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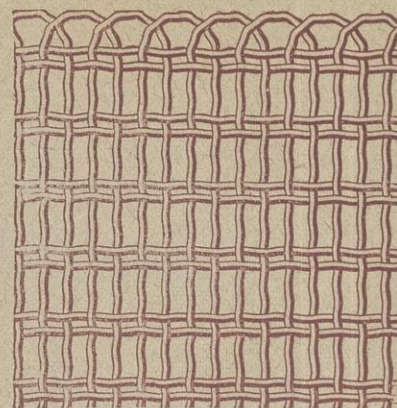
THE CANADIAN HORTICULTURIST & BEEKEEPER

Vol. 26, No. 6, June, 1918
\$1.00 per Year

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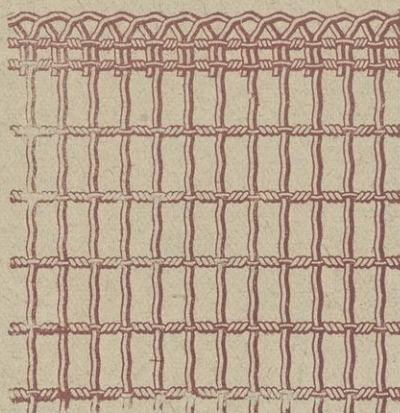
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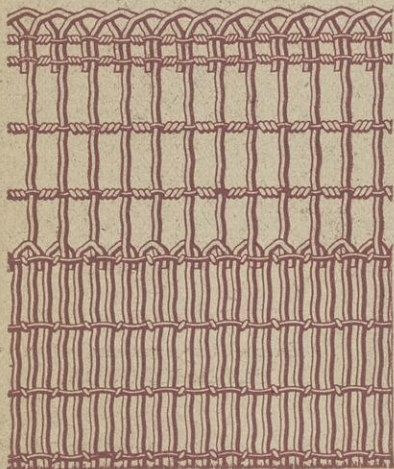
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With filling to match any style "Ideal" Lawn Fence.

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"Ideal" Lawn Fence and Flower Bed Guards will be supplied in any style and length of roll wanted. If a more complete description of gates and fence is desired, send for free catalogue. Remit by Bank Draft, Post Office Order or Express Money Order.

The McGregor-Banwell Fence Co., Limited
Walkerville - Ontario

The Canadian Horticulturist

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The hand sprayer illustrated has proven very effective.
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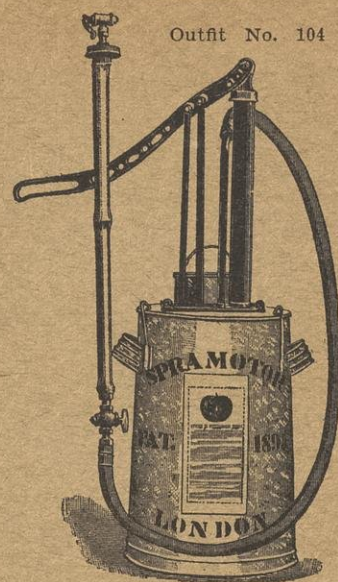
PARIS GREEN, strictly pure, lb. 75c, postpaid 90c. Market price for large quantities on application.

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For spraying cattle, small fruits, etc., it is unsurpassed, and for putting Paris Green on potatoes it has no equal. The Continuous Sprayer will make and save more money for farmers, gardeners, florists, orchardists, stockmen and poultrymen than any other machine they can buy, cost not considered. Special, \$1.25 each, postpaid \$1.50.

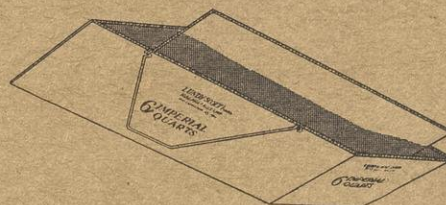
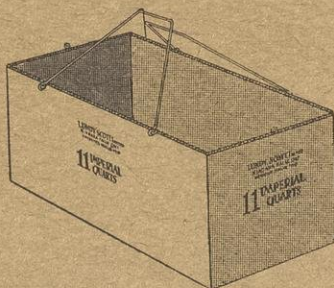


HAMMOND'S SLUG SHOT for destroying potato bugs and those on tomato and egg plants; currant worms, cabbage lice and worms, beetles, striped bugs on lemons, squashes, turnips, beets; canker worms and caterpillars on fruit and ornamental trees; rose bugs, cut worms, etc., 1-lb. carton, 25c, postpaid 35c; 5 and 10-lb. packages, 15c per lb., by express at purchaser's expense.

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For Painting, Whitewashing, and Spraying. We illustrate here the Spraymotor No. 0, arranged especially for single nozzle painting work. It will be found capable of spraying any material that can be formed into a spray. A pressure of 150 lbs. per square inch can be maintained with one nozzle at work, and where limited surfaces are to be covered no better machine is needed. Thousands of these machines are in daily use, and no paint shop can afford to be without one or more of them. Although you may have one of our larger outfits, there are many odd jobs in which it is too large and cumbersome to move around or through openings. Price, complete as illustrated \$13.50.

STEELE, BRIGGS' SEED COMPANY, LIMITED
Hamilton TORONTO Winnipeg



THE COLLAPSIBLE FRUIT BASKET

It is made of double walled waterproof corrugated paper, reinforced with galvanized steel wire.

The basket open and empty has been put to a crushing test of over four hundred pounds.

It will fully withstand the juices of all fruits and vegetables in a saleable condition.

Note the compact form for shipment, the bundle cut represents twenty-five baskets complete with handles on, ready for shipment.

The covers are made with blue or red net and are fastened on with the same wires as the wood basket covers.

The baskets fully comply with the requirements of the Government Inspection and Sales Act.

A FEW OF THE MANY ADVANTAGES

Absolutely no culls. Less than half the weight of the split basket. Complete with handles fastened on. Perfectly ventilated. Handles fold flat when shipping. Splendid facilities for Fruit Grower to place name or brand on side of basket. No rough surface to damage fruit. No weak or imperfect baskets, as all are made from one quality of stock, and that the very best that can be bought.

3, 6 and 11 Imperial Quarts, with or without covers. Collapsible Egg Crates, complete with new patent filler, 3, 6, 12 and 15 doz. sizes. Prices and terms on application.

Lundy Scott, Limited, Queen St. and Welland Ave., Niagara Falls, Ontario

The Canadian Horticulturist and Beekeeper

(See Pages 153-158)

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Vol. 26.

TORONTO, JUNE, 1918

No. 6

Marketing Basket Fruits*

P. J. Carey, Chief Fruit Inspector, Toronto

MARKETING forms the strongest link in the chain governing fruit handling. The grower may work long hours and diligently and entail heavy expenditures in an effort to produce fruit of the best quality and prepare it for the market, but if he fails to market it well, much of his hard work is in vain.

The plain meaning of marketing is the passing of some commodity from the producer to the consumer. Successful marketing is a case where the consumer makes a purchase of a package or packages of fruit, and on account of its superior quality is so well satisfied that he wants more. Faulty marketing is a case where the consumer finds himself in possession of a package or packages of fruit, either of poor quality or fraudulently packed, or perhaps both, and is so displeased with his purchase that not only does he not want any more, but he is perhaps for a long time thereafter, suspicious of all packages, even when of fine quality. It does not require much brains to realize the far-reaching effect on the fruit industry in either direction, of two cases such as those cited.

The difference in result means the difference between success and failure. This is where the whole secret lies. It is difficult to successfully market a poor product. On the other hand, when you have produced a good article it is already half sold.

Most of us can recall a time or a number of times, perhaps, when we were attracted specially by fine packages of fruit, and while we had no intention of buying, yet we could not resist taking home a basket. We can also recall cases of having gone out with the intention of buying, but finding qualities irregular or unattractive came home empty-handed. Few of us realize just what the sum total of such experiences mean to the fruit industry.

The word "quality" has more significance in the fruit industry than in perhaps any other trade. This is on account of the variable and perishable

nature of the product, and because fresh basket fruits placed on the market cannot be called a staple article. I do not deny that fresh fruit is a splendid article of food, and fills a large place in the household supply, but generally speaking it is something of an extra.

A staple article, when there is a scarcity, jumps to a high price. This

Then comes honest packing and attractiveness of pack.

Too much emphasis cannot be placed on the need for grading peaches. The placing of fruit of different qualities and sizes in the same basket is now out of date as a practice by the best growers in every peach growing country. Such a pack does not please



The 11, 9 and 6-qt. baskets are here shown. The recently enacted Dominion legislation will make the use of the 9-qt. basket illegal and standardizes the other two sizes. Note article on page 128.

happened in the case of potatoes last year. It is not so with basket fruits. When our peach crop was almost a total failure, the consumers soon made up their minds that they could go without peaches, and prices ruled but little above ordinary years. This was the case in the face of a shortage of perhaps nearly a million baskets.

Growers of basket fruits should realize where they stand when it comes to the matter of disposing of a large crop. If it is true that their product cannot be called a staple, it means that it has a somewhat limited demand. Their first thought then should be to cater to the tastes and fancies of the consumers, by placing before them for sale an article of such quality, and so packed that they cannot resist buying. The first essential then on the part of the grower is to produce fruit of a high quality, packed at the proper time.

any trade. The high class trade is ready to pay a high class price. It has no place for the lower grades, and often will go without rather than take mixed packs. The packing too can be done with much more ease, when fruit is sized. It is impossible to make a good smooth job of packing fruits of different sizes in the same basket. Their is a danger, too, when all sizes are present, of the packer putting the larger fruit on top of the basket, and then, of course, getting into trouble with the inspectors.

The grading of tomatoes is also practiced by the best growers. I look upon the grading of basket fruits as one of if not the most advanced step in fruit handling.

Packing.

Few growers seem to be sufficiently impressed with the importance of the condition in which their fruit lands on the market. The Canadian peach is

*An address delivered before a meeting of the Niagara Peninsula Fruit Growers' Association.



Yellow transparent apples grown under irrigation on the Dominion Experimental Farm, Lethbridge, Alberta.

a very delicate fruit, and will not stand rough handling. It has little or no resistance, and the soft touch of the handler will go a long way to prolong its life.

One of the drawbacks to our peaches is the short life of the fruit. Under ordinary conditions forty-eight hours seems to be the limit. Often even then the fruit is quite affected. If the growers could see the condition of a large percentage of our peaches when the fruit reaches the housewife, they would be impressed with the importance of careful handling. This involves proper packing.

I found last season that few of the growers paid any attention to the placing of the fruit diagonally in the baskets. In the packing of peaches of No. 1 quality, say at least in two sizes, care should be taken that one specimen does not lie directly over another. In order to have a proper pack, each tier should contain the same number of specimens. Then, when packed diagonally, each fruit rests in a pocket.

Where peaches of different sizes are packed indiscriminately in tiers, without any attention being paid to pocketing the fruits, it is in my judgment a long way from intelligent up-to-date peach packing. It is cruel to pack fine, large and very often over-ripe peaches in such a way that the car motion will cause the fruit on top to be almost buried in that below, by the time

it reaches the market. Even in the case of the heaped basket, the same rules should apply. Of course, in the case of packing the No. 2, or small sizes, the placing diagonally may not be followed, or for that matter the placing in tiers.

In the case of No. 1 fruit some objection may be taken to the placing of the same number in each of the three tiers, on the ground that fruit in the top tier would be necessarily larger than that in the tiers below, which would constitute a violation of the packing law. In the proposed six and eleven-quart baskets, the flare is reduced to a minimum, and the difference in size of fruit in the top and bottom tier will not be very marked. Every No. 1 peach should have a fair color. There are easily three sizes in what may be called No. 1 peaches; one size being commercially as valuable as another. The proper filling of the basket with these three sizes can be accomplished without any fear of violating the law.

Manner of Selling the Fruit.

The methods of selling packed fruit can now be reduced to practically two: shipping to the commission man and selling locally at stations. Both ways have good points in their favor, and are also faulty in some respects. Speaking for the commission men as a whole, I can testify that in most cases there seems to be a desire on their part to handle the fruit to the very best advantage, and I believe, generally speaking, the growers receive fair and honest treatment.

There is one fault that is apparent among the commission men. When there happens to be a scarcity of fruit on offer, or say at the time when a new fruit is first making its appearance on the market, they are apt to take advantage of the scarcity and jump the prices out of sight regardless of the quality of the fruit. The retail man then finds that he has paid an exorbitant price for what is little better than trash, and while he is laboring hard to sell it without a loss, the fruit goes into decay. Nothing in my judgment could be more reprehensible than this method of selling. The retail man who has been bitten goes back determined to buy safe next time, and the consumer, who finds that he has paid an extremely high price for an inferior article, is not too ready to repeat his purchase.

Many things can be said in favor of local buying at stations. The competition between buyers should make it possible for the grower to get the last cent for his fruit. This method of marketing too, tends to distribute the fruit over a larger area, on account of the activity of the many buyers who are anxious to do business. There is one fault, however, with this method

of marketing, and that is, the grower loses his identity, and consequently takes no responsibility for a faulty pack, or loses interest in growing fruit of good quality.

In the apple district north of Lake Ontario, we found that where f.o.b. sales were effected and prices fixed, the packers lost interest in the pack, and in such cases the standard of pack was lowered. This seems to be one of the weaknesses of human nature, from which few of us are free. 'The grower too, who counts on selling locally, is not so apt to care for his orchard in order to raise the best quality of fruit. This latter weakness on the part of the grower is intensified by the fact that the buyers fix each day a flat price to all for a certain kind of fruit, regardless of quality.

If the buyers had the courage to discriminate sharply in prices according to quality of fruit, it would tend to raise the standard all round.

The shipping of peaches by carloads to different points of distribution should be encouraged. I know of no better way of marketing the fruit crop. There are thousands within shipping distance who never have had an opportunity of securing a basket of our peaches. Distribution of fruit is the secret, and I think the consumption could be almost doubled, if special efforts were made by the associations and dealers to have representatives at the different points to distribute car lots of fruit.

Growers' Names on Packages.

The law relating to closed packages requires the name and address of the packer plainly on each package. North of Lake Ontario, in the apple district, we find this the strongest safe-guard in the packing law. In fact the law would be little use without this clause. It has been urged that this clause should be inserted in the law governing open packages as well. If the growers were obliged by law to stamp their names on every package, they would think twice before placing it on some of the packages now finding their way into the market. The fruit industry is the business of the growers, and every man should be big enough to undertake his share of the responsibility, and stand behind his pack.

Increasing Apple Yields

Spreading fertilizer in circles beneath the spread of branches of apple trees has returned greater profits than applying an equal quantity over the entire squares of ground occupied by the trees in orchards of cooperators of the Ohio Experiment Station. An annual gain of three barrels of apples per acre has resulted on an average of

four years by confining the fertilizer to the tree circles in the section kept under tillage with cover crops, and in the section kept in grass mulch the gain has been 6 1-5 barrels over the yield obtained where the fertilizer was spread over all the ground in the orchard.

It will pay, however, to use a larger

quantity of fertilizer and spread it over the entire surface, in order to produce more grass in the open spaces with which to mulch the trees. Fertilizer applied to the trees in grass mulch has returned a four-year average annual gain of 91½ barrels per acre above the yield obtained from unfertilized trees in the same section.

Cultivation of the Strawberry

H. L. Spooner

ALTHOUGH the strawberry thrives better under neglect than any other fruit, there is no fruit that repays so well for intense cultivation. No one would think of trying to grow potatoes without thorough cultivation; yet a person who understands strawberry culture will, by the same kind of cultivation, harvest more bushels of strawberries from an acre of land than of potatoes.

The time to begin cultivation is the next day after the plants are set. No matter how well the soil has been prepared, it will settle and become hard. The rains will run the soil grains together, and then when the sun shines a crust will form, which will prevent the air from circulating through the air spaces underneath the crust.

The cultivation should be continued throughout the first season as often as once a week, and oftener if a rain comes to crust the soil. The cultivator will make a soil mulch which will aid in conserving moisture, and at the same time help to keep the soil at a more uniform temperature. By keeping the air spaces open, it aids materially in

the growth of the bacterial germs that are present in the soil, and whose work is necessary to the healthy growth of plants. It distributes throughout the soil in available condition the plant foods that have been brought to the surface by capillary action. It disturbs the seeds of weeds and keeps them from germinating.

A twelve-tooth cultivator with a leveler attachment in the rear is as good an implement as can be used. The leveler leaves the surface almost as finely pulverized as though it were raked. The cultivation can be quite deep at first, but as the strawberry roots grow and fill the soil, surface cultivation only should be used.

Most growers agree on the necessity of cultivation for the first season, but when it comes to the second season—the fruiting time—there are differences of opinion, with the majority of growers not practicing it. This seems to me to be a very erroneous idea. We cultivate everything else in our gardens. Why then should we depend upon an artificial mulch and hand-weeding, instead of cultivation, for strawberries?

The most fruitful cause of failure with strawberries is a drought shortly before or at fruiting time. If the fruiting beds are cultivated, the soil is loosened up, holding more moisture and evaporating less, and thus preventing to a large extent the effect of continued dry weather. Weeds, if allowed to grow, use up a great deal of the moisture that should go to the plants. All the loss of moisture from this source can be eliminated by thorough clean cultivation.

For the second season, cultivating should begin as soon as danger from frost is over; it should be continued every week until the blossoms come. Discontinue while the plants are in bloom, and then start again and continue until the berries are ripe. Then cultivate after each picking unless it rains and makes the ground too wet. One large grower of my acquaintance found that this method increased his yield twenty per cent., due to the increased size of the berries, which brought a higher price by being larger. The constant cultivation almost doubles the size of the plants, and the larger the plants the larger the berries.

Peach Scab and Leaf Curl

Prof. H. H. Whetzel, Ithaca, N.Y.

Scab is quite common on some of our peaches, especially the white skinned varieties. The Early Crawford suffered severely in some New York orchards last season. Aside from the spotting or "freckling" of the fruit which reduces its market value, the dwarfing and cracking in severe cases may cause considerable loss. Dusting has proven effective in preventing this disease where



Gathering the strawberry crop on the farm of M. K. Ellis, Port Williams, N. S. Mr. Ellis is the secretary of the Nova Scotia Fruit Growers' Association.



Mr. S. H. Rittenhouse, Jordan Harbor, President of the Niagara District Fruit Growers' Association. Note article on Page 163.

tried in New York orchards during 1917. The mixture of 90 pounds finely ground sulphur with ten pounds of powdered arsenate of lead, will not only control the scab and brown rot, but will also markedly increase the red color of the fruit. The first application should be made about the time the shucks fall, with one or two more before the fruit is ripe. A light application of dust may be made within two weeks of ripening. Spraying with Scott's self-boiled lime sulphur will also control both scab and rot. In this connection, the following results of an experiment conducted under the direction of Dr. F. M. Blodgett, are interesting. The work was done during the season of 1917, in Monroe County, this State. The variety was Early Crawford. But one application was made, and this on July 5, when the fruit was the size of the end of one's finger.

Treatment.	Per cent. Sound.	Per cent. Scab.	Per cent. Brown Rot.
Check (Untreated.)	21.49	74.5	3.96
Sprayed (Scott's Self-boiled.)	81.5	18.4	.112
Dusted (Sulphur, 90; arsenate of lead, 10.)	79.4	20.3	.194

Leaf Curl.

