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ADDRESS CORRESPONDENCE TO PETERBORO. ONTARIO.

Getting Bees Ready For The Crop

A. Eric Hutchinson, Mount Forest, Ont.

LARGE crops of honey are the aim of all true beekeepers who operate for extracted honey. I know that there are owners of bees, who call themselves beekeepers, who buy honey for their own use nearly every year. The blame is often placed on the bees, the locality, the weather and the season, when the blame should really be placed on the beekeeper. Skilful management of the bees will overcome a great many adverse conditions.

What is considered a crop? some may ask. With us an average crop in a good locality runs about one hundred pounds per colony, spring count. I know beekeepers who double this average production nearly every year, but they are exceptions. If we study the Department of Apiculture records, we will find that the average reported is far below 100 pounds, but among the better beekeepers there are many who obtain this average.

Our first and most critical problem is, how to get strong colonies in the spring. It is my opinion that the wintering of bees comes first in the solving of this problem. If your bees winter poorly what chance have you of getting a crop? In a late honey season, weak colonies may get some honey if handled right. In the average season, if a colony is weak in the spring, the best of the honey flow will be over before there are enough bees to gather a crop. That colony will likely only gather enough honey to feed itself. It is fairly easy to winter 90 per cent to 100 per cent even in a season like 1919-20, but when a bad spring follows it is hard to have all colonies strong for the honey flow.

Essentials of Wintering.

Bees may be wintered successfully outdoors in single cases or two and four in a case, or indoors. My preference is the Krouse single packing case in which the colony remains packed to the top of the brood chamber the year around. Whatever method is used, however, it is best to have a strong colony of bees in the fall, about September, with a good vigorous queen. Weak colonies may be wintered, and made good colonies the following season if handled right. Let us consider, first, the strong colony. It is necessary for the colony to be fed at least 35 pounds of syrup (granulated sugar and water mixed in proportions of two of the sugar to one of water) or till it has at least 35 pounds of sealed stores in the hive. Forty pounds would be better, if it is very strong, as this quantity will ensure it having enough food to last till the blossoms open. Some strains of bees are poor winterers, and the only way to overcome this difficulty is to get breed from the hardy and productive colonies. At first one must buy queens till a good breeder is secured. Then the way is open to successful wintering.

A Good Location Necessary.

In connection with outdoor wintered bees, there are two points which we have proven from experience, viz., that location plays a valuable part in the success of wintering, and that it is possible to have bees too closely confined. The yard ought to be sheltered from prevailing winds, and the more shelter there is, generally the better the results. The ideal location has a bush on the north, east and west, and it does not need to be dense bush. Any place where the wind eddies is bad.

G. A. Deadman's Merlin Apiary in winter. Note the combination of single and duplex cases, and the groups of two colonies to the stand.

Such an ideal location is also favorable to the building up of cellar-wintered colonies, when setting out. The single case which we use provides about four inches of packing around the sides of the colony, and abundance on top. We find, however, that it is easy to pack the colony too warm, even for a winter like the last one. A strong colony needs the full summer entrance inside of the packing case, and the entrance to the case should be about three-eighths inch by three inches. With such provision, colonies are quiet and free from dysentery, as a small entrance makes them restless. No fear need be felt over hives buried in snow, providing, of course, they are level or sloping to the front. I have had colonies with from one to five feet of snow over the top of their wintering case and with a crust on the snow sufficiently strong enough to bear cattle, which wintered perfectly. The heat of the cluster melts a space out into the snow around the entrance, keeping it clear for sufficient ventilation. I have lost more bees in the winter by having them too warm than from having them too cold.

Strong or Weak Colonies.

If the colony comes out in March or April covering most of the combs, it is an easy matter to get it ready for the clover flow, which is what we count on. In some locations, such strong colonies will secure a surplus of dandelion and fruit bloom honey, but we do not count on those sources for surplus. We want our bees to use that honey for production of bees. With a young queen and plenty of bees to maintain the temperature of the hive, they will use up most of the fall supply of food before the spring flowers yield heavily and there is a big colony to operate with.

What about the hive with only a handful of bees covering ten combs in April? Can we reasonably expect them to keep up the temperature of the hive to incubator standards? Unless something is done they will only be able to cover a small patch of brood, and it is weeks before they amount to anything, if they survive at all. They can, however, be helped by giving them a space of brood chamber which they can keep warm, say, two combs, by using tight division boards. The room can be increased gradually as they need it. They may also be put over strong colonies with a queen excluder to separate them, and they will make good colonies if conditions are right. This latter method is known as the Alexander plan.

By the time flowers are blooming, the stronger colonies will be full of bees from side to side of their single brood chamber, and will have brood in six or eight frames. Such a hive is given a super. We practise putting this super on **without a queen excluder** when operating with ten-frame Langstroth hives. The brood chamber now contains twenty frames with drawn out worker combs, and it is left at this size until the opening of the clover flow. The queen, if she is a good one, will occupy and fill most of the frames with brood. If there happens to be an extra good flow of honey, and there is a tendency to crowd the queen, a super is placed over a queen excluder on the double brood chamber. We do not find occasion to use many such supers during the spring flow. If the second brood chamber has been put on in time, there will be few queen cells raised till clover flow starts in our locality. Judgment must be used in putting this second brood chamber on the colony. The weather and strength of the colony must be carefully considered. If the colony is strong and the super is not given, it is liable to swarm. If the colony is weak, the additional space given will discourage the colony, as they will not be able to keep the enlarged brood chamber warm. Should a cool spell happen along, a serious check would also result to the weak colony.

Clipping the Queens.

With all colonies, I want all my queens clipped during fruit and dandelion bloom. The bees are at this time not too plentiful. The queens are laying heavily, and are consequently large and easily found. The clipping of the queen with us keeps track of her age. The one wing is clipped off the first year and the other the next. She is then two years old, and is replaced before the following winter. Queens raised through the summer are not clipped. They are left over until the following spring.

We practice visiting our yards every eight or nine days, and, as the supers fill up, we continue to add. We aim to keep all colonies working. If bees are kept working hard, there will not be an excessive amount of swarming. At the opening of the clover flow the queen is confined to the lower brood chamber, with an empty super of drawn comb preferably immediately above the excluder. The surplus brood is left in the second brood chamber, which now becomes the top super. At the next visit to the yard this brood is disposed of. We either use it for making increase, or we cut out all queen cells formed, and allow it to remain where it is.

After the opening of the main honey flow, watch is kept for the swarming fever. If a colony has cups or eggs in the queen cells, we just destroy the cells and give the room needed. If the colony has cells capped over, one method we use is to kill the queen and destroy all cells, but leave any cups that have eggs in them. Then in nine days (the next time around) these cups will be capped cells. All may be destroyed but one. If everything goes well, a queen will hatch and mate, and the hive will have a young queen for the next season and be in good shape for winter. Many times, however, when one cell only is left, something either happens to the cell or the queen. To make sure of our work, we make a nucleus of two combs of brood and bees, lifting combs which have one or more good queen cells into another hive. A tight-fitting division board is used to reduce the size of the new brood chamber, and a young queen will hatch and be mated in due time. If this method is practised with the best hives, sufficient queens will be on hand to replace any accidental losses, and old queens. I wish to emphasize that the killing of queens is done shortly after the opening of the main flow and before July 1 unless there is a buckwheat flow in prospect. Otherwise, there would be late mating of the queens, and consequently weak colonies to go into winter quarters.

