The Canadian Bee Journal

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We are in receipt of a letter from Mr. Henry Kacer, of British Columbia, who reports that bees have wintered well. He states that they have there a provincial inspector who advocates the spraying of fruit trees in bloom. This is almost incredible. There must surely be some mistake. If it be true, he ought to be shown our Ontario law on the matter as soon as possible. We have sent Mr. Kacer a copy of the Act, and urged him to call the attention of the B. C. Agricultural Department to it.

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Apropos of the discussion on the Co-perative Selling of Honey, the following ill not be out of place. It appears the itish bee-keepers are in the same boat Canadians in this matter of fixing rices :

Owing to the success of the British ee-keepers' Association in furthering the lt of bee-keeping, and to the great help ceived from the bee journals and trav-ling experts, the last few years have en a very great increase in the number bee-keepers producing pure honey, for hich they have to find a market.

I would therefore ask: Why cannot e parent Association publish an official otation early in the season in the ocer and other trade papers, so that trade buyer shall not fix the price to t his own ideas. At present the modus randi appears to be something like : The middleman gets into touch h the owner of a large apiary, and, ing purchased the whole outfit at, say, per cwt. and 6s. 6d. per dozen for ions (glazed), the transaction is duly ed in the Grocer, and this is trumpet-abroad as the " market price " for the on. The retailer gets about 1s. per ion or 1-lb jar—a profit out of all portion—and in your own advertisement columns a company buys up and resells to the trade owing to this practice. Personally, I can sell all I get at a remunerative price, because I will not sell at less than people pay for dripping or margarine. The consumption of honey is enormous, as was shown recently by an illustrated advertisement for an emulsion, in which it was stated that forty tons of foreign honey was landed as " a portion " of the requirements of the manufacturers in question. Let the producer of the real native article stand out for a fair price, and then the buyer who wants an inordinate profit will have to be content with the glucose-doctored stuff for his " cheap line."—Bee-Keepers' Record.

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The Trade and Commerce Department of the Dominion Government has an enquiry from a Leeds firm (No. 760) in reference to samples and prices of honey from Canadian exporters, of honey suitable for manufacturing purposes. Also an enquiry (No. 795) for Canadian bee appliances used by bee-keepers. They ask for catalogues from Canadian manufacturers of goods suitable for this trade.

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As will be seen by our advertising columns, Mr. R. F. Holtermann and Mr. W. L. Bayless are rearing queens for sale. Both are experienced bee-keepers.

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The C.B.J. has to announce the pleasure of a call from **Mr. F. R. Beuhne,** of Tooborac, Victoria, Australia. Mr. Beuhne is a big bee-man when at home, occupying a semi-official position with the Victoria Government. His trip to America was partly on private business in connection with the sale of patent rights on a machine of his invention, which

melts the cappings while uncapping and separates the honey from the wax. The A. I. Root Company has bought the patent rights for the United States. He was also negotiating with some Canadian supply men for the Canadian patent rights. He is also representing his home Government with a view to getting some knowledge of agriculture while in this country. His machine will be a great boon to bee-keepers, in that it disposes of the wax from cappings and the honey therein with a minimum of time and labor. He reports that the difficulties from foul brood are not so extensive in his country as from bee paralysis. This latter disease is very extensive, often wiping out whole apiaries in a very short time. Mr. Beuhne is a very extensive and successful bee-keeper. We trust his American tour will prove profitable and pleasant.

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Later reports are not so encouraging. Clover is reported very rank and late. Set-back will be experienced if feeding has not been attended to after the close of fruit bloom.

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We had the pleasure of spending an hour with Mr. Frank Adams in his apiary a few days ago. He was employed in clipping queens introduced last fall. They were a beautiful lot of queens. All were raised from one imported queen, from which he obtained upwards of one thousand queens. Mr. Adams is a close student of all the latest methods of queen-rearing, and has been most successful.