The efficiency and convenience of fall spraying for the control of leaf curl was fully established last season. The exceptionally early winter, however, prevented much of the fall spraying that was planned last autumn. One of the cheapest and most satisfactory solutions for the control of peach leaf curl is copper sulphate, two pounds to fifty gallons of water. Lime sulphur, one gallon to fifteen or twenty gallons of water, is equally effective where spraying for San Jose Scale is unnecessary.

Diseases Potato Growers Should Watch

Geo. O. Madden, Dept. of Agriculture, Toronto

BOTH the foliage and tubers of potatoes are subject to attacks by various diseases which help to decrease the crop considerably. However, with the exception of five or six diseases which are transmitted by the disease remaining alive in the soil and thereby reinfecting the next crop of potatoes planted, the remaining diseases can be easily controlled. What is required most of all is to give more time and attention to the tubers before planting, along with careful spraying of the tops during the season; also a weekly inspection of the field in order to remove any diseased plants which might appear, is also very important.

It is necessary to have a simple working knowledge of the different diseases so as to clearly understand the reason for treating the potatoes. Besides, it makes the work more valuable and interesting to know why the various methods employed are used for the control of the different diseases. Potato diseases are more prevalent in some sections, and under certain weather conditions, than in others. So it is important to watch for the first appearances in the field.

Three Classes of Disease.

Generally speaking potato diseases are divided into three separate classes. First, all those common diseases, like ordinary scab and late blight which are always present more or less, and cause considerable loss to some growers. Second, those diseases which are noticed when cutting the tuber for seed. Such seed if planted produces the disease in the foliage and prevents the formation of the tubers. Black leg is a good example of this class of disease. Third and least important as regards potatoes grown in Ontario, but which are becoming more prevalent lately, are those diseases such as mosaic and leaf roll. Such plants should be removed from the field, when found, and destroyed.

The simplest manner of describing potato diseases, however, is with reference to the part of the plant affected with the disease, whether it be the foliage, the stems or the tubers. The following list will give you an idea of the various diseases attacking potatoes, also the part attacked and how to control them. The serious diseases are marked by an asterisk (*).

Diseases Attacking the Tubers.

Late Blight Rot*, is one of our most serious diseases. It occurs as a rot in the tubers while being held in storage. When cutting potatoes for seed, discard and don't plant those which show signs of rotting. It is also good prac-

tice to disinfect knives after cutting such tubers in a solution of corrosive sublimate.

Bacterial Rot is soft rot caused by a bacterial disease which also occurs in tubers while in storage. When cutting potatoes for seed watch for affected tubers and discard. If the bacteria come in contact with healthy tubers the disease is increased still more.

Dry Rot is another rot found in stored potatoes. It is a dry rot, and not soft and wet. This disease lives in the soil as well as in the tubers, so avoid diseased tubers and soil which has produced such potatoes.

Powdery Scab is a bad disease in Europe, which lives in both the seed and soil, the same as dry rot. It is much harder to control than ordinary scab.

Potato Canker is not a serious disease in Ontario. It produces a growth on the tubers, and lives in the soil as well as in the seed. Seed selection and rotation is needed to control this disease.

Common Scab* lives both in the tubers and in the soil. Avoid using seed which shows signs of scab. Treat scabby potatoes with formalin or corrosive sublimate. Also avoid fields that have grown scabby potatoes, and avoid using fresh manure.

(To be Continued.)

Bordeaux Mixture

What materials and quantities are used in Bordeaux mixture for spraying apple trees? I would like to have the proportions for say 50 gallons. Would you also let me know what quantity of arsenate of lead to use in 50 gallons for spraying apple trees?

In making up 50 gallons of Bordeaux mixture you will require 4 lbs. of copper sulphate, more commonly known as bluestone, and 4 lbs. of air-slaked lime. The ordinary procedure is to dissolve the bluestone and lime separately, each in a couple of gallons of water, and then pour both into the tank containing the balance of the water and keep stirred. The proper amount of arsenate of lead to use in spraying apple trees is 2 lbs. of the paste form, or 1 lb. of the powdered form to 50 gallons of water or Bordeaux mixture.

Never spray strawberries after the fruit has formed. The corrugated surface of the strawberry makes it dangerous to do so, as particles of the poisonous materials may adhere to the fruit, thus rendering it dangerous to health, and even life, to apply the spray after that time.

The Increasing Menace of Cherry Maggots*

Prof. Glenn W. Herrick, Ithaca, N.Y.

WE often hear our grandfathers say, "Why I can remember when we didn't have any bugs to fight in this country. I can remember when there were no potato bugs and when our cherries never had a maggot in them, and when we used to get apples out of father's orchard without a worm in them." Is this true in fact, or is it largely due to the rosy memories of a hungry boy dimmed by the passage of many years—memories of a boy who could eat Baldwins from the tree in June and wormy apples by the dozen, and call them good?

Out in Western Texas in a little valley running between two magnificent spurs of the Davis mountains, and known as the Toyah Valley, apples, pears, grapes and alfalfa grew a few years ago in all their pristine perfection. Insect pests were practically unknown, and the apples and pears were as free from knots and blemishes and as smooth and shapely as the cheeks of a child. It was a new country, practically untouched by the disturbing elements of human civilization. Such is the experience of every new country, and similar conditions obtained in the fruit sections of New York State and other eastern sections early in their history. There was a time when there were no codling moths and no canker worms in America. It is safe to say that there are a dozen fruit pests in the east to-day that were unnoticed or unknown thirty years ago. One has only to recall the San Jose Scale, the pear-leaf blister mite, the redbugs on apple, the green apple aphid, the grape root worm and others, to be reminded of the truth of this statement. We cannot here discuss all of the causes that have contributed to this change of conditions, but one way in which we are constantly receiving new insect pests is through a disturbance of the balance of nature and a consequent change in food habits of insects that originally confined themselves to wild, uncultivated plants.

The Cherry Maggots.

The apple and cherry maggots offer fine examples of insects which originally fed upon wild uncultivated plants, but for some reason have changed their food habits, and are now abundant and widely prevalent on the cultivated apple and cherry. Moreover, it is within comparatively recent years that the cherry maggots have become serious pests, the first injury by these insects, worthy of extended notice, occurring

in the late nineties (1899), barely nineteen years ago. Since that time these pests have gradually become more widely distributed and more prevalent. It is probable that the cherry maggots will be in evidence more and more in the future, and forewarned is forearmed. The cherry fruit-flies are not so apt to attack the early varieties, but apparently all late sour and sweet varieties may be injured.

Life History of the Cherry Maggots.

There are two species of the cherry fruit-flies, that are prevalent in our State. They are very similar in appearance, habits, and life history. The flies appear in early June, and soon begin to insert their tiny eggs just under the skin of the fruit. The maggots are yellowish-white and about a quarter of an inch in length when mature. They burrow in the fruit and cause it to decay. Often at picking time there is no external evidence of the maggots within the cherries, and undoubtedly infested fruit is often sent to the canner.

Habits of the Adult Flies.

The flies have their mouthparts fitted for sucking, and as soon as they emerge from the soil they fly to the trees and begin searching the surfaces of leaves and fruit for drops of material which they may sip up and appropriate as food. It is owing to this well defined and persistent habit that the insects have been so successfully con-

trolled with poison baits. In addition, there is an interval of a week to ten days after the flies appear before they begin the deposition of their eggs. This gives ample time in which to spray the infested trees.

Methods of Control.

In the summer of 1912 a fine opportunity was afforded for experimental work in the control of these flies. An orchard which had been badly infested during previous years and which had never been sprayed was found conveniently situated for the experiment. It was decided to try the sweetened poisoned bait, which had given such satisfactory results in the control of the closely related apple maggot. The mixture used was arsenate of lead, 5 lbs.; water, 100 gals., and cheap molasses, 3 gals. The experimental orchard consisted of four rows of Montmorency trees, with 16 trees in each row. Five trees in each row were left as a check at one end of the orchard, while the remaining eleven trees in each were sprayed with the sweetened mixture on June 10, two days after the flies were noticed on the trees. On June 24, two weeks afterward, the trees were given another application. Only a pint of the mixture was sprayed on each tree at each application.

On July 12, two crates of cherries, containing on an average 6,400 cherries each, were picked from the first row of sprayed trees. Every cherry was open-



A Huron County orchard that promises large returns. Commercial orchards are being developed in this county, while small ones are dying out, largely because of the labor shortage.

*An address delivered before the last annual convention of the Western New York Horticultural Society.

ed and examined. In one crate picked from the tops of the trees there were seventeen maggots, while in the other only two were found. Fully a third of the fruit on the last row of the unsprayed trees contained maggots, and all of the cherries on these trees were so badly affected with maggots, plum curculio and brown rot that they were practically worthless. It must be remembered also that the fruit in this orchard was so badly infested the previous year that it was not picked at all.

In another and larger orchard in which the late varieties had been so badly infested with maggots in 1911 that they were not gathered, the trees were sprayed by the owner on May 25 and again on June 16 with arsenate of lead alone at the rate of 4 lbs. to 100 gals. of water. As a result of these two treatments the fruit developed in such fine condition that it was marketed without a single complaint. No flies were found in the orchard during the season, and no maggots were found in the fruit.

Thus we have here a clear-cut experiment in which a sweetened poisoned bait checked the flies effectively under carefully controlled conditions. In addition, we have a field experiment which afforded pretty conclusive evidence that the ordinary arsenate of lead sprays applied thoroughly and at the right time would also control the cherry fruit flies. Since the addition of molasses adds to the expense of the material and also lessens the adhesiveness of the mixture, it is more desirable to use the poison without molasses if it is equally effective.

Fortunately we now have the weight of field experiments on a wide scale in Ontario, Canada, to substantiate the experiments made at Ithaca, which have just been detailed. Although the sweetened baits were used and proved admirably effective, yet the ordinary arsenate of lead sprays are now recommended, as they proved equally effective and much cheaper. Prof. L. Caesar, of the Province of Ontario, sums up his results in the following words: "Extensive tests have shown that these insects can be thoroughly controlled by spraying the trees with 2 or 2½ lbs. of arsenate of lead with or **without** one-half gallon of cheap molasses to 40 gals. (50 gals. U.S.) of water."

Whichever material is used, the first application should be made, at least at Ithaca, during the early part of June or a few days before Montmorencies begin to blush red. In badly infested orchards, at least during the first season, a second spraying should be made two weeks later. To obtain the best success the matter of spraying for these insects should really be a community one, because the flies move

about quite actively, and nearby unsprayed orchards are a menace as agents of infestation.

Spraying for the cherry maggots is not an expensive matter, for comparatively little of the mixture is necessary for each tree. A gallon of the liquid, for a large cherry tree should

ordinarily be sufficient, and the spraying may be easily and quickly done. A light sprinkling of the foliage, covering all accessible parts of the tree, as the sprayer passes down one side and then up the other, is all that seems to be necessary. The flies find the drops and eagerly suck them up.

Leaf Spot a Dangerous Disease

W. E. Biggar, Chief Fruit Pests Inspector, Hamilton, Ont.

YEARS ago when the first commercial orchards came into bearing injury to fruit from disease or insect pests was rarely known and spraying was not thought of and not necessary. Good clean crops could be harvested at that time without much attention to the trees.

To-day it is simply impossible to grow fruit, especially in the southern part of the Province of Ontario, on a paying basis, without knowing how to control disease and insect pest. There are hundreds of acres of apple orchards in the province that are producing but little more than enough fruit to pay the taxes on the land they occupy. This is simply because they are neglected by not being pruned, sprayed nor cultivated. An apple tree not pruned will have in a few years a massive dense growth of wood. It then takes nearly all the strength of the tree to maintain life in its branches without producing fruit.

It is well known that during the past seven years the fruit on unsprayed orchards has been almost worthless because of disease and insect pests. One of the diseases that has caused heavy loss to the fruit grower, and is likely to do so again, this season, is leaf spot, or shot hole fungus. It affects plums, cherries and apples, causing the foliage to become sickly and yellow. This results in a premature falling of the leaves and leaves the tree in a dangerous condition because of the loss of foliage. A cherry tree badly affected with this disease will not mature its fruit. The fruit after it is about half grown remains in a half ripened condition and is almost worthless for marketing. The fruit buds for the coming year not being properly nourished and developed because of the foliage having fallen prematurely are not so likely to produce a crop of fruit the following year. Added to all this the wood of the tree does not ripen and mature properly, and after passing through a severe winter such as the past winter we may find part of an orchard and in some cases the entire orchard frozen to death.

Anyone owning an orchard can positively prevent this disease from attacking the trees by spraying with one gal-

lon of commercial lime and sulphur to 35 gallon of water. Spray before the buds burst, again as soon as the blossoms have dropped, and again two or three weeks later, the two sprayings after the blossoms have fallen will usually control this disease.

Injured Fruit Trees

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

Enclosed please find several samples of leaves taken from trees in my orchard. What is wrong with them, and what should I do in order to save the trees? I planted several hundred trees in the spring of last year, and nearly all of them had leaves like enclosed samples. It makes me feel badly when I look at the orchard.—A. T.

The twigs you enclosed appear to be two from a pear and two from an apple tree. The pear shoots seem to be infected with a common and serious bacterial disease, known as twig blight, or fire blight. You should cut off and burn all twigs affected, and should be careful to cut eight or ten inches below any outward sign of infection. This disease, being a germ disease, is easily spread from tree to tree on pruning tools. I strongly recommend the use of a disinfecting solution for sterilizing the knife or pruner used after every cut. This disease is serious, and unless taken in hand at once, and kept under control, is likely to destroy the trees outright. I have made no microscopic examination of these twigs, but if you find that the trouble appears to progress down the shoot, killing the same as it goes, you may be sure the disease mentioned is the cause of the trouble, and should begin treatment at once.

The best disinfectant for tools is corrosive sublimate (bi-chloride of mercury), two or three tablets dissolved in a quart of water. Failing this bordeaux mixture, or even a strong solution of lime sulphur would do.

The two apple twigs are infected with a small caterpillar, which you may easily see for yourself on examination, and known as "Bud Moth." The insect is now too well protected among these rolled up leaves to be reached by spraying, and nothing can be done this season. The proper treatment, however, is a spray containing poison to be applied in the season when the leaves are small, preferably before the blossoms open.

Reducing Spraying Costs*

Prof. P. J. Parrott, New York Agricultural Experiment Station

IN the last analysis, the fruit grower himself must be the determining factor in every successful orchard enterprise. Each one without much effort on his part can probably see opportunities in the emergency that has been brought about by world conditions, whereby some economy can be effected by a readjustment and improvement of existing methods of orchard management, without any or appreciable loss in efficiency. Our most successful growers have expressed the determination to spray and the problem that confronts them is—how to get maximum results with minimum expenditure both of money and effort.

Insects and plant diseases are responsible for great losses in fruit growing. As injuries by these agents are to a large extent preventable, intelligent spraying has proven very profitable. There is no apparent reason why it should not continue to be remunerative, even during war time, since most commodities, whether from factory or orchard, have risen in value. In 1917, the prices for apples were higher in proportion than the increased cost of spraying supplies.

In planning for spraying operations, chief emphasis should be placed on those factors, which make for largest profits. In western New York the pests of major importance in apple orchards are scab, codling moth and scale, and it is in waging successful warfare against these noxious foes that the most favorable opportunities exist for obtaining largest financial returns. In certain areas some orchardists would do well to adopt special spraying precautions against red bugs and the rosy aphid.

Knowledge is in itself barren. To be effective it must be associated with skill. Moreover, there are lessons in spraying which can be best learned in the field rather than from the printed page or the lecture hall. One of the far-reaching results of the present war is the special effort by the responsible authorities to disseminate knowledge of methods of insect and plant disease prevention and control through field demonstrations, the supplying of specialists and in similar ways. No scheme for pest suppression gives greater promise for larger achievements than the plan to have local expert advice available to each grower. The movement constitutes an advanced step in the economical production of fruit and merits the hearty support of individual

orchardists and fruit-growing organizations.

Specific means for reducing cost in spraying are:

(1) Obtain lowest prices for spraying materials by consolidating orders to make carload lots.

(2) Communicate information indicating unreasonable prices or unwarranted attempts to force the placing of orders on plea of security of material to the proper government authorities.

(3) Place orders in time to have materials on hand when needed. Deliveries will probably be slow, and earlier action than usual in ordering is advisable.

(4) Use 2 lbs. instead of 3 lbs. of paste arsenate of lead in usual spraying of apple trees except in the treatment made when petals have dropped, or in orchards where leaf-rollers abound.

(5) At present prices calcium arsenate is cheaper than arsenate of lead, and experimental data seems to indicate conclusively that it may be safely employed for the spraying of potatoes. For apple orchards, prudence dictates that growers do not dabble with it too extensively, even though it appears a promising arsenical for this purpose, as standards for this arsenical have not been established, and brands by different manufacturers vary in composition.

(6) Do not make special treatments or applications of the more expensive spraying materials for such insects as red bugs or rosy aphid, etc., except

under competent advice or as experience has proven worth while.

(7) Avoid preparations of unknown merit, as they may prove ineffective unsafe and expensive.

(8) The cost of labor has reached a point where it is necessary to make one's energy go as far as it will. If a new or larger machine will do more work in less time, the purchase of a new spraying outfit may be advisable. It is here as with all purchases of up-to-date machinery, that growers should be on their guard against the appeals of false economy.

(9) Economize in time and labor by employing efficient loading and spraying devices. Time unnecessarily spent on the road or at spraying platform is so much valuable time lost in the treatment of the orchard. A "spray-gun" may oftentimes take the place of a man, and do more effective work, besides being more economical.

(10) Finally, the facts of pest experience should not be forgotten—an orchard that is neglected or indifferently managed with respect to insects and plant diseases is generally a liability rather than an asset. In spraying make each application count by thorough and careful work at the right time. Failure to maintain a high level of spraying practices throughout the growing season may have the effect of neutralizing, if not actually destroying, the benefits of earlier applications.

Efficient spraying serves a two-fold purpose: (1) It protects trees from immediate perils, and (2) It is cumulative in results against certain pests, and its beneficent influences extend into the future.



A mulch between the rows of the strawberry beds conserves moisture, keeps the fruit cleaner and improves picking conditions.

* Extract from an address delivered before the last annual convention of the Western New York Horticultural Society.

VEGETABLE PROBLEMS

C. C. Johnston, B.S.A., Toronto, Ont.

Cucumber Leaves Dying.

Will you kindly instruct me what to do with cucumbers that are bearing fruit, but the leaves are dying away. I am afraid that I shall lose the vines if they are not attended to. Also instruct about spraying late turnips and cabbages?—J. A. J.

I would think from your description that the killing of the leaves of your cucumber vines is due to mildew, but it is impossible to definitely locate the trouble unless examined. Spraying with bordeaux mixture made with 4 lbs. lime, 4 lbs. of bluestone, dissolved into 40 gals. of water, and sprayed on both sides of leaves, would help to check it. For spraying cabbage for the cabbage worm, use paris green at the rate of 1 lb. to 120 gallons. If the turnips are bothered with flea beetles, spray with bordeaux mixture and paris green.

Soil That is Too Rich.

What can be used to counteract the effect of soil that is too rich, causing vegetables to go more to tops than to roots?—L. M.