Isle of Wight Disease Discovered

F. W. L. Sladen, Dominion Apiarist.

Dr. John Rennie and his associates, who have been investigating the Isle of Wight disease of bees at the University of Aberdeen, Scotland, recently announced the discovery of the cause of it. It is due to an extremely small mite belonging to the genus Tarsonemus, which invades the respiratory system of the bee. The mite is said to enter the breathing tubes of the thorax, feed on the bees' blood and block the air passages. It has been named T. Woodi in honor of Mr. A. E. H. Wood, of Aberdeenshire, who helped to finance the investigation.

Mr. Wood recently forwarded a cutting describing the discovery, with a request that we look for the parasite in Canada because, it has not yet been found in any bees obtained outside of Britain. As we have in Canada adult bee diseases which resemble the Isle of Wight Disease, it is desirable that we should, as early as possible, look for this parasite. Any beekeepers with colonies suffering from disappearing disease or bee paralysis are invited to forward specimens of affected bees, while still alive, to me at the Central Experimental Farm in Ottawa.

Methods of Packing Colonies

J. F. Dunn, Ridgeway, Ont.

AT the left of the accompanying photo may be seen a packing case which is cheap, though efficient. It is a barrel slightly larger than the ordinary flour barrel, and will accommodate a ten-frame Langstroth hive. Those beekeepers who have the eight-frame size will find the stock flour barrel is about right for this purpose. The hive, which is shown sitting on top of the barrel, is lowered endwise, entrance down, to within six inches of the bottom of the barrel A stout wire passed around the hive and left loose enough at the top to form a handle, comes in handy for lifting the hive out when unpacking.

A fly hole, three-eighths inch by four inches, is cut horizontally in the stave and a piece of tin, showing white in the photo, extends three inches below the fly hole, thus shutting off the drafts. We pack under, around, and on top of the hive with forest leaves, packed in tight and rounded slightly on top. A piece of thick waterproof paper tied with a string makes a good cover for the top. With any other packing than forest leaves, I would cover the outside of the barrel with waterproof paper.

In the centre of the picture will be seen my light double-walled cork packed hive, previously described in The Beekeeper. I have no use for fixed alighting boards projecting in front of the hive. The front edge of the bottom of the hive comes just enough short of the front of the hive to keep the water from lodging before the entrance. Ice never closes the entrance. The alighting board reaching to the ground can be removed when cutting the grass, and with the deep entrance provided, the bees often fly right in. A strip for contracting the entrance is shoved into this deep opening. It has a notch cut in the bottom edge, three-eighths inch x four inches, for the winter entrance. We like to place it about half an inch from the front edge of the bottom or floor board.

At the right we show a pair of single-walled hives, or they were single-walled until we added a thin shell at front and rear, with one inch space between the two walls and two thicknesses of waterproof paper on each side of the cork packing, used to fill same. We insert a two-inch "dummy" into each hive, placing same on the weather side of the hive, thus wintering on eight frames in a ten-frame hive. This dummy fits tightly like a division board. The frame is made of three-eighths inch wood, and the sides of heavy cardboard, made of shredded wheat biscuit cartons. The cardboard sides are made about one-eighth longer than the inside of the hive, so as to crowd down and fit snugly. It is a good plan to paint them with shellac before placing them in the hives. This dummy is packed with re-granulated cork.

Just under the water-table will be noticed a black line, which is a soft wire encircling the two hives. At the left will be seen a stick in a slanting position. This is used to twist the wire tight, which draws the hives snugly together. A similar wire will be noticed just above the water-table, designed to draw the supers (in which is placed the packing above the bees) together. The stick used in twisting this wire can be seen in a straight position at the right of hives. A piece of heavy waterproof paper is slipped between the hives and supers before tightening the wires.

The regular hive cover is used on the super to the right. This full depth super can be packed with finely cut straw or any other good insulator. For a half depth super, however, I would use regranulated cork. The cover on this super is the metal cover used on our regular packed hive cover. These hives, with front and double walls, can be used for supers.

Dr. E. F. Phillips in Toronto

Dr. E. F. Phillips, of Washington, who was one of the principal speakers at the recent beekeepers' convention at Guelph, was the guest of the Toronto Beekeepers' Association for a few hours on his way back.

Through the courtesy of the Department of Agriculture a special meeting was held in the Parliament Buildings. A goodly crowd came to greet Dr. Phillips and also Prof. Sladen and Mr. Demuth who accompanied him.

Dr. Phillips reviewed the problem of wintering, and the principles underlying success in bringing the bees safely through the long period.

Prof. Sladen and Mr. Demuth also spoke on phases of beekeepers' work.

Three methods of packing,—barrel packing case, double walled hive, and two hives packed together. These are described in the accompanying article on this page.

THE EDITOR'S DESK

Our New Headquarters

The fortieth Convention of the Ontario Beekeepers' Association is now history, but it must give all the members, especially the old stagers, a great deal of pleasure to see Ontario take first place in the matter of a building devoted to the Science of Apiculture. It is a pleasant relief to the members of the staff and to those who are constantly associated with the Apiculture Department, to be out of the close, inconvenient, cramped quarters into a building where every convenience is at hand. We can now look with assurance for more breadth in our departmental work.

Our Present Need

It seems to us that the immediate need of the Ontario beekeeper now lies in the direction of better bees and healthier bees. Every support should be given Prof. Millen in his plan for a queen-raising apiary at the O. A. College to secure for Ontario beekeepers

queens from resistant Italian stock, to replace the defective strains now so common in Ontario. It is certain that this is the only way we can systematically secure immunity for the Ontario beekeeper from the ravages of European foul brood. The loss incurred by Ontario through this disease has never been tabulated, but it is quite safe to say that 100,000 would not cover the preventable loss in honey production alone per annum. We should also make systematic efforts to place before the Premier and Minister of Agriculture for Ontario the facts concerning our annual loss from American foul brood and secure more ample financial assistance in combatting this disease. The amount of money now at the disposal of Provincial Apiarist will not go as far as the grant we were receiving in 1914, and we all fully recognize that the Government has not given sufficient at any time to meet our disease problem.

Our Honey Markets

In sympathy with all other foodstuffs there seems to be a gradual recession of honey to lower price levels, but there is no glutting of the market with the better grades. What honey there is still in Ontario, and there is considerable, is in the hands of the beekeepers for the most part. The financial situation does not permit the wholesale trade to stock heavily in honey, and the beekeeper would do well to carry well ripened stock over rather than to sacrifice heavily in marketing. War-time conditions are now over, and competition is becoming more keen, so that every beekeeper should make a study of marketing honey and try to develop the local market to its limit. We believe that if a reasonable effort is made in this direction, the present supply will all be taken up at good prices before the 1921 crops materialize.