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Notwithstanding our political differences, we feel that we but express the feelings of all Canadian bee-keepers when we express regret at the defeat of the late Minister of Agriculture, the Hon. Nelson Monteith. He proved himself always ready and willing to assist the bee-keeping industry as far as possible. We trust that another seat may be found for him, that he may be permitted to continue the work so ably begun in the Department of Agriculture.

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At this writing (June 11th) we have had no announcement of the appointment of foul brood inspectors for the present year. We hope to have the information before we go to press on the 15th.

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As we go to press clover is coming into bloom, and with a good warm rain now prospects are good for an abundant crop. Lucky is he who attended well to his bees last fall and gave them abundant stores. He will now have a good force of honey-gatherers. Coaxing the bees on in the spring with stimulated feeding when in a weak condition will not bring results, though it may serve to save a hive. The expected inrush of honey, now that clover is blooming, and, owing to its abundance, likely to be prolonged, all available empty combs which are clean and in good condition for storing surplus should be prepared for use. To have ready-built combs on hand will ensure a considerable increase in the amount of honey gathered, and there must be few who have not spare combs by them this year. Those who desire to limit swarming, and possess hives full of bees, must give timely room, even if no surplus honey is being gathered, for the good reason that, when hot weather comes suddenly upon us, and bees are cramped for space, no after care will prevent swarms from issuing. Do not use much smoke when examining or removing surplus; the odor of it hangs about the honey for a long time, and is not pleasant; just a puff to alarm the bees is all that is required, and while honey is coming in plentifully no smoke at all need be used. In very hot weather, if the bees exhibit signs of distress by hanging out give ventilation at the bottom of the hive by raising it up a little from the floor board. Entrances should be shaded if it can be conveniently done.

QUESTION DRAWER

By Mr. F. P. Adams, Brantford

Q.—Could I transfer the bees and brood from two-frame nuclei into hives containing frames of a different size by putting the nuclei frames into supers of the right size to fit them, and placing these supers over my own hives with queen-excluders between, after hunting up the queens and placing them below?

A.—If you can place a frame containing a little brood in the lower story it will be all right to put the queen there, but otherwise the bees would desert her for the brood above, and she would likely turn up missing in a few days.

Q.—What is the best way to introduce queens to a colony already containing a queen with the regular Benton shipping cage?

A.—Remove an outside frame from the brood chamber and shift the rest over to make a vacant space in the centre of the brood-nest. Remove the cardboard covering from the wire cloth on the cage. Cork up the candy hole, and tack a thin piece of wood across the back of the cage. Then place the cage, wire cloth down, in the space left by the frame withdrawn. The thin strip of wood will support the cage by resting on the adjoining frames. Cover up the hive and leave it for three days. At the end of this time remove the old queen and take the plug out of the candy hole, letting the bees liberate the new queen.

Q.—Will you kindly give a system of dividing bees to make increase, as I do not get many swarms, and would like to increase much faster than I do. I work for section honey, and keep them well supplied with supers, and put wedges under hive body. I have not seen any signs of swarming yet, nor have I seen any drones, but some of them are capping the first crate of sections. Would it do to take two frames of brood with adhering bees and start a swarm in that way by giving them two frames of drawn comb, filling out with dummies, and giving them a queen cell or queen? How can white clover honey and raspberry honey be kept separate when both are in bloom at the same time? I think this will puzzle the most of us.

WM. A. O'CONNOR.

A.—The difficulty encountered in taking two frames of brood from a hive, with adhering bees, and making a nucleus, is that usually the frames contain quite a percentage of very young larvæ, which perishes for want of attention during the first few days it is separated from the warmth and attention it should have secured in the parent colony. This can be overcome by raising the brood into an upper storey above a queen-excluder, and leaving until capped over. The frames, with their adhering bees, can then be taken to the new stand and given either a ripe queen cell or laying queen. Another very good method of making a considerable increase during the swarming season is to carefully brush part of the bees off the frames of a colony that has swarmed, in with the swarm, and then place this brood over a medium colony, with excluder between, letting the cells ripen and the brood get pretty well capped over. The brood and cells can then be divided into several small nuclei, from which the queens will mate. Just a word of caution in handling cells after the swarm has left the hive: Be sure and don't jar them in any way, and also see that you put them where there will be plenty of bees to keep them warm until they are about ready to hatch out, which will be about five or six days after they are capped over.