It is practically impossible to have your soil too rich for growing vegetables. Commercial vegetable growers make a practice of adding from 35 to 100 tons of manure to each acre of land each year, and I do not think it possible for a backyard garden to become too rich for the growing of vegetable crops. It is possible that your garden has been over-watered. It is a common practice with city and town growers to add quantities of water to the soil when there is really no need for it, and as a result the plants produce a mass of leafy growth. Another condition which is conducive to heavy leaf growth is shade. Another one is lack of cultivation of the soil between the rows. An application of lime, either fresh or slaked lime, which may be procured from a lime merchant or a building supply company, spread over the surface of the soil after digging in the spring, would be beneficial. It should be raked in, and after a day or two, the seed planted. If these conditions are taken into consideration, you should have little trouble in producing vegetables with fewer tops.

Pests Cause Trouble.

I have a small plot in the rear of my house on which I have grown vegetables every year for four years, but I have decided to quit as I have been bothered greatly with different pests. Something is interfering with the roots of plants that makes them spread and appear deformed when pulled up. Is it wire worms or what? Would appreciate advice on how to kill them. Is there a commercial manure that would do? I have used horse manure and have been wondering if that may have caused the trouble. Lot is about 30 x 15 feet. What proportion would I need for successfully killing these pests?—R. P.

The only thing that I can imagine would be giving you trouble would be

that your root crops, such as beets, carrots, parsnips, salsify, etc., have come in contact with fresh horse manure. This will often cause the roots to be forked or gnarled; but if the deformity is found in other roots, for instance, tomato roots, I cannot give you any advice with the limited information you have given me. For one season at least I would not place any fresh manure on the part devoted to these root crops, but would dig the manure in the last thing in the fall in that part of the garden on which you propose growing these crops the succeeding season.

Wire Worms.

How can I clear my ground from wire worms? It has a great many of them.—R. H.

It is impossible for me to give you a definite remedy for wireworms. This pest is one which causes considerable trouble in gardens, and as yet we have no effective means of controlling them. It is recommended that they may be effectually trapped by placing under boards bunches of clover poisoned with paris green. The land should not be allowed to remain in grass for any length of time, and it is recommended that the soil be dug in the late summer or early fall and thoroughly cultivated for a month or so. This is all the information that I can give you, and all that I know of as being available for the control of these insects.

A Simple Greenhouse.

Do you know of any book giving instructions how to construct a small greenhouse adapted to a farmer who wants to grow some greens during the winter, and then have a good stock of cabbages, tomatoes and celery for the spring?—C. S.

A greenhouse adapted to the farmer would be most satisfactorily built after the style described under Pipe Frame Construction. These houses can be made any width desired, so far as narrowness is concerned. A house 20 feet wide could be supported with one line of pipe supports to the ridge. Concrete walls would support the plate, and on this the sash bars could be placed. If you so desire, I could send you a rough plan and approximate bill of materials for such a house as you would desire.

Cut Worms.

What is a good remedy for cut worms?—H. L.

Use mixture of poison bran spread over the surface of the soil, close to the plants. A pail of bran, with sufficient paris green to highly color it, should be moistened with molasses until it crumbles readily in the hand. This mixture should be kept on the ground during the early part of the season.

Frame lettuce must have careful attention to make a successful crop. See that the soil is kept moist and the frame properly ventilated.

The Sod Mulch System

Dr. A. J. Grant, Thedford, Ont.

If your orchard soil is a nice sandy loam, or light clay loam, you can save some labor by using the sod mulch system for a few years, instead of cultivating, but I am always afraid to mention sod mulch without the use of the "soft pedal," as it is hopelessly out of order on many of our good orchard soils. Then there is always the temptation, on the part of the novice, to draw off a few loads of luscious hay instead of leaving it on the ground where it belongs. Some of the finest and quite the best colored apples that I ever grew were produced by an orchard under this system, and I would not hesitate to use it on a nice friable soil at any time, but cultivation is vitally necessary on the harder soils if you are going to get real crops.

Late fall plowing is good practice in most parts of Ontario, if the orchard has been regularly cultivated, and makes work much easier in the spring. The method of leaving the trees standing in a sod strip ten or twelve feet wide will save a lot of time, and in so far as I have been able to judge, neither the trees nor the crop are any worse than under complete cultivation. Mr. Gibson, of Newcastle, one of our largest apple growers, has used this system of cultivation for a number of years, and is still using it, so this should be good evidence that the method is profitable. In my own more limited experience, I can vouch for the fact that it saves about half the labor, that is, the slow part of the work is the last five or six feet next the trees, whether plowing or cultivating. This would seem like a real war-time plan of cultivation and should be in general use, as it suits all soils.

Transplanting Early Celery

Early varieties of celery, sown in boxes and pricked out into other boxes, may be planted to the trenches in June. Dig out a trench a foot deep and a foot wide. Clean out all the loose soil, and put a layer of well decayed manure (preferably that from a spent hotbed) in the bottom. On this place two or three inches of the finest of the soil that was taken out.

Plant the celery in two rows, each three inches from the sides of the trench, and the plants nine inches apart. Set the plants so that those in the row on the right of the trench alternate with those on the left, and vice versa. Late varieties may be similarly treated, save that the seed may be sown in a finely prepared seed bed out of doors.

Early Summer Management of Bees

R. W. Muckle, Clandeboye, Man.

THE work of the beekeeper at this season of the year is to build up his colonies so as to have them strong in bees when the honey harvest time arrives. There are a number of things that have to be taken into account in early summer management of bees. They may do poorly because they have wintered poorly, the hive being greatly weakened through winter losses.

Many beginners make the mistake of thinking that the greater number of colonies of bees they have; the larger will be their honey crop. One good

out cracks or openings, as the conservation of heat during the cold weather of early summer is very important. In Manitoba we have many successful Ruthenian beekeepers, and much of their success can be attributed to the well made double walled hive that they use. By having a well-made hive the bees will rear a larger number of young during the cool weather of spring.

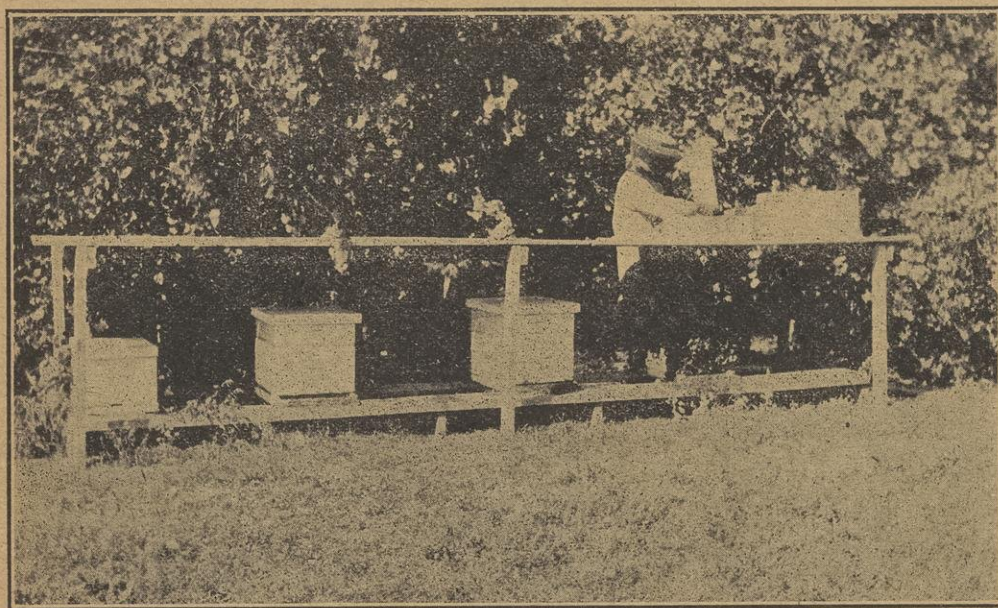
Many of our beginners, and I am sorry to say, a few of our older beekeepers, do not extract any honey from the lower story or hive proper. This

brood nest, as only a very few drones are needed. An authority has stated that it takes four worker bees to feed one drone, so we see the reason why we should be careful not to let the bees rear too many of the useless fellows. "Get rid of the loafers." The value of full sheets of foundation in this respect is very great. In the early summer, especially during the latter part of May and during June, the bees like to rear a large number of drones. This can be prevented by using foundation and by removing all drone comb from the brood nest.

It is very important that we have good queen bees in each hive. A good queen will start laying in the middle of a comb, and lay one egg in each cell in a circle, so that as the brood develops, each comb will present an even appearance, and be filled from top to bottom and right out to the ends with brood, not leaving a rim of honey just below the top bar. The brood chamber should not be used for the storage of honey; we expect the brood combs to be filled with brood. We want a queen that will not lay in a drone comb early in the season. A good queen is known by the workers that hatch from her eggs; they should be industrious, gentle and resistant to disease. The selection of breeders that are not inclined to swarm is wise. The queen herself should be apparently well developed, graceful and strong in her movements, not excitable nor easily frightened, but neither awkward nor sluggish.

A queen bee is usually at her best in her second year, and should not be allowed to retain her position after she shows signs of waning energy. A very old queen will have lost her power to lay worker eggs, or, at best, will lay only a few, as compared to one in her prime.

Clip the queen bees' wings, for two reasons. To keep track of the queen's age, clip all right wings one year, and left wings of young queens the next year, and thus know their age. Second, by having the queen bee with her wings clipped, it is an easy matter to have a swarm, and often saves the beekeeper loss and inconvenience. When the bees swarm, the swarming bees will fly around in the air. The clipped queen will be out in front of the hive. All the beekeeper has to do is to carry the hive that has swarmed to a new stand, replacing it with an empty one, and allowing the queen to run in, or better still, caging the queen in the empty hive for several hours. The swarming



A well-kept apiary at the Dominion Experimental Farm, Lethbridge, Alberta. Note the provision made for shade.

strong colony will gather more honey than several weak ones. Many of our most successful beekeepers do not try to increase from the hives that they intend for honey production. The thing to do then, if you wish to get a honey yield, is to unite all colonies that are too weak to build up before the middle of July. A beekeeper must remember that it takes a long time for a colony of bees to build up, as the queen bee will only lay eggs during the spring in relation to the number of inmates of the hive, and the rate at which the honey and pollen is coming in.

A satisfactory method of uniting colonies is to place one above the other, separating them by a single sheet of newspaper. In twenty-four hours the bees will usually have opened communications, and in a day or two you may remove the balance of the paper, and shake or otherwise transfer the top story bees to the lower.

Be sure the hive is a good one, with-

often allows the brood chamber to be crowded with old, often candied, honey, thus depriving the queen of laying space. Be sure the queen has plenty of room in which to deposit eggs. If you use queen excluders, be sure that the hive below the excluder never becomes entirely filled with honey or brood before the main honey flow comes along. A question that is often asked in Manitoba is, "Do you think it advisable to spread the brood and insert empty frames in the space between the brood frames?" The experience of our leading beekeepers has been that with our changeable weather, the best plan is to insert empty worker brood combs, or ones with full sheets of foundation, on either side of the brood, rather than in the centre, thus lessening the danger of chilled brood. It is not advisable to spread the brood frames until the middle of June, in Manitoba.

Reduce the Drones.

Remove all drone comb from the

bees, when they find the queen is not with them, will return to the parent stand and the now empty hive. The field bees will also return to the parent stand, giving a strong colony, which will be sure to give a honey yield. The hive that has been placed on the new stand will hatch a queen, and usually we will not be troubled with swarming again that summer, providing plenty of hive room is given.

Be ready for the honey flow, which,

at best, will last only a few weeks. It is the height of folly to attempt to prevent swarming and secure a bountiful honey harvest without having a sufficient number of supers, either with full sheets of foundation, or, better still, with drawn out comb.

The food situation is such that every beekeeper should give his bees every care and endeavor. By so doing he increases the food supply so necessary at this time.

Requeening the Home Apiary

Allan T. Brown, Peterboro, Ont.

THE queen rearing industry in Canada has remained in a comparatively undeveloped state, due, probably, to the spring in Canada coming too late to permit of having queens hatched and mated in time for the spring trade. However, there is no reason why the individual beekeeper should not rear queens in sufficient numbers to supply his own apiary, as this plan has a great many advantages, and the only drawback is the time and trouble necessary to carry it out, which no beekeeper should begrudge in order to have his apiary stocked with the best.

The purchasing of queens from the south has the disadvantage that the strain may not be hardy enough to stand our rigorous winters—as the writer found to his bitter sorrow the past season—and also that queens which have been jolted and bumped two or three thousand miles through the mails, are liable to be injured, and may prove unsatisfactory. On the other hand, the beekeeper who rears his own queens is able to control breeding to a large extent, and practice selection for desirable characteristics, such as gentleness, industry, resistance to foul brood, hardness, and swarm control. This latter is an important consideration. Some beekeepers whose time is limited may be tempted to use swarming cells for requeening, as they are large and fine looking, and always to be had in large numbers during the swarming season. But in this way a strain is soon bred up which will swarm incessantly, and swarms and large crop returns do not go together.

The plan about to be described was originated by Mr. G. M. Doolittle, of New York, and while somewhat complicated, is one which enables the beekeeper to practice selection for the characteristics mentioned, and the fact that Mr. Sladen, of Ottawa, recommends it, should commend it to any beekeeper.

The best time to requeen is toward

the end of the white honey flow, which will be around August 1st. In the colony selected for rearing the queens, conditions should be made to approximate as nearly as possible, conditions at swarming time, viz., a powerful colony, and a light honey flow. If honey is not coming in, stimulative feeding with about half a pint of thin syrup daily will create the desired condition.

The next step is to make as many artificial queen cells as required. To make these a piece of hardwood is whittled down to three-eighths of an inch in diameter, and the end tapered to the shape of the interior of a natural queen cell. This is moistened in cold water, and dipped to the depth of one-half inch in hot wax. When the first dipping has cooled, it is again dipped,

but not so deep. This operation is repeated several times, the idea being to have the base thick and strong, and a thin edge where the bees are expected to begin working. At the last dipping the cell is loosened by slight pressure of the thumb. The base is dipped again, and before cooling is attached to a slat fixed horizontally in an ordinary brood frame.

The colony in which the queens are to be reared is deprived of queen and all brood except one comb of capped brood. A few hours later the frame or frames of cells are placed in the colony. After the bees have cleaned and polished these, a larva, not over a day old, and from a select queen, is placed in each cell, together with a small quantity of royal jelly from natural queen cells, which may be obtained by previously placing a comb of eggs in the super of a strong colony. The bees will begin work on the cells, drawing them out, and supplying the larvae with an abundance of royal jelly. In due time the cells will be capped, when they may be placed in cell protectors, and removed to nuclei. When the queens are mated and begin laying, they may be introduced to the colonies in the usual way. Queens so reared will immediately begin laying, and by late fall will have the hive filled with young bees to winter over—a most desirable condition—and will be less likely to swarm the succeeding season.

Increasing Bees

F. W. L. Sladen, Dominion Apiarist, Ottawa

THE importance of increasing bees in preparation for a greater honey crop next year makes it opportune to draw attention to a good method of increase that has been employed at the Central Experimental Farm. Many methods of artificial increase are wasteful, because much young brood is deserted, and consequently chilled and starved, or because the bees of the new colonies or nuclei are long idle before their queen begins to lay. These troubles, however, are largely prevented, and at the same time a fair crop of honey is secured by making increase from colonies that have thrown a prime swarm.

The method consists in simply dividing the parent colony into a number of nuclei, about six days after the swarm has left the hive. Each nucleus will consist of a comb or two containing honey, brood, much of which will be capped, and a queen-cell or two containing queens soon to emerge, with the adhering bees, placed in a separate

hive towards evening. Held attracted by their capped brood and queen cells, the bees will not return next day to the parent hive to any extent, and it is possible, under favorable conditions, to make as many as eight or nine nuclei from a colony on ten combs, but the inexperienced should not attempt more than four or five.

Some judgment is needed to select the day for making the nuclei. If the departure of the prime swarm has been delayed by bad weather, it may be advisable to do this before the sixth day, because some of the young queens may emerge earlier.

Under ordinary conditions, the queen in each nucleus will emerge within a few hours, and will commence laying within ten days. When she begins to lay, a comb of capped brood from another colony given to the nucleus will help to build it up quickly. A colony can usually spare brood during the honey-flow without reducing the honey crop gathered, because brood does not



The demonstration season is once more with us. A field day conducted by Jas. Armstrong, at the apiary of E. J. Teepell, Battersea, Ont., is shown.

produce bees ready for field work untill two to five weeks later, when the honey flow has usually ceased.

By this method only the parent colony is used for making the increase, and a crop of honey is obtained from the swarm. It is often possible, indeed, to get almost as large a crop of honey as if no increase had been made. This is done by moving the parent colony to a new stand at the time of swarming, and hiving the swarm on the old stand so that the field bees join it. Of course the parent colony is so weakened by this action that it cannot be divided into so many nuclei, and danger of the queen larvae or pupae getting starved or chilled is to be guarded against.

The inexperienced beekeeper is liable to meet with difficulties and losses in making increase, as practiced by professional queen breeders, by raising queens and forming nuclei from regular colonies. These difficulties increase

as the season advances, and the honey flow declines or ceases, when it becomes hard to raise full-sized queens, and robbing newly formed nuclei has to be guarded against. June is a better month than July for making increase, and August is in many places too late. It is also necessary to warn the inexperienced beekeeper against dividing up the colony into too many nuclei. Nuclei should be strong enough by September 15 to fill the space between seven or eight combs, in order to pass the winter safely. Those covering only five combs at this date have, however, been successfully wintered in the cellar at Ottawa, by placing them in pairs in a 10-frame hive with a double wire cloth partition between each pair. Placed in a separate hive during the honey flow from dandelion in May, each nucleus has become a strong colony in time for the clover honey flow.

Lessons from the Winter of 1917-18

Morley Pettit, Georgetown, Ont.

WINTER loss of bees in Ontario is reported to be from 40 to 50 per cent. and over. Careful beekeepers who applied modern methods have practically no loss at all.

This can be illustrated briefly by a reference to experiences in the Pettit apiaries. One yard was carefully requeened during the latter part of the honey flow, so that every colony was in good condition as far as bees were concerned. They were packed in quadruple cases, with three to five inches of planer shavings on the sides, and about one foot on the top. Each was given four 10-lb. pails of sugar syrup after being placed in the case, and packing placed around the pails while the feed was being taken down. When

the pails were empty the top packing was removed, pails taken off, cloths and papers spread over the feeder-boards, and the packing replaced and well pressed down.

For protection from wind, the yard has a high wooded cliff on the west, and an eight-foot board fence on the north and east. The ground slopes rapidly toward the south-east.

Every colony in that yard is in fine condition this spring, and many have drones and are needing supers at this date (May 15th).

Another yard had equally good feeding, and almost as good protection, but the winter cases are of another type, which gives less side and top packing. The re-queening received less atten-

tion than in any of the others, because it was the farthest from home, and the honey flow cut short sooner than expected. The loss there is about 12 per cent. of the colonies, mostly queenless, or with young queens reared too early for drones. The other yards, packed, fed and protected in much the same way as the first mentioned, have only slight loss, practically all chargeable to insufficient attention to the queens last season.

There is no one factor which will insure good wintering when all others are neglected; but the primary ones, not necessarily in the order named, are bees, stores and protection.

Good queens will insure against weak colonies, if they have plenty of feed in the hives from the close of the honey flow till honey comes again. They will insure against loss from queenlessness at a time when that means the loss of the colony.

Use Good Sugar.