Cross Pollination

During the discussion on this subject at the recent Convention of the Ontario Beekeepers, R. F. Holterman, of Brantford, Ontario, made the statement that "Where one dollar is reaped by the beekeeper in honey, another dollar is reaped by the neighbor farmer." In the interests of beekeeping we cannot talk too much about the great influence bees have upon the fruit and seed crops of the country. We must insist continually that while apiculture is necessarily a minor branch of agriculture, it is nevertheless producing far more direct value to the country than has been credited to it.

Ontario Beekeepers' Convention

The fortieth annual Convention of the Ontario Beekeepers' Association was held under new conditions on December 1, 2, and 3, and the keynote of the whole convention was one of optimism and progress. The new Apiculture Building at the Ontario Agricultural College, was the centre chosen, and there was considerable pleasure in looking over the new headquarters for apiculture science in Ontario. This building is said to be the finest building in the world devoted to beekeeping. It is 64 feet 6 inches by 47 feet 3 inches, and has well equipped basement, main floor, and second floor. The equipment includes a bee cellar, a wax room, with steam, water, gas and electrical conveniences; a dark room, stock room, bench room, laboratories, fumigating room, offices and lecture room, and the whole structure will cost about $60,000 when completed.

The meetings of the convention were held in the lecture room of the building, which has seating accommodation for about 250 and abundance of light.

At the opening session of the convention, Prof. J. B. Reynolds, the president of the college, extended a hearty welcome to all of the members of the association, and in his remarks emphasized the position of the Agricultural College in agricultural work. "Research work throughout Canada and the United States is 25 years ahead of the practice of agriculture," he said, "and if we can bring the average of agricultural practice up to agricultural science, it would pay to abandon agricultural research work for ten years. The slowness with which the advanced knowledge finds its way to the average farmer is our chief problem." He has no intention of abandoning research work, but of concentrating on ways and means of securing better practice on the farms of Ontario.

The formal opening of the building by the Deputy Minister of Agriculture for Ontario, W. B. Roadhouse, followed Prof. Reynolds' address of welcome. He expressed the deep regrets of Premier Drury, who had planned on being present in person, and emphasized the long-felt need for just such a building. "This building," he said, "is dedicated to the beekeepers of the Province of Ontario as a whole. It is dedicated to everything which makes for the betterment of the beekeeping conditions and those who are working at beekeeping. If everything is left to the staff, however capable it may be, it will not avail. It must have the backing of the beekeepers as well."

The presidential address by W. W. Webster, of Little Britain, Ont., dealt particularly with the need for Italian queens reared in Ontario, and the value of the honey bee as a cross pollinating agent. "The demand for Italian queens to combat European foul brood can be better met by the Department of Agriculture and the Ontario Beekeepers' Association than by any other means."

The question of establishing a queen rearing yard in connection with the Department has been brought to the attention of the Minister, and it is hoped something will be done during the coming year. Mr. Webster also observed that "The tendency of the honey producer is to drop the middlemen and sell direct to the consumer."

Mr. McTavish, of Carleton Place, Ontario, the first vice-president, in his reply to the president's address, cited his own experiences in marketing through the local retail stores, showing that beekeepers who will take the trouble to promote honey sales by attendance at fall fairs and window displays in the nearby towns can develop the local market to a remarkable extent.

Mr. R. E. L. Harkness, of Iroquois, Ont., the second vice-president of the association, whose connection with the college dates back to the first lectures in beekeeping delivered there, gave a short sketch of the development of his apiary, and spoke particularly of his later trials with European foul brood. The substance of his experience is that strong colonies of Italian bees are the only remedy for this malady.

The membership of the association stands at present at 1,188 members, an increase over 1919 of 44 members, according to Secretary Millen's report. Three additional county organizations have become affiliated with the Ontario Beekeepers' Association. During the past season the association contracted for 2,200 Italian queens, but sickness, weather conditions, etc., prevented the full delivery of this number by queen breeders. Preliminary work has been done with a view to securing good strains of Italian bees capable of resisting European foul brood in the college apiary, and we will be ready to take advantage of any assistance we can secure for the establishment of a queen-rearing apiary from the Government.

Many splendid addresses on practical subjects were made to the con-

vention from Wednesday afternoon to Friday afternoon. Messrs. Dr. E. F. Phillips, of Washington, D.C.; Geo. S. Demuth, of Medina, Ohio, and Russell H. Kelty, of East Lansing, Mich., were there from across the International boundary, and Messrs. J. J. Morrison, of the United Farmers of Ontario; Morley Pettit, F. W. L. Sladen, Wm. A. Weir, F. W. Krouse, and many other well known Ontario beekeepers took part in the programme.

On Thursday evening a well attended banquet was held in the Royal Canadian Cafe, Guelph, and a very enjoyable social evening spent.

The election of officers resulted as follows:

President—W. W. Webster, Little Britain, Ont.

1st Vice-President—A. McTavish, Carleton Place, Ont.

2nd Vice-President—R. E. L. Harkness, Iroquois, Ont.

Secretary-Treasurer—F. E. Millen, B.S.A., O. A. College, Guelph, Ont.

Do Combless Packages Pay?

F. L. Barber, Lowville, N.Y.

ON May 5, 1920, I received by express twelve two-pound packages of bees from an extensive shipper in the State of Mississippi. Two of the packages had lost their queens on the way, and about one-third of the bees were dead. These two packages were placed in ten-frame hives, and given three frames of drawn comb, one of which contained some sugar syrup. One frame, about half filled with unsealed brood, was also given to each package colony.

The dealer was notified, and he sent me the queens, which arrived in about a week. These queens were introduced successfully, the bees accepting them, even though they had in the interval of queenlessness gone to work and started queen cells on the combs of brood given them.

The other ten packages arrived in good condition. Three of them had lost some bees approximately one-fifth of them being dead.

The other seven had practically no dead bees. In preparation for these ten packages, two ten-frame hive bodies were prepared for each package and were placed in position. The lower hive body was empty, but the upper contained three frames of drawn comb, one of which contained some sugar syrup. Another frame containing a little unsealed brood was placed in each upper hive body.

The package was opened and placed in the lower hive body, resting at an angle toward the combs above. The caged queen was placed on the end of the package case nearest to the comb containing the brood. The bees soon took possession of the frames of comb and unsealed brood above them. The weather was fairly warm the next day and the bees were flying. We observed some of them bringing in pollen. The colonies were examined four or five days later and all the queens were found to be laying. The bees were then examined twice a week. During fruit bloom, when they were gathering honey, the division board was removed and the hives were filled with frames containing full sheets of foundation. The lower empty hive body had been previously removed.