In answer to this last question, would say that there is no way of keeping two different kinds of honey separate if they

are both coming in at the same time. Both raspberry and clover honey are of good quality. It will not make much difference to the grade even if they are mixed.

REPORTS

Bee-keeping in Victoria County has got rather a check this cold, wet spring; 30% of a loss is about the best I have heard of, while 50 to 80% is quite common. There was no good weather for bees till about the last week in May. Then the fruit bloom and dandelions both made a great show for very little over a week, and now bees are doing nothing and there will be no clover in bloom for at least two weeks yet. Any strong colonies that had drones on the way have started to throw them out. This is a warning for bee-keepers to start and feed late in the season though it be. The clover is looking fine, and those having bees may expect a good crop.

JAS. STORER.

Lindsay, June 5th.

Our bees have worked up well now, but had a hard time before May 13th. A lot of bees were lost in this part of the country, from 20 to 50%. My own loss reached 20% and another 20% rather weak, but I have 75% young queens, and the colonies work up wonderfully. It is a pretty sight to see all the young bees come out at noon for their play spell.

A word of warning, however: Beware of old heavy combs. They will, if you weigh your hive in the fall, deceive you sometimes by ten pounds per colony. I have lost a few colonies by starvation in that way. Bee-keepers, give us more of your mistakes—we learn by it. Don't be ashamed, for, as Mr. Byer says, "there are others."

JACOB HABERER.

Zurich, Ont., June 12.

BRITISH CHAMBER OF COMMERCE IN PARIS

The Canadian Section of our Chamber is exceedingly interested in the recent Franco-Canadian Commercial Convention, and desires to facilitate by every means on its part the export of Canadian produce to France.

The long existence of our Chamber, and its experience of the conditions of French trade, will, we feel, enable us to be of great service to Canadian exporters who wish to avail themselves of this market, and we should be glad if you would do us the favor of inserting the enclosed paragraph in your valuable journal, so that the facilities which we offer may be brought prominently to the notice of the producers of the Dominion.

Manufacturers and dealers in produce wishing to cultivate trade in France should write to the British Chamber of Commerce (Canadian Section), 17 Boulevard de la Madeleine, Paris, France.

What the Chamber does for its members:

Offers the experience of forty years of Continental trade.

Puts Canadian houses in touch with suitable agents.

Obtains information on the commercial standing of French firms.

Notifies changes in French customs duties, proposed commercial legislation likely to affect special trades, etc.

Communicates enquiries from French buyers of Canadian goods.

Files members' catalogues for the information of buyers.

Gives commercial and statistical information of all kinds.

Aids members in customs and technical difficulties.

D. F. FLETCHER,
Chairman Canadian Section

British Chamber of Commerce, Paris,
17 Boulevard de la Madeleine.

TO BEGINNERS WHO TAKE A FANCY TO BEE-KEEPING

(By George Ott, Arkona, Ont.)

Whatever occupation a young man takes a fancy to he will most likely succeed in, but he must have a system to work by. Without system he cannot succeed in any kind of business. Few young men take a fancy to bee-keeping. Many young men take a fancy to poultry-raising, and should visit some good poultry yards and see the different breeds of poultry they raise, and find out which breed is best adapted to their wants, and find out how to build a convenient poultry house, and get all the information they can. Subscribe for a good poultry journal, and get some books on poultry-raising. Read them and study up the poultry business, and no doubt, with good management, they will have good success.

Other young men take a fancy to fruit-growing, and should visit some of the large fruit farms, where all kinds of fruit is grown, and find out what kinds of fruit are the most profitable and best adapted to the climate and soil. Subscribe for a good horticultural journal, buy some good books on fruit-growing, and read them. Experiment on what is read, and by a good system of management they will make successful fruit-growers.