Stores are sure of being good only when they consist of syrup made from best granulated sugar. This may be contradicted, and is, vehemently, by some who stand high in the esteem of beekeepers, and write extensively, but has been proven beyond question by many of our best practical men and women. It is the only feed which can be used for winter with full confidence that it is sure not to cause death from dysentery or disease. With honey at its present value, the nation cannot afford to expect beekeepers to take any chances in this most important matter. I believe the Canada Food Board will recognize the importance of this if the beekeepers press their claim properly, and it should not be neglected.

The matter of protection both by insulation and by shelter from wind, is equally important. The one is just as much needed as the other.

Now, when the winter is just past, is the time to draw conclusions from its experiences, and to plan and note down the methods to be adopted for the next. My bulletin on "Wintering Bees," which may be had on application to the Department of Agriculture, Parliament Buildings, Toronto, enlarges on the principles of wintering, and gives specifications of the case I have found most satisfactory.

There is nothing on the farm which requires so little care in proportion to the returns as the bees. This is why they are so often kept at a loss; because the care they need is so small that it is utterly neglected. They require only a little attention, but what they do require they must have.

Spring Management and Swarm Control*

R. Brewster, Manitoba

IN this north country the question of spring management is a most important one, owing to the depleted conditions of the hive after a winter's rest of great duration. Seldom is it possible to put bees back on their summer stands under 20 weeks, and some seasons, bees have to stand a confinement of 24 weeks. The result of this is that we are confronted with hives whose bees are reduced in numbers and weakened in constitution by the long confinement, some colonies having barely sufficient bees to keep them in the hive during the excitement of the first flight in the spring.

Many are the methods advocated for the putting out of the bees in the spring. Some wish to put them out when they think the next day will be cold and dark. They carry them to their summer stands at night, even if it means working all night to do it. Others prefer putting them out early in the morning of a fine day after airing the repository the previous night by opening doors or windows, or the removal of the earth covering where buried in clamps. Much might be said for both systems. Sometimes, after putting them on the stands but before they have had a flight, a high wind may spring up. Should it be a warm one, great losses may follow from drifting, as the flying bees gather where the greatest noise is. Thus some colonies get far too many bees, whilst other weak ones are nearly ruined by the loss of their workers. This condition can be averted by the contraction of the entrance to a one or two bee space, thus preventing that indiscriminate rush and confusion in which they either fail to locate their own hive or forget it in the intoxication of a first flight.

After putting them on to their summer stands, they need but little attention or manipulation, provided they are in good tight hives and have plenty of stores and are made comfortable by well fitting quilts over the frames; but sometimes I have seen bees, shortly after being put out, with full-width entrances open and covers askant and quilts awry or with holes in them, making it quite impossible for any but the strongest colonies to make any progress towards raising young bees to replace the old ones that have come through the winter, and which at best must shortly die.

Our first object should be to see that they have sufficient stores and are then made warm. A very weak colony, under these conditions, if left alone, will make good; but there is a better way in the Alexander method of building up weak colonies. This method has been worth hundreds of dollars to many beekeepers. I have tested it with unfailing success so long as the instructions were faithfully followed.

The Alexander Method.

Mr. Alexander said: "About five days after putting out your bees, pick out and mark all your weak colonies, also your strong ones, marking an equal number of each. Set each weak one on the top of a strong one, with a queen excluder between, closing up all entrances to the weak colony except through the excluder. Then there are those that are very weak, that have only their queen and perhaps not more than a handful of bees with no brood. Fix these last named as follows: Go to your strong colony, that you wish to set them over, and get a frame of brood and its adhering bees, being sure not to take their queen; then put the queen of the weak colony on this comb with the

strange bees, and put it in the weak hive; leave them in this way for half a day. Then set them on top of the strong colony where you got the brood, with a queen excluder between. Do all this with a little smoke and avoid exciting the strong colony in any way. If a cool day and the bees are not flying, I usually leave the strong colony uncovered, except for the excluder, for a few hours before setting on the weak colony.

"The whole thing should be done as quietly as possible, so that neither colony hardly realizes that it has been touched. When the weak colony has been given some brood and put on top in this careful manner, hardly one queen in a hundred will be lost, and in about thirty days each hive will be crowded with bees and maturing brood. Then when you wish to separate them, set the strongest colony on a new stand and also give it some of the bees from the hive that is left on the old stand, as a few of the working force will return to the old location, especially if they are black bees or degenerate Italians."

Causes of Failure.

Mr. Alexander also claimed that every case of failure on the part of others to get satisfactory results was caused by one of two things, either an absence of brood in the weak colony to hold the queen and her few bees in the upper hive, or too much smoke, causing the bees of the strong colony to rush up through the excluder and sting everything in sight. On the other hand, if done as described, the bees in the lower hive do not seem to realize that strangers have been put over them, and work in perfect harmony together. This method has been of great value to me for some eight or nine years, and though only adopted at first on a cautious scale, during the last few years it has only been limited by the number of suitable colonies in the apiary. I have done this up to the 9th day with success, and occasionally up to the 11th day.

As the season advances and pollen and nectar are coming in freely, or at least sufficient for brood rearing, all combs should be overhauled, and where there is too much drone comb these should be removed and worker comb given or drone comb cut out and filled in with worker comb or even foundation. Too many drones is a heavy tax on the resources of a colony, and should not be tolerated. Those who have made a study of the subject contend that 100 drones are sufficient for the strongest colony.

Clip the Queens.

At this time also queens should be clipped, and though it is not my intention to take up this question, I must add my testimony to that great body of beekeepers who follow this practice. The feeling of security when you know that all your queens are clipped is an asset not to be despised. Especially is this true when you have high trees in the apiary, and the beekeeper has arrived at the age when his ambition for climbing trees is on the wane.

Generally the last few days in May or the first week in June I find a few colonies strong enough to require treatment if swarming is to be averted. As in May the weather is still uncertain and the mercury may drop below 32 F., I prefer to give relief where a colony is being over with bees and has seven or eight combs of brood—by taking a couple of frames of brood and giving to a colony that has four frames or over, thus building up your second best into the rank of first class and leaving the weaker

ones to their own devices until the weather is settled. The temptation to give them to the weak ones is great, but should be resisted, as they seldom have sufficient bees to cover more brood than they have.

These strongest colonies are then all right for a week or two, when it is safe to lift brood. I then take a full-depth super by the side of each one of my strongest colonies, which have been chosen and marked previously. This done, I start lifting brood. These supers contain full-drawn combs, though foundation will do. Taking the cover and quilt off the first hive, I remove two frames of brood and bees from centre of hive, filling the vacancy made with two empty frames taken from the centre of the super. I then put these frames of brood in the super in place of empty combs put below, put the super on the hive, and close it up. All the other strong ones are served the same. This may be repeated ad libitum. Thus there is no looking for the queen, as it does not matter whether she is on the combs or not. Anyway, she will, if a good one, move up and fill them with brood in a short time. If when doing this I find queen cells have been started, it is the signal that a regular inspection of strong colonies must be made every nine days.

I know it is claimed by many that they can get from both swarm and parent hive as big a crop as if they had never swarmed, but this has not been my experience. My large yields are always made by colonies that have not swarmed that season. Consequently every effort is made to keep the bees together as long as possible, as I prefer to make my increase by artificial means. Quite a few colonies treated as described will not make any attempt to swarm, but will continue to fill supers till the end of the flow. Others that may show an inclination to swarm are tried once more to be brought to a proper state of mind by what is called the "Demaree" method. For the benefit of those who have not textbooks on bee culture, I will explain it again. The only drawback to this system is that it demands the finding of the queen at a time when she, in one respect, is most difficult to find—in a crowded colony—and perhaps with a little more inclination to hide as she lets up on her laying preparatory to going out with a swarm.

The "Demaree" Method.

On finding for a second time queen cells with eggs or larvae, I decide to "Demaree" them. I first procure a hive body filled with frames of foundation, remove super and hive body, and place the new hive body on bottom board, take out one frame of foundation and lay it aside, then look through old brood nest for the queen. Put her on a frame containing the least brood, and put it in the vacancy made by the removal of frame of foundation. Now put on a queen excluder, destroy all queen cells, and then put brood and honey over excluder. In about five days look for cells again, and destroy. A large percentage, varying with the season, will not swarm after this treatment.

Have Full Colonies.

Just before July comes in, I want all colonies brought up to full strength. This is generally done by borrowing from those that had received assistance themselves by the gift of brood earlier in the season. Those that are very weak still, get combs of brood and bees, care being taken that the queen is not on them. Often these colonies do remarkably well, as they sometimes have the best queens, the weakness being caused by the tardiness of the bees in superseding the previous fall, rather than from any defect in the queen.

After-swarming, or a second swarm issuing from a hive about eight days after the prime swarm came out in an apiary where

* An address delivered before the Manitoba beekeepers' recent convention.

honey is the object, should not be permitted. When short cuts and economy of time are of importance, the bees can be enlisted to do this part of the work themselves. When the first or prime swarm issues, the parent colony is removed from the old stand and placed a short distance away and covered with a sheet of burlap or canvas. A new hive is placed on the old stand and the swarm put into it. A few hours later the parent colony is put by the side of it. It is perhaps, for the first day or two, put with entrance at right angles to its former position, and later turned the same way as the swarm. Six days after the prime swarm came out, carry the parent hive to a new stand. The return of all flying bees to the swarm on the old stand so depletes the hive that there is no danger of any further swarming.

We occasionally read in bee journals that beekeepers in certain locations with large hives and room given ahead of requirements have no swarming. What an Eldorado for the beekeeper. I am sure it does not work that way in this country, for in spite of these conditions, plus watchfulness and care, most of us lose some swarms each year. Whilst shade, ventilation, and room ahead of requirements is a *sine qua non* of success in swarm control, there is something else. For we may build up a system founded on the most flawless logic, and yet in practice the results are simply ludicrous in some seasons.

It has been found that the removal of two combs of brood and replacing with two empty combs once a week or ten days prevented swarming in a great number of colonies, but not in sufficient number for it to be counted as a panacea.

Killing or removing the queen and allowing them to raise a young queen—for it is

as near a certainty as you can get, that a young queen of the current year, raised in the hive, will not swarm, that is if—"Ah, there's the rub"—if you destroy all queen cells but one.

If we rely on the destruction of queen cells as a means of swarming prevention, we are going to be disappointed. In many cases it is quite effective, but still there are many others where it is not, and a great loss of valuable time, both to the bees and the beekeeper, is going to ensue if persisted in. When the swarming fever has set in and one attempt has been made to swarm, if we return them to their hives and destroy cells again, the probability is that they will sulk and immediately prepare for another attempt. In such a case I resort to a method which the oftener I use it the better I like it.

On finding a colony which is determined to swarm, perhaps already sulking, I simply take their brood from them by shaking all the bees on to foundation, putting a queen excluder over them and returning their honey to them. The beeless brood is placed over some parent colony that has got a young queen of the current year. Watch that colony. In a few days it is one of the best gathering colonies, and the one that was sulking returns to business. Should it be a case in which they were wishing to supersede, they will again raise cells, but there need be little fear of swarming.

Making a colony queenless for ten days by caging the queen or putting her into a nucleus often prevents swarming, but not always, and if a ripe queen cell is given at the time of removal of queen, a swarm is liable to come off with the young queen, though some claim that it does not occur with them.

faculty beekeepers are haying in obtaining bees to replace dead colonies. Reports from southern breeders and shippers of pound packages are adverse. Many orders have had to be cancelled, owing to the backward season in the southern States. The only channel open to the beekeeper is to buy neighboring colonies from farmer neighbors who are pressed for help and cannot give the bees sufficient time to obtain the maximum returns.

There is a strong temptation, owing to the heavy loss, to sacrifice crop in order to make increase. In view of the present food situation, such practice cannot be too strongly condemned. More honey is the first consideration, then keep more bees.

Toronto Field Meet

Members and friends of the Toronto Beekeepers' Association held their annual field day on May 24th at the Apiary of Mr. Wm Couse, Streetsville. About 150 were present. The meeting was a pronounced success. A number of prominent members of the Ontario B.K.A. were on hand, amongst whom were Messrs. Jas. Armstrong; Mr. Elliott, President Halton and Peel B.K.A.; Morley Pettit; J. D. Evans; Mr. Brownscombe; H. G. Sibbald; Chas. Hopper; Miss Trevanow, and a number of local enthusiasts. President R. A. Fletcher, with his committee, were kept busy. The ladies provided a lunch on the front lawn, which was much enjoyed. After lunch the following programme was carried out: Diseases of Bees, Jas. Armstrong; Handling of Bees, Wm. Couse; Introducing and Clipping Queens, Chas. Kitchen; Swarming, Artificial and Natural, J. D. Evans; Supering and other Practices, H. G. Sibbald.

One improvement in treating American foul brood was noted. Mr. Armstrong put only five starters in the hive, covering them with a folded sack, leaving the other half of the hive empty, into which the bees were "brushed" off the combs instead of shaking them in front or on top of the frames. When all the foul brood combs were clear of bees the other five starters were put in and the hive closed.

A vote of thanks was extended to those who assisted in the work of demonstration.

The city contingent left for home on the 4.36 p.m. train, C.P.R., after enjoying a splendid time. The committee wish to thank the ladies who contributed so largely to the success of the gathering and especially wish to thank Mr. and Mrs. Couse for their extreme courtesy in making every one present feel happy.—F.

B.C. Beekeepers Organized

The beekeepers of Vancouver Island and the gulf islands of B. C. have formed a local branch of the British Columbia Beekeepers' Association. Members of the association are entitled to receive a ten per cent. discount on all supplies purchased from a well-known Vancouver supply house.

The following officers were elected: President, T. W. Walker, Brentwood; secretary-treasurer, C. F. Davie, Victoria; directors, George Parkes, Errington; Mrs. C. A. Troughton, Duncan; R. W. Frankow, Alberni; Miss Ada Bell-Irving, Denman Island; Thomas Bennett, Mayne Island; Charles F. Street, Ladysmith; C. E. Jeffreys, Sydney; M. Deane, Keatings; A. Campbell, Sooke; C. Woolley, Victoria; J. G. Little, Marigold; W. A. Sprinkling, Victoria; Mrs. Sutcliffe, Oak Bay; C. McTavish, Victoria; and J. S. Lucas, Victoria.

Beekeepers Have Had Heavy Losses

Winter Loss and Spring Dwindling May Equal Thirty Per Cent. Clover Prospects Fair. Reports From Many Beekeepers.

W. A. Weir, Assistant Apiculturist, Toronto, Ont.

THE spring report of 1,263 of Ontario's most progressive beekeepers bears out the general impression that the loss of bees in Ontario during this past winter has been unusually heavy. The results are being rapidly tabulated, and the detailed results should reach the individual beekeepers shortly.

The bulk of the spring reports reached the Fruit Branch, Department of Agriculture, between April 29th and May 6th. In all, 52,437 colonies were reported as having been put into winter quarters, and 39,073 are reported as alive on the date of reporting. The total loss is, therefore, 13,364, or approximately 25.5% of the bees put away. Recent reports indicate that spring dwindling brings the loss up to about 30%.

The beekeepers reporting are, for the most part, commercial beekeepers managing 25-100 colonies. The wintering loss has fallen heavily upon the less experienced, but some of our best beekeepers report 25-30% loss. All report that losses among neighboring farmer beekeepers have been exceptionally severe, wiping out many apiaries completely.

The cause of the losses are reported as granulated stores, poor stores, starvation, lack of pollen for early brood rearing, lack of young bees, dysentery, queenlessness, lack of ventilation, mice, and flood. In sections where there is usually a fall flow, reports show that the flow for 1917 failed to materialize, and the shortage of sugar made it

hard to secure a supply early enough to give the best results in feeding winter stores. Many report having to feed honey, and the granulation of stores is most noticeable as a cause of failure, in the reports where honey was fed or left for the winter supply.

Winter Too Severe.

The severe, steady cold weather is charged with most of the severe loss which has taken place in the northern counties, and lack of protection with the loss in the southern counties. Nipissing reports a loss of 84.3%; Haliburton, 83.3%; Muskoka, 65.5%; Timiskaming, 37.6%; Parry Sound, 32.1%; Lanark, 35.7%; Manitoulin, 37.6%; Elgin, 41.7%; Essex, 41.2%; Kent, 32.2%; Norfolk, 46.2%; Welland, 57.3%. The balance of the counties run between 20-25% average.

Cellar wintering has shown to the best advantage in colony count, but the condition of bees which have been wintered out of doors is reported as somewhat more advanced.

The clover prospects were not commented upon freely by reporters. Those who reported state that alsike clover has been badly winter-killed. (Since receiving these reports the condition of alsike has improved considerably.) Many reporters speak favorably of the condition of white or Dutch clover, so that the general prospect for a honey crop is fair.

The heavy loss is accentuated by the dif-

Apiary Buildings and Their Equipment*

Morley Pettit, Georgetown, Ont.

A BEEKEEPER'S buildings and equipment will depend on his general system of management. If he moves his extracting machinery from apiary to apiary, he can use vacant houses or temporary structures which can be made fairly bee-proof at moderate cost. A complete extracting outfit at each yard will involve more expense for equipment; and if he brings all supers home to extract, a good central plant will practically replace all out-apiary buildings.

All three systems have their advantages and disadvantages, and each beekeeper must choose the one which in his case has the most of the former and the fewest of the latter.

Before the days of power machinery and motor transportation, one of the outyard arrangements seemed the best. The hand extractor was easily moved and set up, or a complete set of extractors was not expensive. The smaller output with hand machinery simplified the handling of the honey and getting it all home each night. On the other hand, teaming supers home and back again was slow, costly and dangerous.

In one way the introduction of the automobile made this arrangement more desirable by shortening the time on the road and leaving more time for work or recreation each day. But outapiaries have to be moved sometimes; temporary arrangements are little more than a makeshift, and one tires of always working under these conditions.

Then came the more general use of power extractors with increased capacity, which complicated the matter of moving and setting up machinery and increased the difficulty of clarifying, filling and taking home all honey at the end of each day's work. Some advanced beekeepers immediately bought motor trucks, as the lighter ones were then coming on the market, and started taking all supers home to extract. The high cost of trucking at that time deterred most of us from following their example; but I have not heard of anyone going back on that system after once testing it thoroughly. The present facilities for converting light cars into trucks at low expense are increasing the number of satisfied users of the central extracting plant.

There is an idea prevalent among advanced beekeepers that Henry Ford has made commercial beekeeping in its present advanced state possible. Without perpetrating a new Flivver joke, I wish to express a desire that his name be placed beside those of the inventors of the movable frame hive, the extractor and comb foundation.

Advantages of Central Plant.

When apiaries are managed from one central plant, the advantages may be listed as follows:

1. A thoroughly suitable building may be erected on the beekeeper's own property, where machinery can be permanently installed. A systematic person will then gather around him all sorts of labor-saving devices and conveniences which take time to accumulate, and which frequent moving to outapiaries completely disorganize. I am referring especially to the tools one uses only occasionally, which must have regular places and be kept in them or they can never be found when wanted.

2. There is less expense for equipment

than where each apiary is equipped, and less wear on machinery than where one outfit is torn up, moved, fastened down, and torn up again from time to time.

3. Larger and better machinery will be used, and it will be installed in a much more substantial manner when it is going in to stay.

4. More pounds per day will be extracted because of the improved machinery.

5. The work of extracting and caring for honey and cappings is done at home, where meals and hours can be regular, and if the beekeeper wishes to fit machinery or do other chores before and after hours he is there to do it, instead of travelling on the road. This matter of regular hours is very important in keeping help.