About June 15 supers of sections were given to six of the twelve package colonies. The other six colonies were given full depth supers containing full sheets of foundation and brood over a queen excluder. In arranging the last mentioned supers, we removed three or four frames of brood that were mostly sealed, placed them in the centre of the super to go above the excluder, and put frames with foundation in their place in the brood chamber.

The colonies at this time had from six to eight frames of brood. About the 1st of July another super was given them. None of these six swarmed.

They averaged about 85 pounds of surplus honey each. The six colonies which were given comb-honey supers soon went to work in them. In about ten days to two weeks another super was put on each colony. Four of the colonies finished two supers, one filled three and the other only finished one. The last mentioned colony swarmed about the 1st of July, and did not gather much honey afterwards.

On May 16, 1920, I received another shipment of bees that I had ordered early in the winter, delivery to be made the first week in May. They had failed to arrive on schedule time, but "better late than never." This shipment consisted of ten one-pound packages, with queens. They arrived in good condition, with no dead queens and the loss of few bees. They were treated exactly the same as the ten packages of the first shipment, with one exception, viz., they were given a frame containing **hatching brood,** instead of frames of unsealed brood.

On June 20 five of the last package colonies were given full depth supers, some of the brood being placed above the excluder in the same way as with the earlier packages. The other five package colonies were given supers of sections. On June 10 one of the latter colonies had been given another frame of brood. This colony filled two supers of twenty-eight sections each, while the other four only filled one or a little over. The extra frame of brood made a difference in production of about twenty pounds. The five colonies with the extracting supers averaged about sixty pounds of surplus honey. The frames of brood given to the package bees were taken from strong colonies, and did not seem to weaken them much. However, they were a great help to the package bees, and without it I do not think the one-pound package would have produced much, if any, surplus honey. The two-pound package would have gathered some surplus, but not so much. My conclusion, therefore, is that under favorable conditions and **when received early enough,** the two-pound package will produce about as much honey as full colonies. From one-pound packages little surplus can be obtained, unless they are helped by a frame of brood, or it is a favorable season. Of course, much depends on the time of arrival, and also the kind of queen they have. I believe that here in the North the best time to receive package bees is about May 10 to 15.

The bees that arrive in the packages are nearly all flying bees, and by June 15 or 20 few of the original bees will be left. The brood that was put in will just be bringing forth a new crop of honey gatherers. The number of flying bees and nurse bees fluctuates every thirty days from the time the colony begins to breed, and there is only sufficient time from May 15 for one crop of workers before the harvest begins. Thus the time has to be figured closely. If the bees are received much later than May 15 they may be strong in nurse bees, but weak in honey gatherers when the honey flow begins. This may account for some strong colonies being classed as poor honey gatherers when the real reason is that they are package bees received out of time with the honey flow.

I would urge all who intend to purchase bees in combless packages to get them early if possible, but if no surplus is expected, packages received as late as June 15 to 20 will build up into strong colonies by fall. If there is a late flow from buckwheat or some other source, they may gather some surplus from the same.

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The Niagara Organization

AS the organizing of the Niagara Peninsula is a big problem and one that will take much careful thought and considerable time to solve, we would suggest, to expedite matters, that the organization sub-committee give its initial attention more to the consideration of what is the plan of organization most likely to succeed, rather than to devote too much time to rules, regulations and by-laws. The first thing to decide is method of organization, whether it should be a merger of existing associations or a new company with new membership. The framing of rules and by-laws will be wasted time should the original committee and the fruit growers themselves fail to approve the plan that the sub-committee drafts. We are aware that the sub-committee already has drawn up rules and regulations with a one organization scheme in mind that practically ignores the present locals, other than giving them the option of merging their membership in the bigger organization, if they so desire. Even the consideration of binding a membership application form, one of the many details already decided upon, should be left until the actual method of organization has been approved and decided.

It is our opinion that the sub-committee should first give its sole attention to the broad plan of organization. To save time, it might prepare two or three alternative plans for presentation to the larger committee. It will then be the duty of the latter to choose the one best suited to the situation or to draft a plan that embodies the best points of all those submitted. If the sub-committee goes before the larger committee with a single plan that is not based somewhat on an amalgamation of the local associations, as a nucleus for the district-wide scheme, it is safe to say that its work will have been in vain—and weeks of time will have been lost. The big idea should come first. Details respecting whether this or that man should be admitted to membership, or whether members should be paid interest on shares, or whether this or that rule should be adopted, are mere bagatelles until such time as the committee, the associations and the fruit growers of the Niagara Peninsula decide what kind of organization they want and are prepared as a body to support and boost it.

Peach Grades and Packs

WHEN one interviews the fruit growers of the Niagara District on the question of standardizing grades for peaches, a very singular statement, really an objection, constantly is heard—singular because no other fruit district on the continent would think of such a thing — and that is that the packages used for peaches have been made to fit the fruit, and that, therefore, it might be impossible to pack the fruit in the package level full, if government standards were adopted. In the Georgia peach belt, in the Michigan peach district, in California and in all other peach sections of the United States, they make the fruit fit the package, regardless of size or grade. In the Niagara District, there is practised, generally speaking, only one method of packing peaches in a basket, say, the 11-quart—one peach on top of another three tiers high for No. 1's; that determines the grade, and many growers will claim that No. 1's cannot be packed any other way. There are some growers who know how to pack any size peach in a basket. We know a few men who can pack peaches with the best of the expert packers of the United States. But the fact remains that the majority of packers know only one way of layering peaches in the basket, and are without resource when they are confronted with the task of layering a size a little larger or a little smaller than the one with which they are most accustomed.

It probably is a fortunate thing that this unwritten standard has been in existence. Otherwise the lack of unformity in grading that we hear so much about would be even more pronounced. To improve the peach reputation of the Niagara District in competitive markets, not only standard grades are required, but also a more universal practical knowledge of peach packing with any size of peach and any size of package. Once government standards are adopted, the next step should be the bringing into the district for demonstration purposes of two or three expert peach packers from Georgia or California. Some men would be surprised!

Order Packages Early

IF the fruit growers want a guaranteed supply of baskets next year, they should give their order early to the manufacturer—this month or next—and permit the manufacturer to deliver a certain percentage of the baskets direct to the fruit growers' barns or railway station as early as he wishes. This advice from the pen of Mr. J. M. Wallace, president of the Oakville Wire-bound Box and Basket Co., Ltd., in a recent issue of the Toronto Globe, is sound business. While the manufacturer does not expect payment until the following October, he wants orders in early so that he may run his plant throughout the year, instead of the usual procedure of closing down for a number of months during fall and winter. The Clarkson Fruit Growers' Association, which buys supplies of all kinds for 172 members, has placed an order for about 42,000 crates and 1,250,000 berry boxes for delivery at any time direct to the members' barns. A far-sighted policy of that kind will be well repaid when the next fruit rush is on. Other associations and individual growers might well follow the example, and order now.