A few young men take a fancy to bee-keeping. New beginners, before investing any money in bee culture, should invest a few dollars in visiting some of our enterprising bee-keepers who have made bee-keeping a success. If you are living in Canada, subscribe for the Canadian Bee Journal. In it you will find advertised where to purchase good bee books; in it you will also find where those enterprising bee-keepers have their apiaries located. Now make a start on your visits. Tell the first bee-keeper you call on that you intend going into the bee-keeping business and you want some information. He will be delighted to show you his nice Italian bees. He will show you all through his bee-yard, which is nice and tidy-like; boxed-up hives, all nicely painted up. His hives are all of one style and one size, so that any comb frame will fit any hive and any surplus box will fit any hive—everything all in a uniform shape, just as it should be. He will tell you he runs altogether for extracted honey. His hives are made on purpose for extracted honey. He will tell you he can get more honey per hive by extracting than section honey, but it does not sell for as much per pound as section honey. He will also show you his honey extractor, uncapping can, wax extractor, honey knife and bee-smoker, and show you how to use them, and many other things which are necessary about a bee-yard. He will tell you he winters in the cellar, and will show you all through his cellar, which he built on purpose to winter his bees in. Now when you have got all the information you can from this bee-keeper, go and visit a second bee-keeper who has been also a successful bee-keeper, and who has altogether a different style of movable comb frame hives from the first one visited. He will also be pleased to show you his bees. His hives are nicely painted with different colors. He will tell you he runs altogether for section honey. He will tell you he can make just as much money out of his apiary by taking section honey as with extracted, and with less bother. He will tell you he winters his bees outdoors in clamps, packed between hives and clamps with dry sawdust. He will say he seldom loses a colony of bees when fixed up in this way for winter, provided they have plenty of good honey. He leaves his bees in clamps till apple blossoms begin to show up before he takes them out of the clamps. By this time the weather will be warm, and there will be no spring dwindling. Next go and visit a third bee-keeper. He will also show you his bees. This bee-keeper has all kinds of different styles of

hives, which he has picked up round about the country where bees have died. Some of these hives have been made by persons who never kept bees. The frames will probably go down so tight in the hive that the bees glue them fast to the hives, and the bee-keeper cannot remove them. One frame out of one hive will not fit another hive. His bee-yard is in a bad shape. He winters his bees out on their summer stands without any protection. He loses nearly all of them in cold winters. Perhaps the hives are not cleaned out where the bees died, and the moths get in and eat up all the old comb and eat up his hives. Some of his bees are native black bees. They are perhaps so cross you cannot go near them without getting stung. He tells you this is too cold a country to keep bees. They freeze to death in winter. He tells you he gets honey enough for his own use. This man takes no fancy to bee-keeping, and has no system to work by and has made bee-keeping a failure. Now go and visit five or six more bee-keepers, and be sure and visit some of those farmers who keep bees in the old-fashioned box hives. Your visits should be made in the height of swarming season, which would be (in Ontario) about the 10th and 15th of June. The bee-keepers are generally at home at this time of year, busily working among the bees, and will show you how to do many things by ocular demonstration. Now when you have visited all these bee-keepers, go home and study and dream your visits all over and make up your mind the kind and style of movable comb hive that suits you best. Comemnce with a hive used by a practical bee-keeper who has made bee-keeping a success, and use no other. Have your hives all of one pattern and one size, so one frame will fit any hive in your bee-yard, also the honey surplus boxes. Now we have the new beginner ready to buy his first colonies of bees. I would caution the new beginner not to go out in the country among the farmers who keep bees and buy your bees because you can get them cheap. Do not have anything to do with such bees at any price. Go to some practical bee-keeper, who has made a success, and who has a good strain of Italian bees, and tell him you want to buy a few of his choicest colonies, and you have the money to pay for them. You may have to pay a fancy price for them, but you will be a gainer in the end and will be well pleased. They are so quiet and so gentle to handle, and no doubt you have got the worth of your money, as I always have found those practical bee-men honest. Your bee-yard should be perfectly level, as hives should sit plumb on the sides and a little lower in front than at the rear, thus preventing water running into the entrance on the bottom-board, which would cause dampness in the hive. Set your hives in rows running east and west, with the entrances facing the south. Set your hives in pairs in the rows. First set two hives side by side one foot apart, space off ten feet and set two more side by side a foot apart, and continue to do so until your hives are placed. Each hive should have a platform about ten inches high from the ground for the hives to set on. You should have a lawn mower to keep the grass clipped short in your bee-yard. This can be done early in the morning before the bees begin to fly.