6. Honey can be left in store-tanks for a few days to clarify, free itself of air bubbles from the extractor, and blend before filling into selling packages.

7. The work of extracting, once started, can be carried through more systematically.

8. At the end of the season all supers are at home for the overhauling or painting many of them will need.

No doubt the advocates of this system will know other advantages I have missed.

The disadvantages of bringing supers home to extract are:

1. The expense of hauling full supers home and empty ones out, including some risk of breaking combs. This includes first cost, upkeep and depreciation of truck; also the time of driver. Against this must be balanced the fact that a light truck is practically indispensable anyway; almost as many trips to the outapiaries would be needed to go to work as to bring supers home, especially as the honey and wax have to come home in any case, and the moving and setting up of machinery take considerable time.

2. The trouble with robbers when wet combs are taken to a yard in the absence of a flow. This is serious, but could be overcome by going with them at night, as a last resort.

3. A more serious objection is the danger of spreading disease. I would advise going slowly until it is pretty well eradicated from all apiaries concerned. The danger can be overcome by extreme care to prevent robbing at every step. The home garage should be in the same building as the extracting room and equally bee-tight, so that each load of supers is under cover all the time at home except when actually moving in or out. Also, all supers from each apiary should be kept by themselves, with no mixing. Extreme care with reference to infection all along the line will not only prevent spread from one apiary to another, but should eradicate American foul-brood entirely.

The Pettit Apiary Building.

After several years of moving machinery, first the hand extractor and capping can in a one-horse wagon; then the power extractor, engine and capping melter with a team, and later in a motor truck, I have become a convert to the central apiary building idea. I have built one and have, or will incorporate in it some ideas based on modern principles of factory equipment. The building is 24x40 ft., with walls 16 ft. to the plate, and a gable roof. It is built on a concrete foundation and is two stories high, with a 4-in. cement floor downstairs and a pine floor on 10-in. joists overhead. The



Front view of Pettit Apiary Building. Note the abundant provision for light, which makes inside work more attractive.

joists are 12 ft. long and meet on a middle partition, making a floor strong enough to carry almost any weight that is likely to be put on it.

The ground floor is divided by the middle partition, which stops 11 ft. from one end for a garage, running across the building and extending 6 ft. in front. This garage, being about 11x30 ft., has room for a truck and an automobile, or two light trucks, as required. The other two rooms, each 12x29 ft., are the extracting room and honey room, respectively. It is 10 feet from the lower to the upper floor, giving a ceiling 9 feet in the clear. The cement foundation on all walls rises four inches above the cement floor, which slopes toward the middle of each room, where a bell-trap connects with the sewer. This makes washing down the floor with hose and brush after each day's extracting, or other mussy work, a pleasure to anticipate. The extracting room also has a washing sink with draining table against the middle partition near the door of the honey room. Running water, hot and cold, and steam will be on tap at the sink.

The upstairs will contain the office of the business, a lavatory with closet and shower for the men, the carpenter shop, paint shop, foundation room, storeroom, etc. As far as possible, I aim to have a room devoted to each line of work, and use it for nothing else. Then machinery and appliances once installed need not be moved, but can be left ready for use at a moment's notice. It will be a lot of space, but that is cheaper than man-time, which is about the most expensive commodity there is in production.

The stairs go up beside the middle partition and open from the garage. They are of easy grade for climbing, but no wider than is necessary for one person to go up or down. They are not intended for carrying things up, as all material goes through a trap door in the ceiling over the garage. This is 6x4 ft. and may be fitted with a simple hoist, although it is easy to hand light things up or down from the back of a truck standing on the garage floor underneath. This is particularly convenient when loads come in or go out; all material being handled in the garage under cover. At present, heavy boxes are taken up with block and tackle.

A large percentage of the outside wall space is glass. This abundance of light relieves the depressing effect which indoor work so often has. It also allows machinery to be placed or supers to be piled wherever convenient, regardless of the location of windows. The ceiling downstairs is 9 feet in the clear, and all windows will be screened, giving plenty of air.

(To be concluded.)

Manitoba will have 204 people starting keeping bees this spring for the first time.—R. M. Muckle.

* Reprinted from the American Bee Journal by the courtesy of the editor.

Potatoes Must Be Graded

At the recent session of the House of Commons legislation was adopted, on recommendation of Hon. T. A. Crerar, Dominion Minister of Agriculture, requiring that potatoes when offered for sale must be graded and defining the grades. The bill reads as follows:

(1) No person shall sell or offer for sale any potatoes represented to be of,—

(a) Number 1 quality unless such potatoes consist of specimens which are sound, of similar varietal characteristics, which are practically free from dirt, or other foreign matter, frost injury, sunburn, second growth, cuts, scab, blight, dry rot and damage caused by disease, insects, or mechanical means. The minimum diameter of potatoes of the round varieties shall be one and seven-eighths inches, and of potatoes of the long varieties one and three-fourths inches. In order to allow for variations incident to commercial grading and handling, five per centum by weight of any lot may be under the prescribed size and, in addition, three per centum by weight of any such lot may be below the remaining requirements of this grade.

(b) Number 2 quality unless such potatoes consist of specimens which are sound and practically free from dirt or other foreign matter, frost injury, sunburn, second growth, cuts, scab, blight, dry rot, and damage caused by disease, insects, or mechanical means. The minimum diameter of potatoes of the round varieties shall be one and seven-eighths inches, and of potatoes of the long varieties one and three-fourths inches. In order to allow for variations incident to

commercial grading and handling, five per centum by weight of any lot may be under the prescribed size and, in addition, three per centum by weight of any such lot may be below the remaining requirements of this grade.

(2) This section shall not apply to seed potatoes.

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

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

(4) Every person who, by himself or through the agency of any other person, violates any of the provisions of this section shall be liable, upon summary conviction for the first offence, to a fine not exceeding twenty-five dollars and not less than ten dollars; for the second offence, to a fine not exceeding fifty dollars, and not less than twenty-five dollars; and for the third and each subsequent offence, to a fine not exceeding two hundred dollars and not less than fifty dollars, together, in all cases, with the costs of prosecution; and in default of payment of such fine and costs shall be liable to imprisonment for any term not exceeding one month, unless such fine and costs, and the costs of enforcing them, are sooner paid.

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AMERICAN BEE JOURNAL
 HAMILTON, ILLINOIS

Important Fruit Legislation

(Continued from page 158.)

"(3) No person shall sell, or offer, expose or have in possession for sale, any fruit packed in a closed package, upon which package is marked 'No. 2,' unless such fruit includes no culls and consists of specimens of not less than nearly medium size and some color for the variety, sound, and not less than eighty-five per cent. free from scab, wormholes, bruises and other defects, and properly packed.

"(4) No person shall sell, or offer, expose or have in his possession for sale, any fruit packed in a closed package, upon which package is marked 'Domestic,' unless such fruit includes no culls and consists of fruit of not less than medium size for the variety, sound, and not less than eighty per cent. free from wormholes (but may be slightly affected with scab and other minor defects), and properly packed.

"(5) No person shall sell, or offer, expose or have in his possession for sale, any fruit packed in a closed package, upon which package is marked 'No. 3,' unless such fruit includes no culls and is properly packed.

"(6) No person shall sell, or offer, expose or have in his possession for sale, any fruit packed in any package in which the faced or shown surface gives a false representation of the contents of such package; and it shall be considered a false representation when more than ten per cent. of such fruit is smaller in size than, or inferior in grade to, or different in variety from, the faced or shown surface of such package.

"(7) No person shall sell, or offer, expose or have in his possession for sale, any fruit in any package that is so diseased, wormy or otherwise depreciated as to render it unfit for consumption.

"(8) No person shall sell, or offer, expose or have in his possession for sale, at original point of shipment, any fruit in any package unless such package is well and properly filled.

"(9) No person shall sell, or offer, expose or have in his possession for sale, any fruit in any package that has been repacked, unless such package is well and properly filled.

Branding.

"322. (1) Whenever any fruit in any package is found to be so packed that the faced or shown surface gives a false representation of the contents of the package, any inspector charged with the enforcement of this Part may mark the words **Over-faced** in a plain and indelible manner on the package.

"(2) Whenever any fruit packed in a closed package is found to be falsely marked, the said inspector may mark the words **Below grade** in a plain and indelible manner on the package, or he may efface such false marks and place the proper grade mark upon the package.

"(3) The inspector shall give notice, by letter or telegram, to the packer whose name is marked on the package, within twenty-four hours after he marks the words **Over-faced** or **Below grade** on the package or has reduced the grade on the package.

Fruit Packages.

"325. On and after the first day of June, 1919, the following provisions shall come into operation:

(a) All apples packed in Canada for sale in Canada by the barrel, in closed barrels, shall be packed in good and strong barrels of seasoned wood of the following dimensions, as nearly as practicable: length of stave, twenty-eight and one-half inches; diameter of head, seventeen and one-eighth inches; distance between heads, twenty-six inches; circumference at bulge, sixty-four inches outside measurement, representing as nearly as possible seven thousand and fifty-six cubic inches.

(b) When apples, pears or quinces are sold by the barrel, as a measure of capacity, such barrel shall not be of lesser dimensions than those specified in this section.

(c) All apples packed in Canada for sale in Canada by the box, shall be packed in good strong boxes of seasoned wood, the inside dimensions of which shall be: length, eighteen inches; width, eleven and one-half inches; depth, ten and one-half inches, representing as nearly as possible two thousand one hundred and seventy-four cubic inches.

(d) When apples are packed in boxes or barrels having trays or fillers wherein it is intended to have a separate com-

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partment for each apple, the provisions of this section as to boxes and barrels shall not apply.

- (e) All apples packed in Canada for sale in Canada in crates, shall be packed in good and strong crates of seasoned wood, the inside dimensions of which shall be: length, eighteen inches; width, eleven and one-half inches; depth, ten and one-half inches, with slats at least three-quarters of an inch apart.
- (f) All pears or crab apples packed in Canada for sale in Canada by the box shall be packed in good and strong boxes of seasoned wood, the inside dimensions of which shall be: length, eighteen inches; width, eleven and one-half inches; depth, eight and one-half inches, representing as nearly as possible one thousand seven hundred and sixty cubic inches.
- (g) All peaches packed in Canada for sale in Canada by the box shall be packed in good and strong boxes of seasoned wood of one of the following dimensions, inside measurement: length, eighteen inches; width, eleven and one-half inches; and depth, either four and one-half inches, four inches or three and one-half inches.
- (h) All plums or prunes packed in Canada for sale in Canada by the box shall be packed in good and strong boxes of seasoned wood, the inside dimensions of which shall be: length, eighteen inches; width, eleven and one-half inches; depth, three and one-half inches.
- (i) All cherries packed in Canada for sale in Canada by the box shall be packed in good and strong boxes of seasoned wood, the inside dimensions of which shall be: length, eighteen inches; width, fourteen inches; depth, five and one-half inches.
- (j) All fruit packed in Canada for sale in Canada by the four-basket crate shall be packed in baskets and crates of the following dimensions, inside measurements: Baskets — seven and one-half inches by seven and one-half inches at the top, six and one-half inches by six and one-half inches at the bottom, three and three-quarters inches deep, measured perpendicularly. Crates: fifteen and three-quarters inches by fifteen and three-quarters inches by four and one-quarter inches."

Berries and Currants.

"326. On and after the first day of June, 1919, every box of berries or currants packed in Canada for sale in Canada, and

every berry or currant box manufactured and offered for sale in Canada, shall contain when level full as nearly as practicable one or other of the following quantities:

- (a) Four-fifths of a quart;
 (b) one pint, and shall be four and three-eighths by four and three-eighths inches at top and bottom, and one and seven-eighths inches deep;
 (c) two-fifths of a quart.

"(2) Every wood veneer basket of fruit packed in Canada for sale in Canada, or manufactured and offered for sale in Canada, shall contain, when level full, as nearly as practicable, one or other of the following quantities:

- (a) one bushel;
 (b) eleven quarts, which shall be of the following dimensions and specifications, inside measurement, as nearly exactly as practicable: six inches deep perpendicularly, eighteen and one-fourth inches in length and seven and three-fourths inches in width at the top of the basket, sixteen and three-fourths inches in length and six and one-fourth inches in width at the bottom of the basket, all measurements to be inside of the veneer proper and not to include the top band. The veneer to be cut fourteen to the inch minimum; bottoms to be three-eighths inches thick, minimum; top bands to be three-fourths inches thick, minimum; top bands to be three-fourths inches in width, cut twelve to the inch minimum and secured with twelve tacks, bottom bands to be one-half inch in width, cut fourteen to the inch minimum and secured with twelve nails, all nails and tacks to be exclusive of handles, and all bands to be drawn tight so as to fit snugly over forms; the handles to be twenty-five and one-half inches in length and one and one-eighth inches in width, cut seven to the inch minimum, with one tack in each side of the handle at top band, and two nails in each end of the handle at bottom band, the handles to be outside of bands, and to be so shaped that pinching of the baskets when handles are attached will be avoided; the veneer for the covers to be not less than two inches in width and cut ten to the inch minimum and constructed in such a manner as to fit properly; the basket to be constructed over blocks measuring seventeen and three-fourths inches in length and seven and five-sixteenths inches in width at top, with a radius of one and three-fourth inches at corners. The covers and baskets to be made of



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"We are only one mile from Lake Erie and exposed to high cold winds; in fact, this is the windiest place along the great lakes. Your bees were able to stand the winter with only an insignificant loss, and we would have no others. As for honey they averaged 175 pounds of extracted surplus, did not swarm, and gave an artificial increase of 39 per cent, which is as fine a record as can be had in this locality, especially when the work is done entirely by amateurs." Name furnished on request. North East, Pa.

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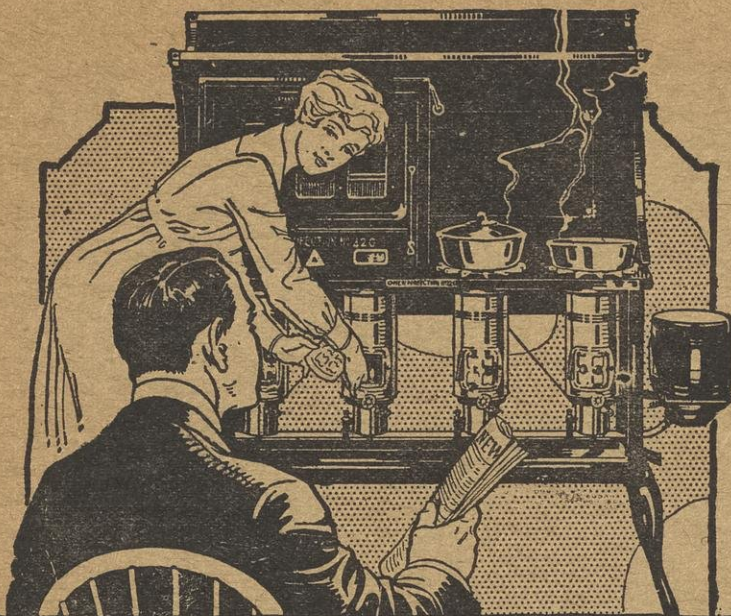
Tested—\$1.50; 25 or more, \$1.40 each.

S. Untested—\$1.10; 25 or more, \$1.00 each.

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sound, well-seasoned wood, free from material defects;

(c) six quarts; which shall be of the following dimensions and specifications, inside measurement, as nearly as practicable: four and one-half inches deep perpendicularly, fifteen and one-fourth inches in length and seven inches in width at the top of the basket, thirteen and one-half inches in length and five and seven-eighths inches in width at the bottom of the basket, all measurements to be inside the veneer proper and not to include the top band. The veneer to be cut sixteen to the inch minimum; bottoms to be three-eighths inches thick, minimum; top bands to be three-fourths inches in width, cut fourteen to the inch minimum and secured with twelve tacks, bottom bands to be one-half inch in width, cut fourteen to the inch minimum and secured with eight nails, all nails and tacks to be exclusive of handles, and all bands to be drawn tight so as to fit snugly over forms; the handles to be twenty-one and one-half inches in length, cut eight to the inch minimum, with one tack in each side of the handle at the top band and one nail in each end of the handle at the bottom band, the handles to be outside of bands; the veneer for the covers to be not less than two inches in width, cut ten to the inch minimum, with one tack in each side of the handle at the top band and one nail in each end of the handle at the bottom band, the handles to be outside of bands; the veneer for the covers to be not less than two inches in width, cut ten to the inch minimum and constructed in such a manner as to fit properly; the basket to be constructed over blocks measuring fourteen and three-fourths inches in length and six and five-eighths inches in width at top with a radius of one and three-fourths inches at corners. The covers and baskets to be made of sound, well-seasoned wood, free from material defects. When wire-stitching machines are used in the manufacture of these baskets, the baskets must be as securely constructed as though the above specifications as to nailing had been followed;

(d) three quarts.

“(3) Every basket of fruit packed in Canada, for sale in Canada, and every basket manufactured and offered for sale in Canada, of other material than wood veneer, shall be of such dimensions as may be specified by the Minister of Agriculture, and shall contain, when level full, as nearly as practicable, one or other of the following quantities:

- (a) eleven quarts;
- (b) six quarts.
- (c) three quarts.

Provided that the said Minister may make regulations allowing any person or persons to use packages of other sizes than those specified in the foregoing section.

Penalties Imposed.

“328. (1) Every person who, by himself or through the agency of any other person, violates any of the provisions of sections 320 and 321 of this Act shall be liable, upon summary conviction, for the first offence, to a fine not exceeding twenty-five dollars and not less than ten dollars; for the second offence, to a fine not exceeding fifty dollars, and not less than twenty-five dollars; and for the third and each subsequent offence, to a fine not exceeding two hun-

dred dollars and not less than fifty dollars, together, in all cases, with the costs of prosecution; and in default of payment of such fine and costs shall be liable to imprisonment for any term not exceeding one month, unless such fine and costs, and the costs of enforcing them, are sooner paid.

"(2) Whenever any such violation is with respect to a lot or shipment consisting of fifty or more closed packages, there may be imposed, in addition to any penalty provided by sub-section 1 of this section, for the first offence twenty-five cents, for the second offence fifty cents, and for the third and each subsequent offence one dollar, for each closed package in excess of fifty with respect to which such violation is committed.

"329. Every person who, not being an inspector, wilfully alters, effaces, or obliterates, wholly or partially, or causes to be altered, effaced, or obliterated, any marks on any package which has undergone inspection, shall be guilty of an offence and liable upon summary conviction to a fine not exceeding forty dollars.

"331. Every person who carelessly handles, wilfully destroys or pilfers any fruit packed in any of the packages prescribed in this Part shall be guilty of an offence and liable upon summary conviction to a penalty not exceeding twenty-five dollars.

"332. Every person who obstructs any person charged with the enforcement of this Part in entering any premises to make examination of packages of fruit as provided by this Part, or who refuses to permit the making of any such examination, shall be guilty of an offence and liable, upon summary conviction, to a fine not exceeding five hundred dollars and not less than twenty-five dollars, together with the costs of prosecution,

and in default of payment of such fine and costs, shall be liable to imprisonment for any term not exceeding six months, unless such fine and costs and the costs of enforcing the same are sooner paid.