In regard to prices, Mr. Wallace said that growers could save at the rate of 15 per cent per annum on the purchase price by paying at time of ordering or delivery, and another $6.00 a thousand by taking the baskets from the factory, rather than having them delivered. While the price for baskets is altogether too high, advantage might well be taken of these discounts for cash and for cartage. Fruit growers who adopt sound business principles in ordering early and in financing the deal may reasonably expect to have little or no worries next year, should the general basket situation continue unfortunate.

Fruit Farm Surveys

AT this period in the history of fruit culture in Ontario, there is need for a complete census and survey of the fruit industry in that province. In view of the renewed interest that is evident in the industry, including the proposal to organize a big marketing association in the Niagara District, this survey might well be made this winter and completed before the fruit season opens in the spring. At the present time, important surveys of a kind are being, or about to be, conducted by three different agencies — an apple survey in Western Ontario, by the Dominion Fruit Branch; a grape survey, by the Niagara District Grape Growers, Limited, and a business survey on about 200 selected farms between Winona and the Niagara River, by Prof. A. Leitch, Farm Management Department, Ontario Agricultural College. These surveys should be of great value in their respective spheres, but they are not enough. What is needed is a province-wide survey of conditions and of the situation respecting all kinds of fruit. This survey should include a census of fruit growers, including men who grow and market any appreciable quantity of apples or other fruits as a side-line; a census of fruit acreage, including areas devoted to each kind of fruit on each farm; a census of fruit trees, bushes and vines, including varieties; condition of orchards and vineyards; production costs; proposed plantings; possibilities of expansion, and so forth.

The Ontario Fruit Branch has conducted local surveys in recent years that have proven of much value to the districts concerned. But surveys conducted in one county one year, in another county the next year, and so on, are not of great value, so far as province-wide information is concerned. With the information secured in the past and with the co-operation of the agencies now at work, as above mentioned, the Fruit Branch might well undertake this winter a thorough and comprehensive survey of the fruit counties of the province as a whole. If each county were covered practically at one and the same time, results would be quick and comparatively even. We would suggest that a practical and capable local fruit man in each county be appointed to supervise the work for his particular locality, under the direction and according to plans of the Fruit Branch, and that he be assisted by others, according to the size and fruit population of the district concerned. Some such scheme should be put into effect at once. Ontario needs the information.

The permanent success of the Niagara District Grape Growers, Limited, or of any association of growers for co-operative marketing depends upon many factors, but none more important than strict penalizing of poor production and of outside selling.

Market Conditions in Great Britain

J. Forsyth Smith, Fruit Trade Commissioner.

THE removal of apple price control at the opening of the season, together with the extreme shortage of English apple supplies, has had a most unfortunate effect upon the stability of the market. Phenomenal prices were realized for the first small shipments, Virginia York Imperials reaching 100s., Ontario Wealthy 95s., McIntosh 90s., Gravensteins 86s., and Alexanders and Duchess 80s., Nova Scotia Gravensteins 85s., and Dudleys 80s., while Cox's Orange reached the phenomenal value of 140s. The immediate affect of such prices, combined with the announcement that control would be re-imposed on the 15th November, was to attract much larger quantities of trans-Atlantic apples than would normally have come forward so early in the season. Continental apples, also, from hitherto unknown sources such as Spain and the Tyrol, added their quota to a supply much greater than would permit of the payment of satisfactory prices. The result was a decided slump in values about the middle of October when continental apples were selling wholesale from 1¾d. to 3d. per pound, and Canadian apples of No. 1 grade as low as 26s to 30s. The coincidence of the miners' strike, and its resulting unsettlement with this oversupply, and especially the threat of a railway strike, had a further unfortunate effect upon the market. Towards the end of the month values increased.

It will help in the realization of the situation if it is noted that during September and October, 1920, the British Government statistics show an importation of 1,318,041 long cwts. of apples, as compared with 274,146 cwts. in 1919, and 318,165 cwts. in 1916. Of this quantity 372,986 cwts. are placed to the credit of Canada.

Some of the early fruit and many of the Nova Scotia Gravensteins arrived in poor condition, and a certain amount of scab was present in many of the Ontario Greenings.

A feature of the situation has been the increased quantities of Ontario apples, which are in high favour with the trade, and the large increase in eastern boxed apples, both from Nova Svotia and from Ontario. Virginia has been sending forward large supplies of the popular York Imperial, and New York has also been much more prominent on the market than in recent years at this early season.

Re-imposition of Control

Efforts have been made to secure the continuance of a free market for imported apples, as fully justified by prevailing conditions, in the interests both of shippers and consumers. From the consumer's standpoint, it appears clear that the quantities of apples that may be expected to come forward will ensure ample supplies at prices well within the control figures, while the undoubtedly attractive effect of unrestricted conditions has sufficiently proved itself in the experience of the past two months. From the standpoint of the shipper, a free market would undoubtedly tend to induce shipments of the best boxed and barrelled apples, some of which would secure values in excess of control. However, the Ministry of Food have decided to hold to their announced policy, and renew-

ed control comes into effect on November 15, with a revised price-list to make provision for slack and wasty parcels. The new schedule is as follows:—

"Home-grown apples, first owner's price. Maximum price at the rate of 63s. per cwt. Imported apples, first owner's prices:—

When sold in packages—	Sound s. d.	Slack s. d.	Wasty s. d.
Canadian and U.S. apples in barrels of not less than 120 lbs.	68 0	64 0	53 0
Canadian, U.S. and Austral'n apples, in cases of not less than 37 lbs.	21 6	20 3	17 0
Canadian and U.S. apples in cases of not less than 40 lbs.	23 6	22 2	18 6

Any variety of imported apples sold otherwise than in the packages mentioned above, maximum price per cwt. 60s. Retail price, maximum price at the rate of 10d.

The order also contains the following provisions:—

"No apples imported in the standard cases or barrels specified in the schedule may be sold in the first instance on arrival in the United Kingdom unless they are classified as tight, slack or wasty, if the apples are in barrels, and as sound, slack or wasty if the apples are in cases.

"Varying maximum first owners' prices have been fixed for apples according to their classification. These prices will remain in force until March 31, 1921, and may then be reviewed. After Dec. 13th, 1920, the first sale of imported apples must be by or through the agency of a broker who is registered by the Ministry of Food. The proposals that brokers should be registered and that apples should be classified were put forward by the Fair Trading Council, and have been accepted by the Food Controller, who is satisfied that they are in the interests of fair trade, and that they help to protect the consumer.

"The Food Controller desires to make it clear that importers who wish to sell their own apples will be entitled to be registered as brokers on application being made to the Ministry of Food, provided that they have the necessary facilities for properly classifying the packages."

Southampton Auction.

Sales have been proceeding at the newly opened Southampton auction, and this centre promises to develop into one of considerable importance. Unfortunately, there is no direct cargo service between Canada and this port. The Canadian Pacific Ocean Services make Southampton a port of call for the landing of passengers from their Antwerp boats, but so far have shown no disposition to arrange for the landing of cargo. Ontario shippers should consider the advisability of endeavoring to secure some concession in this regard. Nova Scotia shippers should also consider the taking of steps to secure transportation to this point.