Your bee-yard should be clean and tidy. This is system, and you will not be ashamed to invite your visitors into your bee-yard to show them your nice Italian bees. You may have a few hives made with a glass in the side, with a door over the glass to see the bees work. You may send to some bee-keepers' supply house and get half a dozen rubber gloves and half a dozen Italian bee caps for the ladies to put on when they come to visit your bees. We don't like to have the ladies stung by our bees when they take a walk through our bee-yard.

By the experience I have had with bees I would say that there is no more luck

about bee-keeping than there is about keeping any other kind of stock. It is just the way you care for them, and it is easy when you know how. Study the nature of the bees. Be out in your bee-yard whenever you have leisure time and get acquainted with your bees. Most all new beginners dread bee stings. Never mind bee stings. You must get used to it. The oftener you are stung the less it will affect you when once you get thoroughly inoculated with the poison. It will have no ill-effect on you. All old bee-keepers will tell you that bee stings are healthy—no better medicine for rheumatism than bee stings. If you are nervous and cannot sleep good at night, go into your bee-yard and get stung a few times, and it will make you sleep good, even if you do get up in the morning with one eye swelled shut.

I am an old bee-keeper 81 years old, having kept bees 52 years, and have always made my own hives and attended to my bees without any help up to the present time, and having been stung thousands of times by the bees, I never feel better than when working among them and getting stung every day. In the spring, when the bees commence to fly, I often go into my bee-yard on purpose to get stung by the bees. It is the best spring medicine you can take to cleanse your blood.

Some years ago I sold half a dozen swarms of bees to a man living not many miles from me. This man was too stingy to leave honey enough in the hives for the bees to winter on. His bees all starved to death. I knew another man who extracted all the honey from his hives just at the close of the honey harvest. He, too, lost all his bees. You never should extract from the brood-chamber from hives you intend to winter over.

The wise bee-keeper will not blow smoke into hives when a flow of honey is on, as bees always fill their sacks with honey when smoke is blown into the hive and when filled with honey will remain at home and will not leave for the fields to gather honey for a whole day. A strong colony of bees will store from ten to fifteen pounds of honey in one day. We should give the bees all the help we can to store honey when the honey flow is on. A bee-keeper also should never blow smoke into the hive when putting on surplus boxes or when taking off surplus boxes. When using a smoker, do not fill it with old cotton rags, shavings or dry, rotten wood. This makes too hot a smoke. When hot smoke is blown among the brood it kills the life germ of the larvæ. This makes a bad smell in the hive, and worries the bees, so that they dwindle down and will not prosper as they should. The best thing I have ever used to burn in a bee-smoker is bee fungus. This fungus grows on the outside of old maple stumps, and is the shape of a half-moon, and is white on the under side and of a punky nature. Dry it and cut up in small pieces about two inches square. A smoker filled with this fungus will burn for a long time and make a mild smoke and not too hot to do any harm to the bees and brood, and will quiet the bees in less time than any kind of smoke I have ever used. Never blow tobacco smoke in a hive; it stupefies the bees and retards their work. I would just say to young men who take a fancy to bee-keeping, before commencing to keep bees, if you are in the habit of using tobacco and drinking whiskey, you had better lay aside this bad, filthy habit, as the breath of such a young man is very offensive to the bees. You know the good Book tells us to cleanse ourselves from all filthiness of the flesh, and what is more filthy to the bees than to have a young man smoking tobacco in their sight? They are most sure to go for him and use their sharp weapons to drive him out of the bee-yard. You know the little Italian chaps are tidy housekeepers, and like a nice tidy cottage to