A Prominent Fruit Grower

Mr. S. H. Rittenhouse, the recently elected president of the Niagara Peninsula Fruit Growers' Association for 1918, was born and brought up on his father's farm near the village of Vineland, in Lincoln county. In 1885, he started farming on his own account on his present farm, "Seestrang," about two miles from the old home farm and beautifully situated on the shores of Lake Ontario. He engaged in mixed farming until the late 90's, but with an ever-growing inclination towards fruit growing, and, following the agricultural depression of that period, he turned his attention almost exclusively to fruit. At present his chief fruit interests are peaches, of which he has about thirty acres, five acres of cherries, four acres each of strawberries and raspberries and about the same acreage annually of tomatoes.

Mr. Rittenhouse has always taken an active interest in the Institute work of the past and the Board of Agriculture of the present, being a frequent speaker at meetings throughout the province. It has been, however, first as a director of the Niagara Peninsula Fruit Growers' Association, and now as its president that he has felt most the satisfaction of sincere and constructive efforts directed towards the fruit industry, particularly of the Niagara Peninsula. Cooperation, of which he is an ardent supporter and exponent, has been the keynote of these efforts.

The Fruit & Produce Market

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

STRONACH & SONS

33 Church St., Toronto, Ont.

Wholesale Fruit, Produce and Commission Merchants.

H. J. ASH

44-46 Church St. - Toronto, Ont.

CONSIGNMENTS OF FRUIT & VEGETABLES SOLICITED

We give personal, consistent and reliable attention to every consignment. Shipping stamps furnished on request.

DAWSON-ELLIOTT Co.

32 West Market St., Toronto, Ont.

Wholesale Fruit and Produce. Consignments Solicited.

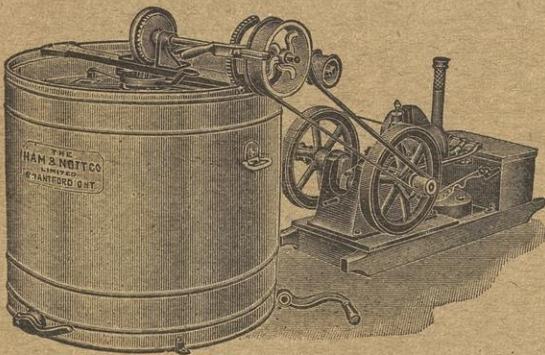
HERBERT PETERS

88 Front St. E., Toronto, Ont.

Wholesale Fruit and Produce

See advertisement on page 172.

Power Extractors



Cut gears or friction drive, with or without engine.

If you are considering a power outfit this season it will pay you to write to us at once.

The Ham & Nott Company, Limited

MANUFACTURERS OF BEE-KEEPERS' SUPPLIES

Brantford, Ontario

Prepare For The Drive

Of Work and Worry at
Crop Time by Getting a

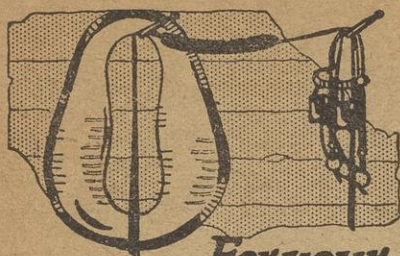
GIFFORD FRUIT SIZER

The Gifford is the only machine that will handle successfully without bruising, and size them accurately—your Peaches, Pears, Plums and Apples. It will grade your fruit so much faster than old hand methods that picking and packing will be done in time and without loss, with less help. Made to suit requirements of individual grower or large packers; compactly built, light weight, uses hand or power. Saves its price easily in few weeks. Write today for full information and booklet.

Good live men wanted throughout Canada to introduce these wonderful machines to Fruit Growers.

R. J. LOWREY St. Davids, Ont.

Canadian Distributor



For your HARNESS' SAKE

Overcome the worst enemies of leather—water and dirt—by using

EUREKA HARNESS OIL

"Lengthens leather life"

Softens old harness, leaves it pliable and waterproof, prevents cracking and breaking of stitches, doubles the life of new harness.

MICA AXLE GREASE

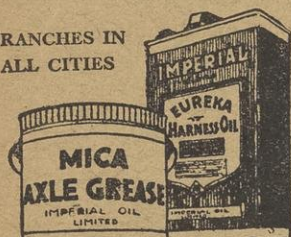
"Use half as much as any other"

Gives the effect of roller bearings. The mica flakes work into the pores and crevices of the axle and the grease holds them there. Mica Grease prevents hot boxes, locked wheels and screeching axles. Saves wear and tear on horses, harness and wagons. "Best thing on Wheels."

Sold in standard sized packages by live dealers everywhere.

IMPERIAL OIL LIMITED

BRANCHES IN
ALL CITIES



Fruit Packages

Have you placed your order for them yet? The fruit season will soon be here when you will need them. In order to get highest prices in the best markets, you require the

BEST STANDARD PACKAGES

Secure these by ordering at once from

The Hantsport Fruit Basket Co.,
LIMITED
Hantsport, : : N.S.

POULTRY YARD

Make Every Chicken Count

The aim this year should be to make everything count. Make every hen lay her best, make every chick mature early enough and thereby make every pound of feed give the maximum returns.

When the chicks are removed to their brooding quarters there should be some coarse sand or fine grit scattered where they can have free access to it. They should be left until they show positive signs of hunger, which would be between the second and third day after hatching. They may then be given some bread crumbs that have been very slightly moistened with milk, this may be scattered on clean sand or chick grit. If being brooded by a hen, she will see that no food is allowed to lie around, but if in a brooder, that part of the food that the chicks do not pick up in a few minutes should be removed, as nothing in feeding causes so much trouble as leaving food of that nature around until it is sour.

The following daily ration of five feeds given about two hours and a half apart and continued from the time the chicks are two or three days out of the shell until ten or twelve days of age may be altered or adopted to suit conditions: First feed.—Dry bread crumbs slightly moistened with milk. Second feed.—Finely cracked mixed grains or commercial chick feed. Third feed.—Rolled oats. Fourth feed.—Dry bread crumbs moistened with milk. Fifth feed.—Finely cracked mixed grains.

In addition to the foregoing, give the chicks a little green food, such as grass, lettuce, sprouted oats, etc. Do not have the moistened bread sloppy, but in a crumbly state, and during this period let the chicks on to fresh soil or grass every day if possible.

Natural Brooding

Brooding with the hen need not be troublesome if a limited number of chicks are required, and proper appliances are provided. When large quantities are to be raised, however, artificial means must be employed.

In taking the hens off the nests the aim is to give about 25 chicks to each hen. If more than one hen comes off at a time and there is a laying colony house available, four hens and 100 chicks can be put in one of these houses. A little opening is left for the chicks to run out when large enough and there is ample room for them to scratch on the floor on wet days. If the hens are all put in the house at the same time, there does not appear to be any serious trouble from fighting.

As soon as the hens can be removed they are put back into the laying house and the chicks are given the house for the summer. The A shaped house is also much used for the same purpose, except that but two hens and fifty chicks are put in one of these.

Small coops for individual broods are also used. These are made without bottoms and each coop should be moved the width of itself each day.

Feeding the Chicks.

The feeding of the chicks is important. More chicks are killed from too much feed-

ing during the first two weeks than from too little feeding. Don't feed the chicks for at least 24 hours after they are put in the brooder. Dry feed will give less trouble than wet mashes.

Scaly Legs Cause Losses

Scaly leg of poultry is a common and well-known affection of chickens that sometimes causes affected birds to become worthless. It is caused by an extremely small mite that works in and under the crusts that form on the legs. Caraway or sulphur ointment will kill the pests.

Scales form at the point of invasion of the insect, and under them the skin is irritated and bloody. Badly affected birds walk with difficulty and may even lose a toe, later they become thin, lose their appetites and prove worthless. The disease is slowly contagious.

To treat scaly leg the feet and legs of affected fowls are held in warm water for several minutes, so that the crusts are softened and can be removed. A mite killer is then applied to the dry diseased surface. The Ohio Experiment Station recommends the following mixtures: (1) Oil of caraway mixed in four times as much lard or vaseline, and (2) flowers of sulphur, one dram; carbonate of potash, 20 grains; and lard or vaseline, half an ounce.

Some poultrymen have used a mixture of one part of kerosene and two parts of raw linseed oil with speedy effect. The legs of the affected fowls are dipped in this mixture, care being taken that the feathers are not wet.

A United States Example

The Philadelphia Vacant Lots Cultivation Association has been in existence for some 22 years, during which period it has gained a wide experience in vacant lot gardening. In this connection it has published some very interesting annual reports explaining its purposes, aims and methods. It prepares the idle land which is loaned to it for cultivation by plowing and harrowing it. It then divides the land into gardens about one-sixth of an acre in size and assigns the lots to families whose applications have been received. Fertilizer and sufficient good seed to insure a successful start are furnished to the gardeners and improved methods of gardening are shown. A slight charge is made for the preparation of the land. Societies desiring suggestions in this line of work might be able to obtain some of their literature by writing to the Secretary, who, sometime since, was Jas. H. Dicks, 1122 Land Title Building, Broad and Chestnuts Sts., Philadelphia.

An unusually nicely printed book with a fancy cover entitled "Milady's House Plants," by F. E. Palmer, is a guide and instructor to success with flowers and plants in the home. It includes a chapter on the ideal sun parlor. It is beautifully illustrated, contains some 180 pages, and is well worth obtaining. It may be secured from The Canadian Horticulturist for \$1.10, including postage.

More Winter-Killed Orchards

Heavy Casualties Amongst The Orchard Trees This Spring

Just at a time when greater production in all directions is being urged to make up the food deficiencies of Great Britain and our Allies, the fruit growers of Ontario are viewing with deep regret the spectacle of dozens, in many cases hundreds of winter-killed trees, in their own and neighboring orchards.

The damage is extensive and is reported in all counties, and the cause is again that old "enemy alliance"

LATE CULTIVATION Unusually Severe Winter

Over-fertilizing, (in some cases)

Many growers are just getting over the last great winter killing of that of 1904-5, and as it takes a matter of 18 to 20 years to mature an apple orchard, it will be admitted that the trees are far too valuable to take any chances with.

The hope is that more and more orchardists will safeguard their orchards and not keep the trees soft right up to frost time by undue fertilizing and late cultivation.

Therefore—stop orchard cultivation early. To some degree this depends upon your locality. In Eastern Ontario stop about June 1st. For the rest of Ontario make it say the middle or end of June.

For a good cover crop to take up the surplus moisture and so send all the growth into the fruit—not into the wood to leave it green for the frost—the following are regularly used: Buckwheat, Red Clover, Rye, Winter Vetch or a combination of Rye and Vetch. The following are approximately the quantities needed:

Buckwheat	-	-	1 bushel per acre
Rye	-	-	1 1/2 bushels per acre
Vetch	-	-	1/2 bushel per acre
Clover	-	-	20 lbs. per acre

For manuring—ten tons of barnyard manure to the acre, yearly, is recommended.

Insect pests will be rigorously dealt with this year by many growers so as to offset in some degree the loss by winter-killing.



Winter or Hairy Vetch—the growth from a single plant. One of the heaviest and easiest grown of cover crops. Very rich in nitrates.

For specific information upon any phase of fruit growing, manuring, cover cropping, the choice and use of insecticides, cultivating, etc., to suit your special case, you are invited to write the office of the Commissioner of Agriculture, Parliament Buildings, Toronto, giving full details and full information will be sent you.

The Ontario Department of Agriculture

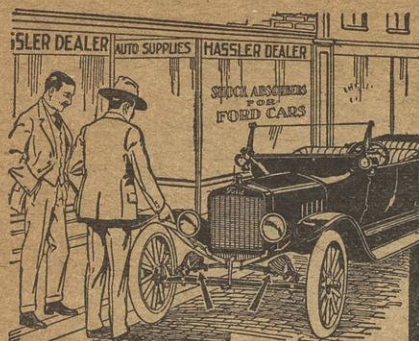
PARLIAMENT BUILDINGS, TORONTO, ONT.

SIR WM. H HEARST,
Minister of Agriculture.

DR. G. C. CREELMAN,
Commissioner of Agriculture.



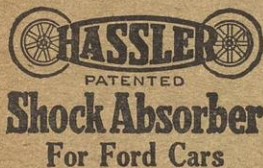
ONTARIO



Ride 10 Days at Our Expense

FOR ten days we want to transform your Ford into a \$2,000 car. We will do this by putting on a set of Hassler Shock Absorbers.

If you are willing, we will take them back without question when the ten days have elapsed. But you won't bring them back.



Don't take another fellow's word for it. Feel for yourself the ease and comfort, the smoothness found in a Hassler-ized Ford.

Hassler Shock Absorbers pay for themselves over and over again. Reduced tire bills, more miles per gallon of gasoline, one-third up-keep cost saved—all swell the total of Hassler dividends. 300,000 Ford Owners recognize their economic necessity. Write today for Free Trial Blank, illustrated circular and opinions of users.

Don't ride without Hasslers simply because someone discourages you from trying them. Accept this offer and see for yourself.

ROBERT H. HASSLER, Limited
Lock Drawer H.C.25 HAMILTON, ONT., CAN.



British Columbia

By Our B.C. Correspondent.

Growers of soft fruits in the Okanagan country are looking for record crops this season. It is believed that 1918 will witness a 25% increase in production over 1917, and there is every prospect for good prices for all that can be put on the market.

If April indications hold good, both apricots and peaches will be abundant. Apricot prices are mounting daily with the keen competition between the various buying organizations. They now call for six cents a pound, which is a record even for No. 1's. Last year's best figure was four and a half cents, and even then the growers thought the returns were exceptional, considering that in the old days they were lucky to receive two cents a pound. Peaches will bring four cents this year, as compared with three last year.

Apples will be up to the average in yield, and it is expected that prices approximating last year's will be repeated.

The continued dry weather is causing a little anxiety, although there is plenty of water coming down from the mountains. But rain would be welcome. A sharp frost recently hit the Penticton district and resulted in minor loss. Some experts fix the damage at five per cent. on the apricots and ten per cent. on the cherries, but there are other authorities who think the loss was negligible. Frost has cut down the soft fruit output of the Yakima and Wenatchee districts, in Washington State, so that the crops of the Okanagan will be doubly remunerative.

It is reported that the high prices may force the Penticton cannery to close down, in which case fruit will be shipped to Kelowna.

The Okanagan's fruit shipments, it is predicted, will fill 450 minimum freight cars this year.

Premier John Oliver has relinquished the portfolio of Agriculture, and Mr. E. D. Barrow, provincial member for Chilliwack, and a well-known farmer of that district, has been selected as Minister of Agriculture. Mr. Barrow was opposed in the by-election on May 8 by H. J. Barber, but won by a heavy majority.

The Vernon Fruit Union has decided to form a company, to be known as the Vernon Storage Co., Ltd., for the purpose of erecting a big fruit warehouse in that city. The building will be capable of storing upwards of 250 cars of fruit.

That the Fraser River delta may some day be looked upon as a prolific beet sugar producing area is proved by recent experiments. To ascertain the possibilities of the sugar beet in relieving the food situation, J. Gracey, of New Westminster, at the instance of the New Westminster Board of Trade, brought out a trial shipment of seed and distributed it among the farmers of the district. The most successful of the experimenters was Edward Burr, who lives on the Delta. His field ran thirty tons to the acre, and the beets contained 21 per cent. of sugar contents, according to analysis. This is considered a high percentage.

The Farmers' Institutes of British Columbia have been consolidated into nine district advisory boards, for the furtherance of co-operative buying and marketing with maximum efficiency. There are 148 institutes in the province, and each one will have one member accredited to one of the nine advisory boards.

W. E. Scott, Deputy Minister of Agriculture, is dangerously ill in Victoria, and it will be months before he is able to resume his active duties.

Addressing the B.C. Entomological Society, R. C. Treherne recently stated that measures for the eradication of the codling

moth in the Okanagan Valley were progressing satisfactorily. The work was being carried out by the Horticultural Branch of the Provincial Department of Agriculture and the Dominion Entomological Branch. The former controlled the work in the orchards, and the Dominion officers followed the life history in each of the sections affected, and memorialized the field officers on the development of the insect, so that control measures would be properly executed. In this way, he said, at one outbreak an infestation of from 3,000 to 5,000 larvae in 1915 had been reduced to 500. As to the wireworm pest, Mr. Treherne said that Japanese gardeners on Vancouver Island had adopted the method of catching the worms by dropping balls of rice-bran mixed with molasses between the rows of onions, and every few days the balls were dug up and destroyed, with the worms that they had attracted.

The evaporating industry is rapidly forging to the front among British Columbia's war-time enterprises. The evaporating plant of the Grahams Company, Ltd., at Marpole, is one of the latest to be established, and is already handling 30 tons of turnips and carrots daily, and employs about 70 men and girls. W. D. Elliott, a Belleville, Ont., man, has been in charge since the middle of April.

The United Farmers of British Columbia, meeting in Vernon recently, expressed astonishment at the fact that the consumers in some prairie centres are paying more than double the price for potatoes that have been received by Okanagan growers. From direct correspondence last month it was learned that a carlot of over 500 bushels shipped from Vernon was sold at \$1.40 a bushel. This is at the rate of \$46.66 per ton. The Okanagan men claim that all they got was \$19 to \$22 a ton for several cars shipped out a few weeks ago, and they are now asking where the \$24 difference has gone. The organization is investigating the case.

The Okanagan United Growers recently elected the following officers: President, Capt. J. T. Mutrie, Vernon; vice-president, E. R. Simpson, Summerland; secretary, T.

Save Your Labor and Raise More Total Crop

By using larger farm implements, more horses, more fertilizers, and by working less land.

Machinery and Horses:	Acres in one day.
1-horse { corn or potato } cultivator works	4.4
2 " " " "	6.6
4½-ft. mower (2 horses) cuts	8.3
6-ft. " " "	10.2
5-ft. binder (2 horses) cuts	7.2
6-ft. binder (3 horses) cuts	10.4

—Cornell Agricultural Experiment Station.

Fertilizers:

57.1 hours labor produce 1 acre of corn.

1 acre corn unfertilized (in Indiana) yielded 37 bus.

1 acre corn fertilized (in Indiana) yielded 54 bus.

This shows that:—
You can make your labor 50% more productive by properly fertilizing the crops.

You can yet add larger machinery and side-dress potatoes, root-crops and corn with fertilizers when cultivating these crops.

Write for our bulletins

The Soil and Crop Improvement Bureau
of the Canadian Fertilizer Association
1111 Temple Bldg., Toronto 11

CABBAGE PLANTS

Of all leading early and late varieties, 45c per hundred, mail prepaid; \$2.50 per thousand, express collect. Also cauliflower, brussels sprouts, celery, onion and tomato plants. Ask for price list.

HEROLD'S FARMS

"Dept. D,"
FRUITLAND ONTARIO
Niagara District.

Powell, Peachland; directors—E. Trask, Oyama; E. M. Carruthers, Kelowna; W. H. Keary and R. Arnott, Armstrong; E. W. Little, Enderby; J. Anderson and C. F. Rush, Penticton.

The British Columbia Fruit Growers' Association has decided on the following scale of prices for pickers this season: Day work—Experienced pickers to receive \$2.75 per day of nine hours, or 30 cents per hour. Inexperienced pickers to receive \$2.25 per day of nine hours, or 25 cents per hour. Piece work—Sweet cherries, per pound, 1½ cents;

sour cherries, per pound, 2 cents; peaches, per orchard box, 4 cents; prunes, per orchard box, 8 cents; all other plums, per orchard box, 10 cents; apples, per orchard box, 4 cents; pears, per orchard box, 3 cents. All pickers must give one day's notice before leaving employer or forfeit one day's pay.