Considerable development is in prospect in the use of Bristol and Cardiff as apple distributing points, and shippers should take full advantage of the facilities offered for shipment to these ports, as they serve a very important territory, and should attract a number of important buyers.

Continental Prospects.

It is hoped that Canadian exporters have taken steps to get into touch with the

many Scandinavian importers who have expressed an interest in developing business with Canada. Unfortunately, Norway, one of the most promising markets, has placed an embargo on imported apples, but Denmark and Sweden are doing an important business with the United States, and should not be neglected by our shippers. The embargo on apple importation into France has been removed, and, while exchange conditions will make business difficult, interested inquiries from French importers have been received.

Box Apple Weights.

With the re-imposition of control, and the prospect of many boxed apples selling at the maximum, shippers are reminded of the importance of seeing that their boxes contain the minimum net weight of 40 pounds, as otherwise they will be precluded from securing the top price of 23s. 6d.

It is worth some care to secure an extra 50 cents per box, while it is important to note that a percentage of light weights may condemn a whole shipment to listing in the 37 pound net weight category at a maximum price of 21s. 6d. It is impossible to weigh every box, and fear of prosecution often forces the importers to accept the lower minimum for safety if slackness in a shipment offers any apparent justification.

It is strongly recommended, in this connection, to hold back all large sizes, especially the lighter varieties. Large sizes will seldom make the 40-pound net requirement, and, in any case, always make lower values.

Gladiolus Society to Meet In Canada

The American Gladiolus Society will hold its annual convention in Canada for the first time in 1921. It will meet at St. Thomas, in August, in Alma Ladies' College. McLachlin Hall and the college class rooms will be used for staging the exhibition.

The trial garden of the St. Thomas Horticultural Society is located immediately west of the college, and it will be planted with choice collections from some of the leading growers in both the United States and Europe. Grullemans, of Lisse, Holland, are sending a complete collection of their famous Primulinus. Diener, of California,

will send 1,500 bulbs, and others will also be represented.

To make 1921 a truly "GLAD" year, the members will be asked to each plant at least 100 gladioli, so that when the convention meets, every home, store and office will be beautified with them. The year 1920 has been a record one for the St. Thomas Society, and many new features have been initiated. The engaging of a landscape gardener has had a splendid effect, many citizens taking advantage of the opportunity of securing his services. Three hundred thousand picture postcards were printed, and were so much appreciated that a repeat order is on the way.

A trial ground has been established, where the newer varieties of different plants could be tried out, and where perennials could be grown for the members. Prizes for displays of gladioli were won at Boston and Toronto, and supervision of tree pruning for the Hydro-Electric was also undertaken.

War on Bill Boards

The St. Thomas Horticultural Society has adopted a unique and effective method of controlling the bill board nuisance. The usefulness of one board was destroyed by planting a hedge of fully developed shrubs in front of it. Amongst the shrubbery were planted bulbs and iris. The bill board people were threatened with arrest if they trespassed on the beds or disturbed the shrubbery, which was on city property. The board was removed.

A road show tacked posters on a fence without permission. The fence owner prosecuted for trespassing on his fence, and the Horticultural Society for trespassing on the boulevard and flower beds. The judge discharged the guilty party with a warning.

The city council is framing a by-law making it an offence to tack signs on fences, buildings, telephone poles, etc., without the permission of the owners; also a measure to protect the city boulevards, beds and private lawns from thoughtless people who do not keep to the walks.

British Columbia

The first shipment of fruit from British Columbia via the Panama canal recently arrived in England. It was made under refrigeration, and, according to reports, arrived in perfect condition. This will open up a new opportunity for British Columbia fruit growers.

A considerable quantity of B.C. apples have been shipped to Australia this season. The B.C. growers shipped about 6,000 boxes on one vessel, and about 7,000 boxes on some earlier sailings. The Okanagan United Growers sent 3,000. The Australian market is rather weak, there being a considerable carry-over from last season's crop, and trans-Pacific buyers evidently do not feel like paying the price asked in B.C.

A representative box of Okanagan apples, collected by J. Tait, District Horticulturist of Summerland, won second place in a horticultural show in Oregon in November. This competed with more than 100 varieties of apples representing most of the sections of the United States. The show was said to comprise one of the largest collections ever exhibited. The first prize went to some fruit of a larger size from Wanatchee, Wash.

Niagara District

The Fruitland Co-operative Company, Limited, Fruitland, Ont., the newest association of the district, having been organized in August this year, had a very successful season. An excellent start was made in the handling of fruit for its six grower-members. Plans are now being discussed for extension next season.

Circulars received from the Dominion Department of Agriculture by prominent fruit growers in the Niagara district indicate that unless the Grimsby Fruit Precooling Plant is purchased by the fruit growers of the district it will be closed.

The precooler is one of the greatest assets that the fruit men possess, and saved much loss during the car and basket shortage this summer. As a consequence the growers are much perturbed over the matter.

A proposal to discontinue the pre-cooling plant at Grimsby, or at least to turn it over to a company of growers or to the municipality, has led growers in the Winona district to suggest the establishment of a similar plant at Winona. It is contended that Winona needs such a plant as much as one is needed at Grimsby.

The buying and handling of supplies—spray materials, fertilizers, packages, nursery stock, etc.—by the Niagara District Grape Growers, Limited, is anxiously being looked forward to by the shareholders. It is believed by many that the profits on supplies would pay, perhaps more than pay, the expenses of operation of the company's total business for the year.

Make it District-Wide

NOW that a real movement is under way for big organization in the Niagara Peninsula, it is to be hoped that the scope of the proposition will not be confined to only one section of the district. The scheme should embrace every shipping point from Port Credit around the lake to Niagara Falls. Welland, Fonthill and other fruit localities, nearby but not always associated in the popular mind with the term "Niagara Peninsula," also should be included. The movement should be district-wide as well as district-long. Especially necessary to the purpose of the scheme—the control under one management of the marketing of "Niagara" fruit—and to its success is the inclusion of the Port Credit to Hamilton section as well as the section on the other side of the lake.

As both the committee and the sub-committee, appointed to consider ways and means and to draft plans, have power to add to their numbers, it is to be hoped that

they have already secured adequate representation from the sections above mentioned. Burlington has been given a member, but it is not the only fruit centre on that side of the lake. Nothing could put a stronger damper on the flame of enthusiasm started at the Vineland meeting than the localizing, even though only apparent, of the project. Let all in, if they will—and the earlier the better.

Nova Scotia

Mayor Blair, of Kentville, recently attended a meeting of the Pomological Society at Columbus, Ohio. He exhibited there one hundred specimens of Nova Scotia apples.

A new canning factory at Aylsford, which is being constructed by the United Fruit Companies of Nova Scotia, Ltd., is almost completed. It is expected to commence operations at an early date.