live in and a tidy room to store their nice section honey in, and a nice, tidily-dressed young man to wait on them and see that their cottages are all fixed up in uniform shapes, with good roomy streets between them. Keep these streets clear of rubbish. These little chaps want style and system as well as we do, and want to be tucked up snug and warm before cold winter weather sets in; and in the spring, when they are set out on their summer stands, to have the bottom-boards cleaned of dead bees and litter. When the first flow of honey comes on it is a sight to see the little fellows rushing out of their little cottages to the fields to fill their sacks with honey and store it into the upper storey of their cottage for the owner who is so kind to look after their wants. Bees also are a source of profit to their owner outside of their products of honey and wax. It is a well-known fact that bees fertilize fruit blossoms and cause more fruit to set and mature. The wise Creator has caused the secretion of sweets in the flower for the very purpose of attracting the bees to it for fertilization. Here the bee-keeper and the horticulturist run parallel. It has also been proven that gardeners cannot raise good crops of melons, cucumbers and tomatoes where no bees are kept. This has been proven by fertilizing the flowers by hand. Large crops have been grown. Bees also fertilize buckwheat and clover blossoms, which will bring to the farmer more bushels to the acre and a nicer sample of seed.

It is no wonder the fruit-growers round about the beautiful village of Arkona grow such quantities of all kinds of nice fruit, where so many apiaries are conducted by such enterprising bee-keepers as T. Langel, A. Batriam, George Huntley and myself. My apiary is nicely arranged and is inside of the corporation of the village, and yet there is room for thousands of colonies of bees to be placed round about among the farmers who keep no bees. What an addition to a farmer's household it would be to have a few nice hives of Italian bees to fertilize his flowers and fruit and store a nice lot of honey for his own use. Every farmer in Ontario who has boys and girls should keep a few bees and subscribe for the Canadian Bee Journal and purchase a few good bee books. Let the boys and girls look after them, and give them a share of the proceeds, which would buy many little necessaries which they are in need of.

It is a well-known fact that the Province of Ontario is a good field for the enterprising bee-keeper and a most desirable place to live in. This has been proven by prizes secured by Ontario bee-keepers for their displays of nice honey exhibited in different parts of the country. Bee-keeping in Ontario is in its infancy yet, and the time is not far distant when Ontario will be noted for its production of honey and wax. Let any one of us take a visit round about the Province of Ontario when fruit trees are in blossom, or when the fields of alsike clover are in full bloom and the roadside and pasture fields are blooming with white clover blossoms, and inhale the sweet perfumes secreted in the flowers, and he will be obliged to say, "Yes, Ontario is a Garden of Paradise for the honey bee to dwell in."

Now, as the National Bee-keepers' Convention is to be held next fall in Detroit, Mich., so near the border of Ontario, those young men who have taken a fancy to bee-keeping, and also all enterprising bee-keepers in Ontario, should not fail to attend and take some of the products of their apiaries.

Now, Mr. Editor, if I have contributed any item which would be a benefit to the new beginner I will feel amply rewarded. I trust I have not trespassed on your space too much.

Make your wants known by placing a small ad. in the Want and Exchange column of the C.B.J.

THE HONEY BEE

Incalculable Value of the Product of Its Marvellous Storehouses and Labor in the Fields

Mr. E. F. Robinson, of Victoria, B.C., has kindly favored us with the following very interesting article, which was prepared by him for the Victoria Natural History Society:

Before taking up the subject of fertilization of plants by the bee, I must make some reference to the fruits of this insect's labor, viz., honey, wax and pollen.