The Penticton fruit cannery will soon be operating again. More peaches entered the cannery last year than any other fruit, 400 tons being treated. Apricots came next with 83 tons. Twenty tons of cherries, 15 tons

of pears, and 10 tons of plums were also handled by the plant, whose total revenue amounted to \$50,000.

The Dominion Grant

The Dominion Department of Agriculture has issued a statement entitled Agricultural Instruction in Canada, which shows that of the \$10,000,000 voted by the Dominion Government four years ago for agricultural instruction work in the different provinces, \$3,400,000 has been expended, and how it



IMPERIAL SERVICE

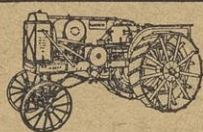
If you are in doubt about the proper lubricant, *ask the Imperial Oil man.* He will give you courteous attention and sound advice on your lubrication problems. That is part of Imperial Service.

CALL AT HEADQUARTERS

WHEN you add a new machine to your farm equipment—a tractor, a stationary engine, a drill, a thresher—no matter what the machine, you need dependable lubrication advice. You want to be sure the oils you use will maintain your machine in constant service and give it long life. Look to us for the answer to your problem. We know the oil you need for each particular purpose. We know the lubrication requirements of every farm machine. Our chief interest is to do away with lubrication troubles, to make sure that you are using the correct lubricants.

All our oils are supplied in steel barrels and half-barrels—convenient, economical. No waste. You use every drop you pay for and you know every drop is uniform and clean.

A Correct Lubricant for every Farm Machine



For Gasoline Engines,
Tractor, Auto or
Stationary
POLARINE OIL
STANDARD GAS
ENGINE OIL

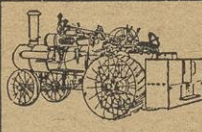
For Kerosene Engines,
Tractor or Stationary
POLARINE OIL
HEAVY
IMPERIAL KERO-
SENE TRACTOR
OIL
(Recommended by Inter-
national Harvester Co.)



For Open Bearings of
Farm Machinery
PRAIRIE
HARVESTER OIL

—very heavy body,
resists cold, won't
thin out with
moisture

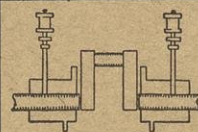
ELDORADO
CASTOR OIL
—a thick oil for worn
and loose bearings



For Steam Cylinder
Lubrication, whether
Tractor or Station-
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CAPITOL
CYLINDER OIL

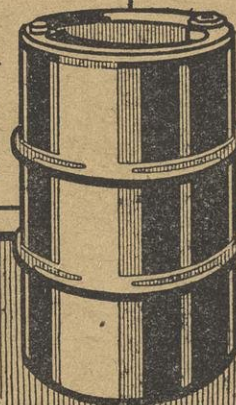
—the standard pro-
duct for steam
cylinder
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THRESHER
HARD OIL

For
Grease
Cup
Lubri-
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of Bear-
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a clean
solidi-
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high
melting
point



IMPERIAL OIL
LIMITED
BRANCHES THROUGHOUT CANADA

Borrow to Buy Cattle



12

"Mixed Farming" is the big money-maker today. Of course, grain and fruit and vegetables pay well—but beef and bacon, butter and cheese, are piling up the profits for the farmer.

Milk more cows—fatten more cattle—raise more hogs. If you need money to do it, come to The Merchants Bank. We are glad to assist all up-to-date farmers.

THE MERCHANTS BANK

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

with its 102 Branches in Ontario, 32 Branches in Quebec, 19 Branches in Manitoba, 21 Branches in Saskatchewan, 53 Branches in Alberta, and 8 Branches in British Columbia serves Rural Canada most effectively.

WRITE OR CALL AT NEAREST BRANCH.

DOUGLAS GARDENS

Catalogue for 1918

Contains a complete list of a number of new plants that will interest customers this season.

A fine assortment of Paenies. Perennial plants of all kinds. Shrubs and roses.

BEDDING PLANTS

Standard Fuchsias from 2 to 3 feet. Carnations of the finest varieties. Heliotrope, Cowslips, Salvia, Salpiglossis, Snapdragons, Pentstemon, Lobelias, Pansies, Ageratum, Verbenas, Asters and Stocks.

ERICK ERICKSON
OAKVILLE - ONTARIO

Northern Ontario

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

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

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

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

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

has been used in each province. Ontario's share has been used in part to encourage orchard demonstrations, and in the giving of instruction in spraying, picking and packing. At the Horticultural Experiment Station at Vineland investigations in canning and the disposal of the surplus products of the orchard and garden have been conducted, and demonstrations in fruit growing in Northern Ontario were started during 1916. So far \$24,000 has been expended in this work, as well as \$5,360 for apiary inspection and instruction in beekeeping.

In Quebec the grant has provided for the establishment of a provincial fruit division, which is giving instruction in the planting and management of orchards and the maintenance of fruit experiment stations and the organization of cooperative fruit growing societies. Nova Scotia has used part of its grant to combat the San Jose scale and the browntail moth. Trained entomologists and inspectors have been sent from farm to farm giving instruction in how to identify and how to combat these and other pests. As a result, the scale has been almost eradicated, and the moth has been kept well within bounds.

Fruit Conditions Changing

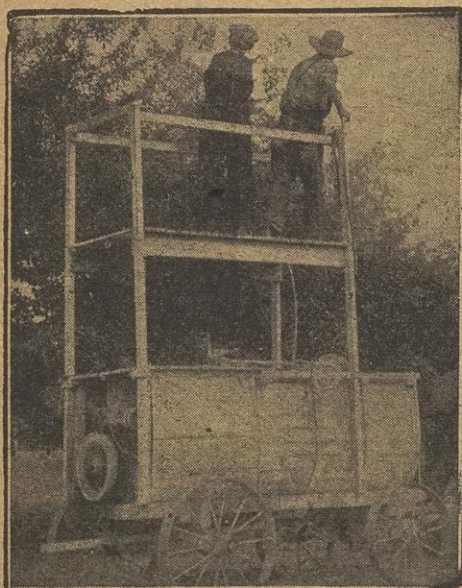
Dr. A. J. Grant, Thedford, Ontario.

FARMERS have been accused of a great many short comings, but I do not believe that we can be rightly accused of gross carelessness in connection with any paying branch of the farm. If some of us have been neglecting our orchards there must be some reason for it, and it is apparent that there are some reasons which might be threshed out to advantage. I think we will all take common ground that the production of good apples in Ontario, from this out, spells work and care in capital letters; but there is a silver lining to the cloud in the fact that the demand for really good apples was never better. I will back a good apple orchard against any other branch on the farm, when the returns are figured up at the end of the season.

It is not many years since there was a discussion on the possibility of over production. I do not think that we need waste time over this subject. Instead, we are seriously concerned about under production and will be for many years to come. If you can grow good apples and have facilities for marketing them, you can make a lot of money; but nobody ever made any money growing poor apples, or growing a low-grade of anything else for that matter. It requires considerable knowledge and intelligence to carry out a good crop rotation on any farm, and get returns for your labor, and along the same line of reasoning it requires as much, if not more, knowledge and intelligence to produce an apple crop with any degree of certainty. This can readily be acquired by the man who is interested and the sources of information are as free as water.

Theory without practice would be hopeless, but unless you have studied some well grounded theory you must fail from a practical standpoint; life is too short to grope in the dark and expect to make a success of anything. I often think that we would appreciate the services of our Agricultural College and Fruit Branch staffs to a fuller extent if we had to pay directly for them. Did you ever size up the crowd at a pruning or spraying demonstration? You will invariably find the fellow absent who is growing the poor crop of apples, and the men in the front row, thirsting for information, are usually the successful growers.

We Make a Spramotor for Every Purpose



The Knapsack for spraying small patches of currants, gooseberries, potatoes and flowering shrubs, the barrel size for small orchard and field work, the horse power outfits for larger field and orchard work, and also the large gasoline sprayers. Each one is a

Spramotor
It isn't a SPRAMOTOR unless we made it

staunchly built, rigidly tested and thoroughly reliable. They are fully guaranteed and world famous.

Made in Canada—No Duty to Pay.

Write us your requirements and we will suggest an outfit suited to your needs. Our free catalogue and booklet on Crop Diseases will be of great value to you. Send for a copy to-day.

SPRAMOTOR WORKS 4016 King St. London, Canada

Niagara District Notes

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

IN spite of occasional drawbacks in the way of cold weather, which we get more or less every season, conditions in the Niagara district this spring have been very favorable to fruit farmers. The season is far in advance of last year and is somewhat earlier than the average. On May 20th, early plums and cherries were setting; peaches, plums, pears, late cherries, and many kinds of apples were in full bloom, and the first two sprayings had been finished for some time.

As to fruit prospects. Peach trees through the Niagara district have suffered badly from the winter. Thousands of trees have died, and many of the older trees, although they have survived, have lost a good deal of their wood and their bearing capacity. At the best the outlook is for not more than 40 per cent. of a full crop of peaches. Sweet cherries have been injured to some extent, and will probably not be much better than 50 per cent. of a crop. Sour cherries, plums, and pears, however, are blooming profusely and are likely to be a good crop. It is rather early to say much about apples, but a good bloom is expected in this district. Grapes look well and have not suffered much from winter-killing, although in some places Rogers and Niagara vines have been affected. A certain proportion of plums and cherries have also been killed by the winter. In districts adjacent to the Niagara belt, such as Fonthill, for instance, much damage has been done to peach trees, most of which have been killed outright. On the mountain ridge, too, much damage has been done to the better varieties of peach trees, but early kinds seem to have escaped. Reports from

Leamington say that a great deal of damage has been done to peach trees there also. Small fruits, on the whole, look well and should give at least an average yield. Market gardens are looking well, and the weather has been, generally speaking, favorable to them. A large amount of cabbage plants have been set out recently, and some gardeners are putting out tomato plants.

Sunday, May 19th, was Blossom Sunday, and special cars were run on the Hamilton, Grimsby and Beamsville electric road. The day was very fine and warm, a temperature of over 80° having been reached, and large crowds took advantage of the occasion to see the blossoms. This is the earliest Blossom Sunday for some years.

A report from Grimsby says that Scale Inspector Olmstead is on the warpath these days, and that all condemned fruit trees and bushes in the town limits must be destroyed. Those owners who do not cut down condemned trees have them cut down for them, and the expenses charged up to them. So far, Mr. Olmstead has cut down several hundred trees, and owners themselves have cut down a large quantity. Mr. Olmstead must be congratulated on the good work he is doing. For years the village of Grimsby has been infested with scale, and trees by the score have been condemned. But that is as far as it went.

Scale Inspector Hunter, of the township of North Grimsby, says that there is 70 per cent. less San Jose Scale in that township this year than last.

A report from Grimsby East says that the fruit farmers are well on with their work. Strawberries and cherries are looking well.

Canning companies are making preparations for a greatly increased output this season. Some of the factories that have been closed for the last two or three years have been renovated and put in shape for this season's work, while a number of new factories have been erected. So large has the increase in operating plants become that the Sanitary Can Company has been taxed to provide canning machinery, and many plants that have held extra machines in case of



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cuts, levels, and turns the soil twice—all in one operation. That's the way "the coul-ters do the work" when you use the

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Works deep into the soil leaving it compact below and with a nice mulch on top. Light draft and comfortable seat. Endorsed by Experiment Stations. Sizes 3 ft. to 17½ ft. wide. Send today for our new free book, *The "Acme" Way to Crops That Pay.*

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Makes poor land fertile and keeps fertile land most productive.

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SULFOCIDE and CAL-ARSENATE

—a new combination which bids fair to replace the old Lime Sulphur-Arsenate of Lead and Bordeaux-Leadmixtures, in both orchard and garden. It is more powerful and much less expensive. 1 gallon and 4½ lbs. makes 150 gallons of spray.

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Wakefield, Succession, Copenhagen Market, Baldhead, 35c per hundred; \$2.00 per thousand.

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A Residential School for Girls

Young Children also received.

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emergency have been compelled to release them. Already contracts have been let in a number of lines at higher figures than formerly. Tomato contracts, for example, have ranged from 50 to 60 cents per bushel. Unless bad weather conditions prevail, there is but little likelihood of a shortage in supply. If the crop prove to be a full one, the factories will be taxed to their utmost capacity in looking after their contracts. The great difficulty facing the canners is the scarcity of labor. This is serious, and unless some way is found of relieving the situation before the opening of the packing season, some plants will have to be closed, in spite of the urgent need of all available supplies. Lower prices than last year are expected. As the high prices of the last two years were the result of a very small pack, prices may be lower and yet not affect the earnings of the canning companies, which are likely to be large.

Prof. L. Caesar, of the O.A.C., Guelph, is again residing in the Grimsby district, engaged in pruning work, experimental spraying, etc., etc.

Mr. J. R. Hastings, of Winona, a member of the Food Control Board, has written a very sensible letter to the Hamilton Spectator, pointing out that although many tons of fruit and vegetables became unfit for consumption this spring and had to be destroyed, in no case can the loss be attributed to the holding for higher prices.

Recent experiments at the Vineland Station have given results which strongly favor little or no pruning of young trees. The trees left unpruned, or only lightly pruned, grew larger trunks, bigger trees, and fruited much sooner than those pruned vigorously. Personally, the writer is of opinion that all that is necessary for the first two or three years after young fruit trees are planted is the taking out of a few cross limbs. They should, of course, be well cut back at the time of planting and the head properly shaped up. This policy may probably cause the growing of branches in undesirable places. Such branches can be cut out with a pocket knife while they are little, say in June. Pruning in that way, and at that time, will have a tendency to promote fruit bearing, while at the same time preserving the proper shape of the trees. But if this be not convenient, no harm will result from letting these undesirable branches grow for two or three years and then cutting them out gradually.

Annapolis Valley Notes

Eunice Buchanan, Berwick, N.S.

Unlike last spring, this has been one of prolonged dryness, with high warm winds. Some days have been very hot, and occasionally a few drops of rain fell. The orchards are very heavily laden with blossoms, but this does not always result in a big crop. The Gravenstein buds showed pink on May 14. Plums and cherries opened about that date.

Spraying began here on May 13. One large orchardist said that he did not intend to spray this year, but would devote the money to putting in 150 acres of crop. Another man said that he would not spray, but has changed his mind, owing to an at-

tack of bud moth. Paste arsenate of lead, in quantity, costs 22c lb.; arsenate of lime, \$25 per 100 lbs.; bluestone, 16c to 18c lb.; stone lime, 350-lb. cask, about \$3.50.

This past winter has been hard on the finer types of roses. Even pansies suffered more than usual. Strawberries, where covered, and not on low spots, have wintered well.

Tractors have made their first appearance here this spring. One owner advertises to plow for \$3 an acre, and to harrow for \$2.

Some people have neglected the first spraying in order to put in more crop. The weather and soil have been favorable for this. Large quantities of beans are being sown.

Residents of cities who flit away during the summer months to the country, lake or sea shore and leave their lawns and gardens to take care of themselves are not in this respect at least the best type of citizen. By giving the weeds a start they make it difficult later to fully restore the appearance of their lawns and gardens, and during their absence their residences often become a public eye sore. In every city there are men and boys who would gladly look after such places during the absence of their owners, and for only a moderate charge. A proper home and civic pride would lead to the services of these men being used more freely.

SKINNER SYSTEM OF IRRIGATION

Control complete. Prevents drought losses. Reduces labor bills. Increases profit. Special Portable Line for \$15.75. Send for new Bulletin.

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

APPLE BARRELS

We ship them all over Ontario.
Machine-made, Standard size.

Get our prices.

Contracts made with Fruit Associations.

SARNIA BARREL WORKS,
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ASTER PLANTS

Good, strong grown plants, including all the following varieties: Late Branching, Rochester, Perfection; all colors mixed, 75c per hundred.

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

THE SELF-OILING WINDMILL

has become so popular in its first three years that thousands have been called for to replace, on their old towers, other makes of mills, and to replace, at small cost, the gearing of the earlier Aermotors, making them self-oiling. Its enclosed motor keeps in the oil and keeps out dust and rain. The Splash Oiling System constantly floods every bearing with oil, preventing wear and enabling the mill to pump in the lightest breeze. The oil supply is renewed once a year.

Double Gears are used, each carrying half the load.

We make Gasoline Engines, Pumps, Tanks,

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Write AERMOTOR CO., 2530 Twelfth St., Chicago



Marketing Berries

L. J. Farmer, Pulaski, N. Y.

I have seen splendid crops of small fruits grow at great expense, and then practically thrown or given away, for lack of business ability in marketing them. I used to send most everything that I raised to New York, Boston and other large cities. Now I seek the small markets, ship small lots to individuals, and encourage the local demand. The big city is the best place to secure a long price when there is a great shortage, provided your transportation facilities and your dealer are all right. I have a few picked dealers that I know to be all right, in local towns within our shipping radius, and I divide my shipments with them from day to day. In most cases, I do not know exactly what I am getting until the close of the season. It is understood between us that they are to receive my shipments, not refuse them, and they are to do the best they can for me. For their guidance, I enclose a tentative bill, but if they cannot do as well, I am to abide by what they can afford to send me.

There are always one or two pickings during the height of the season that bother the grower to dispose of at a fair price. Anticipating these days, I urge the dealers to make an especial effort to sell for canning on those days, at reduced prices. I am also accumulating a list of people in different towns and cities, who secure orders from their friends and neighbors for canning. I ship to these people on the days that otherwise would be glut days were it not for this foresight. One woman in a city of Northern New York, 35 miles from us, handled for us in one day last season, 25 crates of strawberries, supplying her neighbors with them.

Near us lives one of the most progressive, up-to-date apple growers of our county. I supply him with fresh strawberries from day to day. I am glad to get his or any other farmer's trade. It is the best trade in the world. They come after the fruit. But, do you suppose that I can buy a barrel of first-class apples for winter use from him? Not on your life. If I got down on my stomach and crawled to his place, he would not sell me anything better than windfalls. The buyer who takes all his apples might hear of it. Our locality eats culls and windfalls until the Oregon and Washington apples come in, at five cents apiece. Does it pay? I live in the center of one of the largest and richest dairy sections of New York State. They used to make all the cheese for export to England. The soft cheese used for home consumption, was made in Oneida County, and shipped in from Utica, 60 miles away. One day a local cheese maker conceived the idea of making soft cheese for the local trade. Wise man. Onondaga County is a rich dairy county, abounding with some of the finest dairies in New York State, yet the large buyers secure their supply of milk from Syracuse and from Gouverneur, and ship it via Utica, which makes a haul of 125 miles. Will the day ever come when we, who do not grow apples, can buy a few barrels of the large growers who do? Where is the Food Controller?

I have never been a great champion of the box as a package for Ontario apples. I will not say that I have changed my mind, yet it would appear that it would be advisable to use the box for a proportion of the crop.—J. G. Anderson, The McNaughton Fruit Co., Ltd., Winnipeg, Man.