Capt. G. H. Vroom, Chief Fruit Inspector, recently acted as judge at the New England Fruit Show at Hartford, Conn.

Arthur C. Starr, of Starr's Point, a prominent horticulturist of King's County, recently passed away following an operation for appendicitis.

Peaches for London

Hon. Manning Doherty, Minister of Agriculture for Ontario, recently announced that the Province of Ontario would next year make large experimental shipments of Canadian peaches to the London market. He also announced that he had arranged to have Ontario apples marketed co-operatively in Great Britain. "Any attempt to corner or handicap our shipments will be met by the Drury Government by opening suitable cold storage warehouses in the principal British distributing centres," said the Minister.

Crows and English Sparrows

Editor, THE CANADIAN HORTICULTURIST: In one of your issues I saw a letter on "Bounty on Blackbirds." To my knowledge, that article did not go far enough. The bounty should include crows and English sparrows.

Crows are the most numerous birds in the Province to-day. They destroy all the nests they find, both in the trees and on the ground, such as the robin, song sparrow, meadow lark, plover and others. I have often seen a crow fly low, about five or six feet above the ground, watching from side to side, then suddenly drop as he caught sight of a bird's nest or something good to eat. There should be a bounty of 10 cents for each crow's head and five cents each for the eggs.

English sparrows are driving the barn swallows away by taking their nests and occupying them, and if a bird cot is put up for blue birds, it is taken possession of at once by the English sparrows. There should be a bounty on their heads as well.—Andrew Johnston, Claremont, Ont.

It too often happens that useless and neglected apple, wild cherry and hawthorn trees are allowed to live in the neighborhood of apple orchards. On these the trent caterpillars, other leaf-feeding caterpillars, certain boring beetles and fruit pests breed undisturbed and readily spread to nearby orchards, even although these may have been sprayed. Particular attention, therefore, should be paid by orchardists to the removal of these useless and dangerous trees.

Advantages and Disadvantages of Windbreaks

Prof. J. W. Crow, Guelph, Ont.

APPLE orchards in Ontario are not producing as much fruit as could be desired. So far as I am aware, our fruit trees produce as many blossoms and set as much fruit as formerly, but owing to the greatly increased prevalence of disease and insects, crop yields are reduced.

The question as to the extent to which apple orchards in Ontario should be protected by wind-breaks is an open one, for the reason that the disadvantages incurred sometimes outweigh the advantages gained. The advantages may be listed as follows:—

(1) They reduce the loss occasioned by windfalls.

(2) They hold snow and thereby materially prevent root killing, caused by deep freezing.

(3) They decrease evaporation from the tree in winter. It is under this head that credit must be given for winter protection, (aside, of course, from the matter of root killing previously mentioned). Tender trees frequently kill back and do so much more seriously when they are exposed to the sweep of winter winds. The actual injury in these cases is explained by plant physiologists as being due to drying out. The stronger the wind the greater will be the evaporation and the more serious the injury. This particular point becomes of great importance in northern horticulture and in this connection it may also be noted that on the prairies or in the north the wind-break functions importantly also as a sunbreak. It is well known that the safest location for a fruit tree on the prairies is on the north side of an east and west wind-break, thereby materially lessening such injuries as sun-scald, bark splitting, and the like.

(4) Wind-breaks decrease evaporation from both tree and soil in summer and very materially prevent injury by hot drying winds.

(5) Windbreaks raise the maximum day temperature, lengthening the season, and thereby insuring the ripening of late maturing varieties.

Disadvantages.

The disadvantages of wind-breaks may be listed as follows:

(1) They occupy space. Many fruit

growers feel that it is more profitable to give the ground to one or two rows of fruit trees of sorts which can endure exposure to wind. Cherries are frequently planted to windward and such apples as Snow and Spy are likewise well suited to such locations, because they hang well to the tree and do not blow off. Another reason for planting these two varieties in such a situation comes under the following head:

(2) Wind-breaks materially increase the damage caused by apple scab and frequently render control measures extremely difficult.

(3) Wind-breaks harbor insect pests.

(4) Wind-breaks rob trees of moisture and food. This point may be guarded against by cultivating the wind-breaks and applying manure so as to keep the roots "at home" and prevent them extending to the tree area, which they are frequently compelled to do by impoverishment.

(5) Wind-breaks lower the night temperature in their immediate vicinity and on the leeward side. It is for this reason that fruit growers sometimes charge wind-breaks with causing frosts. Anyone who has observed the occurrence of frosts will know that they are much more common and much more serious when or where the air is still. Wind-breaks cause frosts directly by checking the slight movements of air so earnestly desired by the fruit grower on cool nights and this detrimental effect should always be borne in mind in choosing a location for the shelter planting. It should, if possible, be so situated that the air on the protected side will drain away on still nights instead of banking-up to form a frost pocket.

(6) Wind-breaks increase the daily range of temperature by raising the maximum in daytime and lowering the minimum at night. This extended range of temperature frequently results in damage, such as bark splitting, for the reason that these injuries are caused by the contraction of the trunk which accompanies a sudden drop in temperature.

It is, of course, obvious that the influence of the windbreak decreases directly with distance. It is not likely the effect would be appreciable at a point farther away than a distance of ten or twelve times the height of the trees, on the level.

The Location.

Wind-break planting, when required in Ontario, should be located on the southwest and west sides of the orchard. If the most effective wind-break is desired the best tree is probably Norway Spruce, although White Pine grows taller and is much longer lived. A double row of Norway Spruce planted at ten foot distances, the second row alternating with the first, would make a most effective wind-break.

If it is desired only to check the force of the wind and not break it entirely a deciduous planting such as maple or ash would be satisfactory. Lombardy Poplar also makes a very desirable wind-break, as the tree is both tall and narrow. I do not think it would be necessary to allow any more space between the wind-break and the first row of orchard trees than would be sufficient to permit of cultivating and spraying when both are fully grown. This is a matter which can be easily determined for any given case.

See advertisement on page 326

Better Seed

A. J. Logsdail, Ottawa, Ont.

The necessity for better seed, in many lines, it might be said in all lines, is a statement with which no one will quarrel. The seedsmen themselves are continually on the look-out for better seed. The loss both in labor and production through the use of unsatisfactory seed must be enormous each season, and the natural question that arises is: "How can this condition of affairs be remedied, or even improved?"

We are aware that the government is spending, annually, a considerable sum of money in controlling and maintaining standards of seed in relation to its purity, vitality and freedom from noxious weeds. It seems to me, however, that there is one phase, and a very important phase, that has not received the attention it deserves. I refer to the production of Canadian grown vegetable seed of varieties particularly suited to our own climatic conditions.

Canada Can Grow Own Seed.