Nectar as gathered by the bee fresh from the fields is composed of about 60 per cent. cane sugar and 40 per cent. water, also a small quantity of volatile oil, which gives to different kinds of honey their distinctive flavors and odors. To this nectar when stored in the cells the bees add formic acid, which changes the cane sugar into grape sugar. This formic acid is secreted by glands in the head of the bee, and comes in contact with the nectar while it is being disgorged from the honey sack into the comb cell; it acts as a preservative, as it is a powerful antiseptic. The acid also prevents the honey candying by this conversion from cane to grape sugar. Formic acid also forms the principal ingredient of the poison injected at the time of stinging. Honey is a pure hydro-carbon, and when used as a food by the bee is completely used up in developing heat, which is so essentially necessary for brooding and wax manipulation. A temperature of at least 70° is required to successfully raise brood or build comb. Honey is undoubtedly the best food for the bee, especially when introduced into northern counties by man. It being a hydro-carbon, it serves the bee in winter, just as the large accumulation of fat serves the bear, namely, to furnish warmth during the long hibernation in the cold weather. On account of this very complete combustion, as it were, there is very little accumulation of feces, and the bee is enabled to stand a confinement to the hive for over four months without any great inconvenience in this respect; but if, through shortage of stores, it should eat any pollen (which is a nitrogenous food), then dysentery sets in by the fecal accumulation, and the only remedy is a cleansing flight to save the colony.

A bee's load of honey, or nectar, is about one grain, and the largest amount stored by a colony in one day has reached 11 pounds 2 ounces. The bees which stored this amount numbered 50,000, or about 10 pounds, there being 5,000 bees to the pound. No other nation has turned its attention to honey production like America. Many men in California harvest their forty tons each in a good season, and a Captain Hetherington, in New York State, numbers his colonies by thousands. The above day's work of 11 pounds 2 ounces of honey stored means 77,875 bee-loads, and, allowing four blossoms visited for each load, we have 311,500 fertilizations, as the result of one day's labor of these industrious insects.

As regards wax, it also is a pure hydro-carbon, produced from its like, honey, but at a great sacrifice to the latter, as it requires the consumption of 20 pounds of honey to furnish the material to build one pound of comb. Fortunately, this precious material goes a long way, as one pound of comb will hold about 20 pounds of honey. I may mention that man, with all his scientific knowledge, has never been able to furnish a substitute for wax. All attempts to adulterate the comb foundation given the bees with paraffine, stearine and other substances have completely failed, for no other substance will stand the weight of honey in the heat of the hive during the summer without sagging and breaking down.

Not only is this material so well adapted for the purpose, but the architecture

of the comb is without an equal in its mathematical correctness, its economical construction, its capacity in proportion to precious wax used, and the wonderful delicacy of the prepared material, to which add the fact that this wonderful fabrication is produced by a throng of insects in a dark hive, and I feel sure you will ask, Where is the dividing line between instinct and reason?

The comb cells are fifty to the square inch, being twenty-five on each side of the comb, so that a comb one foot square will give breeding room for 7,200 bees, and a twelve-framed hive has a capacity of 86,400 cells. The thickness of the rhomboidal base-plates is 1-230 of an inch; the hexagonal walls are much thinner, being only 1-353 of an inch in thickness, but these partitions have a thick edge or coping of wax, which adds much to their strength, enabling the bees to travel over their delicate structure without breaking the extremely thin walls. Scientific men have tried to account for this wonderful cell-building instinct, but I think their explanations fall very short in unraveling this very difficult question.

I now come to pollen. It is more difficult to explain all connected with its use —that is, as to the amount collected and used in feeding larvæ, etc. Pollen is the only nitrogenous food used by the bee, and large quantities are consumed during active brood-raising. I should think it a conservative estimate to place the quantity used at five pounds per colony of 50,000 bees, being about one-half grain for each bee raised, and used in capping brood-cells. This pollen, as we all know, is the active fertilizing agent in plants, and is absolutely necessary to the bees' welfare. The brood will starve without it, even when surrounded with honey, and at times of scarcity the bees will use rye meal or mill dust as a substitute. When the pollen grains are of such a nature that they will not pack in little pellets, as we usually see it on the legs of these insects, they will dust their bodies in the farina, and so carry home the precious food.