Bob Long

UNION-MADE

Overalls
Shirts &
Gloves

Known from
Coast to Coast



Bob Long says:

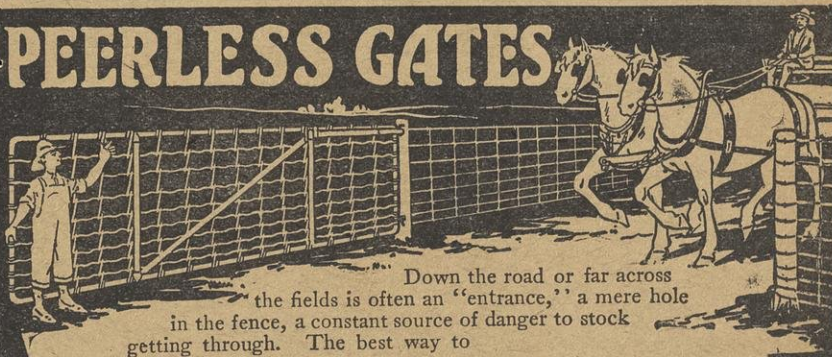
"My overalls and shirts are the best made, because—I know what a man wants—long wear, solid comfort and all-round satisfaction."

Insist on "Bob Long" brand, and ask for Big 11—the big grey overalls—the cloth with the test.

R. G. LONG & CO., Limited, Toronto, Canada

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PEERLESS GATES



Down the road or far across the fields is often an "entrance," a mere hole in the fence, a constant source of danger to stock getting through. The best way to

Keep Your Stock Where You Want Them

is to provide real gates, strong and durable. All Peerless Farm Gates are of heavy open hearth steel wire on strong tubular steel frames electrically welded in one solid piece, and braced like a steel bridge. No sag, no rust, no wearing out. Ask your dealer to show you Peerless Gates, also Peerless Perfection Farm and Poultry fencing with the famous Peerless lock at all intersections.

SEND TODAY FOR CATALOG.

It tells you how to put up a fence to "stay put."

The Banwell-Hoxie Wire Fence Co., Ltd.
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Are there CURLED LEAVES on Your Apple Trees

Then get busy. That means Aphis—a real danger to your apple profits. Aphids cause dwarfed and deformed fruit; also spread fire-blight. Spray at once with

Black Leaf 40

40% Nicotine

Kills Aphis

Recommended by Agricultural Colleges and Experiment Stations. Don't make the mistake of thinking that Lime-Sulphur, Arsenate of Lead and Bordeaux kill Aphis. These sprays don't, but if you are using them at this time, as you probably are, simply add "Black Leaf 40" to the mixture, per directions. You will then not only get the full benefit of these sprays, but also kill Aphis and without the labor-expense of a separate spraying.

Aphis also attacks Plum, Cherry and other fruits, as well as truck crops, vegetables, plants and flowers. "Black Leaf 40" kills all varieties of Aphis, also Pear Psylla, Red Bug, Leaf Hopper, Thrips and other soft-bodied, sucking insects.

Free Spray Chart

Write today for Free Spray Chart, showing when and how to spray, and booklets on insect pests controlled by "Black Leaf 40."

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When you are ready to sell your honey, send us a sample. We are always buyers.

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Items of Interest

It has been brought to the attention of the Dominion Fruit Division that fruit and vegetable growers in the vicinity of Leamington, who contracted for manure for summer movement from Toronto, were receiving cars billed at from 8½ cents to 10 cents per 100 lbs. The proper rate for this traffic to Leamington, Kingsville, and other points, via Chatham, G.T.R. and P.M., is 7 cents per 100 lbs., as provided in G.T.R. tariff, C.M. 49.

At a recent meeting of the Duncan-Nanaimo Division of the British Columbia Fruit Growers' Association, the members decided to ask the provincial government to undertake the proper organization of labor throughout the province for the duration of the war. It was reported that from 300,000 to 500,000 Chinese are now employed behind the lines in France. A resolution was passed expressing the belief that the only possible solution of the labor situation in British Columbia under existing conditions is to permit the importation of Chinese labor.

Our Fruit Growers' Association has made a practice of sending out a pruning gang every year. We have always been able to get men to work in a gang when our individual members might have difficulty in employing one man to help prune. Evidently the social element has something to do with this preference on the part of men. Our method has been to pay the wages every week from association funds and charge the amount against the grower's account, to be deducted from subsequent fruit sales. Members will have work done under these conditions when they might hesitate to face a respectable pay roll on Saturday night at a time of the year when apples are far from their thoughts.—Dr. A. J. Grant, Thedford, Ont.

Cooperative organizations should take an active part in solving problems of harvesting and labor supply. Grades and standards should be formulated if they have not already been established. Likewise a system of inspection should be decided upon in order that the products shipped will be of proper grade, quality and uniformity. Complete information relative to the local production and the amount of business available for sale through the association should be secured. Information relative to the production of other localities is also of importance. The management of co-operative marketing associations should keep in close touch with the outlets for the products handled and market conditions. Transportation problems are of prime importance and should receive attention by the Association.

Fruit and Vegetables Solicited

We Get Best Prices

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

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

H. PETERS

88 Front St. East, Toronto

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



We Solicit Your Consignment

Send for Shipping Stamp



Transportation Problems

Geo. E. McIntosh, Traffic Expert, Dominion Fruit Division, Ottawa,

The problem before the fruit growers of the Niagara district is first to develop a product of quality, then to create a larger consumer demand, and finally to perfect as nearly as possible, the system of efficient economical distribution. This can be done, but only by putting into effect a close co-operative scheme with the railway and express companies. All losses in transit cannot be attributed to negligence of the carrier. Many are the result of conditions, the responsibility for which may be shared by the grower, the shipper and the transportation company. And while there may be, and I believe there are, grounds for complaint regarding the handling by express employees, many losses are primarily due to orchard and packing-house troubles, such as packing too loosely, severe pressing or rubbing. It is well, however, to keep in mind the fact that a well-grown, perfect fruit is a fundamental requirement in successful transportation, and while it is claimed the diseases that affect the fruit after picking cause the most serious losses in transit, the care with which it is therefore handled in the orchard or packing house is one of the important factors in determining the shipping quality.

As previously stated, it is not so much a question of rates, as it is a question of prompt, efficient service, yet rates must be

sufficiently reasonable to permit growth in consumption and development of the industry. The fifteen per cent. increase in freight service does not apply to express shipments. In looking over Government statistics filed by the different express companies, I think I am safe in saying we need not fear an application for an increase from them. The express companies in their report to the Government show a revenue from transportation, and from operation other than transportation, the latter being earnings from money orders, travellers' cheques, etc. In the report for the year ending June 30th, 1916, it is interesting to note that in nearly every case the express companies operating in Canada greatly exceeded their total operating costs by the earnings, absolutely apart from that of transportation. In this regard the Dominion had a surplus of \$356,479.79, Canadian \$315,539.68, and Canadian Northern \$508,741.92. Add to these figures the enormous earnings of nearly 7,000,000 by the and over \$1,000,000 by the Canadian Northern and over \$1,000,000 by the Canadian Northern for transportation, and we have some idea of the financial condition of the express companies.

The effect of the war on the farm apple orchards has been serious, but there is yet time to rejuvenate a great many of them. It is our duty as fruit growers to lead in the attempt.—Dr. A. J. Grant, Thedford, Ont.

Keep the Potatoes Growing

Many are growing potatoes in Canada this year for the first time and as a result of the greatly increased number of growers the crop will probably be greatly increased. But to insure a good crop there must be an abundance of moisture in the soil and the tops must be protected from insects and disease.

Cultivation.

The soil should be kept cultivated with the cultivator or hoe until the tops meet sufficiently to shade the ground. As most of the tubers develop in the three or four inches of soil nearest the surface, and as the tubers will not develop well in dry soil, quite shallow cultivation is desirable at this season of the year. In soil which is dry there may be good development of tops, but there will be few tubers. The roots in such cases have gone down deep into the soil to obtain moisture, but the tuber-bearing stems, which are quite different from the root system, do not develop well. Where the soil is a loose, sandy loam, hilling is not necessary and may be injurious, as the soil dries out more than if left on the level. In heavy soils it is desirable to hill the potatoes, as it will loosen the soil and the tubers will be more shapely than when the ground is left level. When there is sufficient rainfall and moisture in the soil, hilling is likely to give best results in all kinds of

Beautify Your Grounds With a Permanent Frost Lawn Fence.

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

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

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

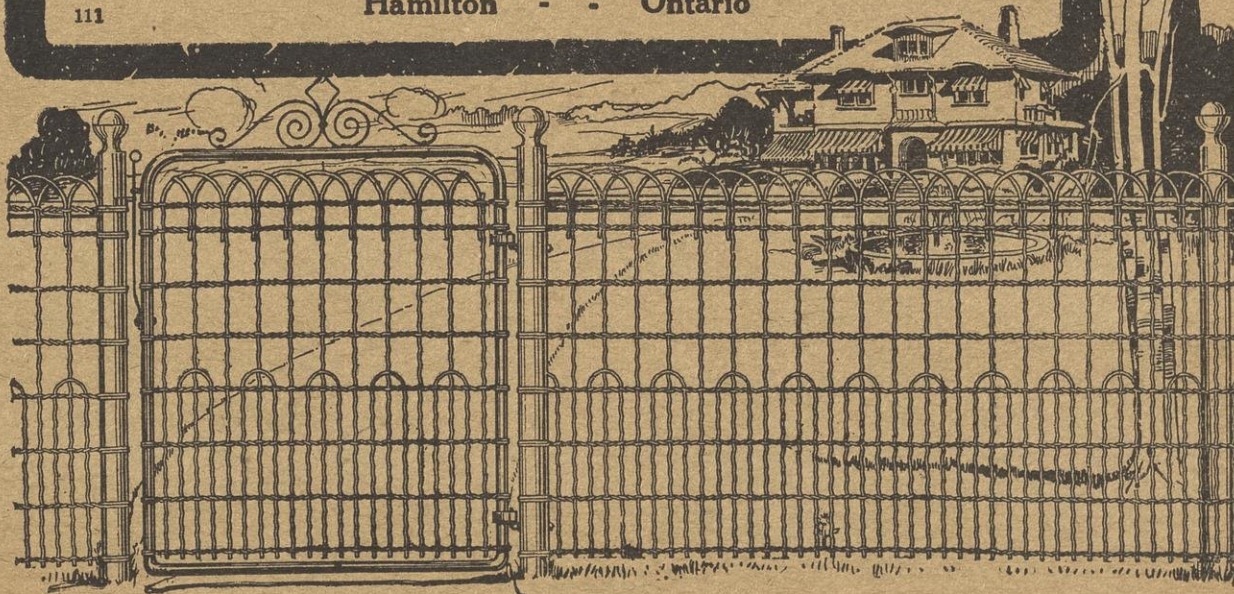
Our catalog shows several other styles of **Frost Ornamental Lawn Fence**. Our dealer will gladly show these to you. If you do not know the **Frost** dealer in your locality, write us direct.

We make fencing and fence supplies for every purpose.

Frost Steel and Wire Company, Limited

Hamilton - - Ontario

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CLASSIFIED ADVERTISEMENTS

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

BEEES

GOLDEN AND THREE-BANDED ITALIAN; also Carniolan Queens—tested, \$1.00 each; Untested, 75c each. For larger lots and bees in packages, nuclei, etc., write for prices. C. B. Bankston & Co., Buffalo, Texas, Leon Co.

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

FOR SALE—3,500 3-Banded Queens, none better. Write for price list. J. F. Diemer, Liberty, Mo.

GET JUNE, JULY and AUGUST prices on 3-banded Queens. J. F. Diemer, Liberty, Mo.

WANTED—A few English (black) queens. Wm. Reid, White Valley, Vernon, B.C.

BEE SUPPLIES

FOR SALE—Fully equipped apiary for 400 colonies of bees. Hives with drawn comb supers, with sections filled with full foundations, season's supply of containers, winter cellar, buildings, etc. For full particulars, write B. F. Johnson, 7901 Franklin Ave., Cleveland, Ohio. (Location, Haileybury, Ont.)

EMPLOYMENT

TEACHER WANTS WORK in apiary during holidays. Some experience. State wages with board. John H. Lang, Elmira, Ontario.

HONEY

WANTED—First-class white honey, the coming season's production. Will pay ruling prices and supply tins. Foster & Holtermann, Limited, Brantford, Ontario.

REAL ESTATE

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

SEEDS, BULBS, PLANTS, SHRUBS

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

SANDER & SONS**ORCHID GROWERS**

The Finest Stock in the World

Catalogue on Application

ST. ALBANS - ENGLAND

PERRY'S SEEDS

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

Hardy and adapted for Canadian climate.

HARDY PLANT FARM, ENFIELD, ENGLAND

soil, as the soil will be looser and the tubers can push through it readily. As a great development of tubers takes place during the cooler and usually moister weather of the latter part of summer, it is very important to keep the plants growing well until then. In one experiment it was shown that during the month of September there was an increase of one hundred and nineteen bushels of potatoes per acre.

Bulletins and Annual Reports

Recent interesting bulletins and reports that have reached The Canadian Horticulturist include the following:—

"Some Observations on the Growth of Apple Trees" and "Notes on the Presence of Nitrates in Orchard Soils," are two bulletins, the first by Prof. J. H. Gourley, and the second by Prof. Gourley and Prof. V. D. Shunk, recently distributed by the New Hampshire Agricultural College, Durham, New Hampshire.

An excellent bulletin, well illustrated, entitled "The More Important Fungus and Bacterial Diseases of Vegetables in Ontario" by Professors J. E. Howitt and D. H. Jones, of the Ontario Agricultural College, is available on application to the Ontario Department of Agriculture, Toronto. Every vegetable grower should procure a copy of this valuable bulletin.

The Dominion Department of Agriculture has issued an excellent bulletin entitled: "The Potato in Canada, Its Cultivation and Varieties," by W. T. Macoun, Dominion Horticulturist. This bulletin deals with varieties, source and vitality of seed, methods of cultivation, tillage, marketing, cost of growing and similar subjects. It is a valuable addition to the literature on this subject in Canada. The bulletin contains 100 pages. A smaller popular edition has been issued comprising 16 pages.

The Entomological Branch of the Dominion Department of Agriculture is distributing circular No. 11 dealing with "The White-Marked Tussock Moth, and Its Control on Shade and Orchard Trees," by J. M. Swaine and G. E. Saunders. As this moth is wide spread throughout eastern Canada and its ravages are increasing this bulletin is timely and valuable.

Three circulars have been issued by the Illinois Agriculture Experimental Station, Urbana, Ill. One is entitled "Apple Flates," by W. P. James. It describes a new product which meets the requirements of a successful dried apple product. Circular No. 215 is entitled "The War Garden Hot Bed." The third circular, No. 20, describes methods of using farm labor advantageously during the war.

"Spraying Stone Fruits" and "Seed Sowing and Spring Transplanting in the Vegetable Garden," are two bulletins that may be obtained from the Oregon Agricultural College, Corvallis, Oregon.

The effect of poor ventilation on stored potatoes is described in Bulletin 436, of the New York Agricultural Experiment Station, Geneva, New York. Bulletin No. 437, issued by the same station, deals with "Onion Neck-Rot in Storage Houses."

Methods of combatting fire blight of the apple are described in circular No. 70, of the Wisconsin College of Agriculture, Madison, Wisconsin.

The Manitoba Horticultural and Forestry Association has issued its report for the year 1917. It includes the monthly issues of the Manitoba Horticulturist for the year. Copies may be obtained on application to Prof. F. W. Broderick, Agricultural College, Winnipeg.

GARDEN BOOKS

Every amateur gardener who is planting a back yard or vacant lot this spring should aim to familiarize himself with the best methods of growing flowers and vegetables. It is more than merely digging the soil and dropping seed here and there. Do you know how to cultivate and fertilize the soil; how deep to plant the seeds; the best methods of crop rotation? A thorough knowledge of these is absolutely necessary to the success of the amateur gardener. Here are a few good books which will give you up-to-date information. These may be ordered at the prices quoted below, post-paid, from our Book Department:

"THE BACKYARD FARMER."

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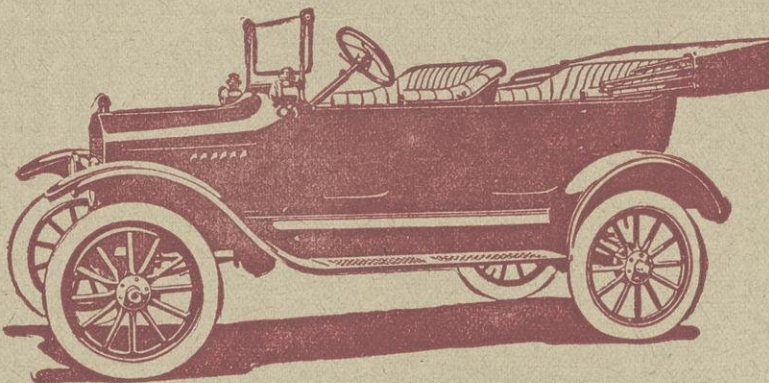
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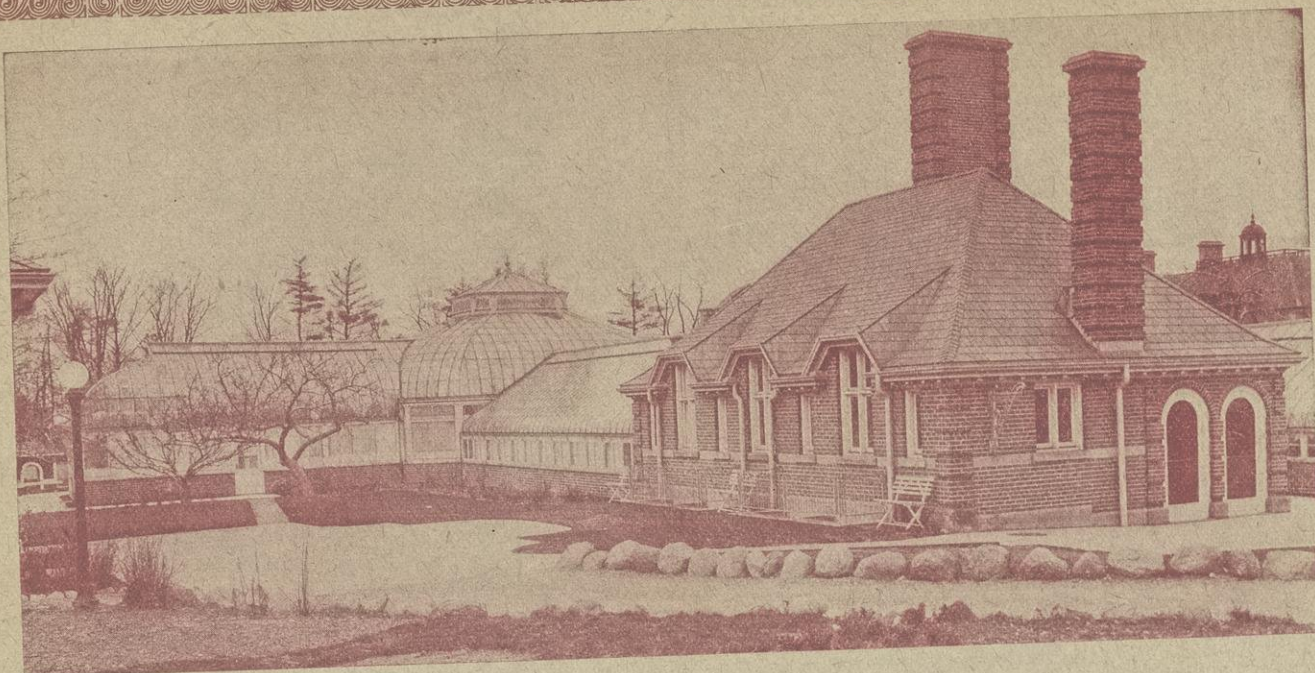
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