Can seed be grown successfully in Canada? Briefly, I would answer that question by stating that seed of first-class quality can be successfully grown and matured. The expense of growing this seed, however, would be considerably greater than is the case in countries where climatic conditions are more favorable. The yield of seed would probably be considerably less, the expense in maturing seed of certain crops would be heavier, and the risks of failure would be greater, but, if one considers the enormous benefits that would be derived from carefully bred and acclimatized seed, the extra expense incurred would be a very minor item to offset the added advantages gained. Further, such work would have an accumulating benefit; after a period of 20 or 30 years (and possibly at a much earlier date), we would possess varieties actually, and not relatively, Canadian.

Yields From Home Grown Seeds.

During the past few years seed of a number of vegetable crops have been grown successfully at Ottawa. Our successes have not been without our failures, but the type of seed produced, its vitality and the kind of crops produced from this seed, proved beyond question the urgent need for seriously considering this important factor in the production of better seed.

Here are a few figures that represent our average yield of seed in pounds for several vegetable crops grown during the past three seasons: Cabbage, 531; carrot, 703½; beet, 1095; parsnip, 969; onion, Yellow Globe Danvers, 459; onion, Red Wethersfield, 303; radish, 541; spinach, 507.

From the yields obtained we fully realize that there is much yet to be learned, but we have obtained in some cases a yield almost double that of the average here given. A sandy soil may assist early maturity and thereby ensure harvesting fully ripened seed, but in some cases a loam soil will produce twice the yield of seed that could be obtained from a sandy soil, and this seed, though not fully ripe, may be sufficiently developed to permit of harvesting and drying under cover, without injuring its vitality.

FOR SALE and WANT ADS

Advertisements in this department inserted at the rate of 5 cents per word. Each word, initial or group of figures counts as one word. Minimum 50 cents cash, strictly in advance.

BEES AND BEE SUPPLIES

HARDY ITALIAN QUEENS—$1.00 each. W. G. Lauver, Middletown, Pa.

GOLDEN QUEENS that produce golden bees, selected untested $2.00, tested $2.50. Safe arrival and satisfaction guaranteed. Clinton Bradway, Monson, Mass.

IT IS GOOD BUSINESS TO USE JUMBO HIVES. We have them as well as standard sizes. The Ontario Beekeepers' Supply House, 24 Melville St., Guelph, Ont.

BEESWAX AND HONEY

WANTED—Large Quantity White Clover and Buckwheat Honey. State how much and lowest price. Rosebrugh Bros., 427 Ave. D South, Saskatoon, Sask.

CANARIES AND POULTRY

CAGE BIRDS, CANARIES, PARROTS, etc.—Exclusive Canadian Agency for Max Stein's full note rollers. Shipped safely anywhere. Circular free. Giles' Aviary, London, Ontario.

SINGING CANARIES, BIRD MEDICINES, BOOKS, etc.—Write for catalogue. The largest reliable bird supply house in Canada. Morgan's, Limited, London, Ontario.

MISCELLANEOUS

ALL KINDS OF BOOKS on Poultry, Pigeons, Pheasants, Birds, Dogs, Cats, Rabbits, Ferrets, Pets, Bees, Farm Animals, Dairying, Fruit Farming, Vegetables and Flowers. Catalogue of books free. Morgan's, Limited, London, Ont.

GOLD FISH, fish food, and seaweed. Write for large catalogue of supplies.—Morgan's, Limited, London, Ontario.

FOX FARMING—Select stock for sale. Correspondence solicited. Literature free. Blake Vannatter, Georgetown, Ontario.

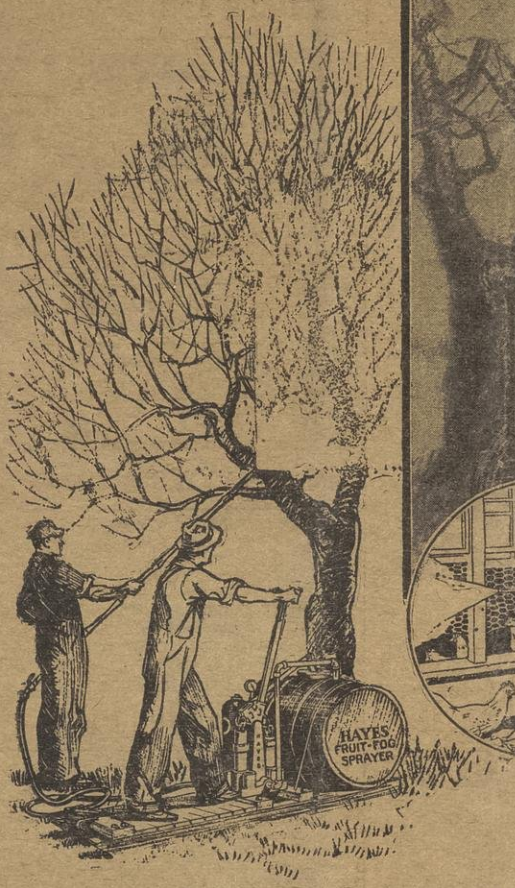
REAL ESTATE

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

SEEDS, BULBS, PLANTS, SHRUBS

BULBS OF ALL DESCRIPTIONS.—Write for prices. C. Keur & Sons, Hillegom, Holland. New York Branch, 82-84 Broad St.; also 10418-113th St., Richmond Hill, L.I., N.Y.

YOUR ADDRESS FOR HOLLAND GROWN Hyacinths, Tulips, Narcissus, Crocus, Gladiolus, Iris, Paeonies, and all miscellaneous bulbs and roots. Please write for catalogue to Vendel & Van Ginhoven, 116 Broad St., New York, N.Y.



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Send the coupon for our FREE Book and read how Hayes guaranteed 300 lbs. pressure and the scientific Hayes nozzle produce Fruit-Fog—the scientifically atomized super-spray. Learn how Fruit-Fog covers every limb and twig like a fog or mist—does an absolutely thorough job.

This is why the Hayes System of Fruit-Fog Spraying kills not only the outside pests, but ALL the pests.

And, by killing disgusting, tormenting bugs, lice, and mites, Hayes Spraying also adds amazingly to farmers' potato, hog and poultry profits. It will add thousands of dollars to your profits.

Hayes Power Sprayers are scientifically made to give endurance and greatest efficiency under high pressures. The famous Fairbanks-Morse "Z" Engine insures reliable engine services.

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Tell us what you want your sprayer to do, and we will tell you the style best suited to your needs, and its price. We will also send the new Book of Hayes Sprayers and Valuable Spraying Guide FREE.

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Distribute Hayes Power Sprayers, Engines and Repairs. Therefore Hayes users are within 24 hours of a service station at all times. In case of accident at a critical time this quick service may save your fruit crop. Hayes Hand Sprayers are distributed by hardware, implement and seed jobbers.

Hayes Pump & Planter Co., Dept. C, Galva, Ill.

Please send FREE and without obligation your Big New Book of Hayes Sprayers and your Valuable Spraying Guide.

Number of trees .....Average age...

Other uses .....

Name .....

P.O. .....

State .....R.F.D. .....

Hayes Pump & Planter Co., Dept. C, Galva, Illinois

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FRUIT-FOG Sprayers