In gathering this food, the bee always confines its labor to one specific blossom or plant for each load, and if a cell full of pollen be cut through, the pollen will be found in layers of different colors—light yellow, dark yellow, brown or green. When a bee arrives home with a load, she inserts her two loaded hind legs into a cell and with the middle legs rubs the pellets off and takes no further notice of them. The nurse bees now moisten the pollen with honey, and pack it down with their heads and mandibles; it is always stored close to the uncapped brood, so as to be handy when wanted. Nothing will so stimulate breeding as a supply of fresh pollen; without it the newly-hatched brood will die in twenty-four hours.

When we take into consideration the ease with which this insect can be domesticated and brought into subjection by man, which he cannot do with any other insect and give it freedom; that it will invariably settle in the vicinity of its hive from which it has just swarmed, instead of going off direct to the woods; the freedom with which it surrenders to man, in spite of its formidable sting; the fact that it lives over the winter in colonies, so as to be on time in great numbers when our fruits are in blossom in the spring and early summer; that its food at this particular season of the year is pollen, and the great precaution shown all through its domestic economy to preserve and perpetuate its kind, must go to show and convince us that this wonderful insect is of far more importance to the welfare of man than it is generally credited with.

It is well known that if it were not for the humble bee we should get very little clover seed; they had to be imported into New Zealand before that colony could grow its own clover seed, but these insects are not in sufficient number to be of much service until late in summer, and

on this account the farmer turns his first crop into hay, and depends upon the humble bee to turn his second crop into seed. (Read Darwin, page 57.)

Important as the humble bee may be, still it can never serve man like the hive of bees, until it stores more food, and lives over the winter in colonies, so as to be plentiful in the spring—for it is then that Nature clothes our fruit trees in beautiful colors and envelops them in a sweet perfume, which attracts these marriage priests, the bee, to fulfil one of the greatest blessings to man—namely, the replenishing of the earth with endless varieties of flowers and fruit by cross fertilization, for we are now dealing with Nature's method of propagation and variation—namely, seedlings, from which all the varied and beautiful species of plants are derived, and by which only can the stamina and constitution be kept up. All horticulturists, in raising hardy plants and trees, to stand the rigor of northern winters, advise raising seedlings, especially has this been the custom in peach culture. It is also very essential that our apples, pears, plums, etc., should be cross-fertilized, for seed that has been so crossed with pollen from another variety of the same species of plant will be full and plump, showing a strong vitality, which again influences the covering of those seeds which we call the fruit. This is shown in a very marked and decided manner in the apple or pear, which has five carpels or seed pockets, needing five distinct fertilizations, and should any of these seeds fail to develop in any section, that part of the fruit will be small and defective, and in total failure to set any seed the fruit will be small indeed and quite unmarketable. (Read Darwin, page 74.)

The influence of these cross seedlings is shown very pronounced in the fruit produced (read Prof. Saunders on the grape), and the extent to which this variation (beneficial or otherwise) can be carried is exemplified in the great number of varieties of our domestic and wild fruits and flowers, which must all have sprung from seedlings. I may mention a few chance seedlings of merit, with which I am intimately acquainted; for instance, there is the "Jessie Strawberry," which was a chance seedling of the Sharpless, and a decided improvement over its parent; the "Cuthbert Raspberry," which was found in a wild berry patch; the "Delaware Grape," found in the garden of Mr. Paul Prevost, Frenchtown, N.J.; and also the "Princess Louise Apple," found by Mr. Wolverton under one of his "Snow" or "Fameuse" apples trees, and disseminated by the Ontario Fruit Growers' Association on account of its high quality, and to show the value in which some seedlings are held, I will mention that the "American Wonder" pea brought the hybridizer $1,000 for the first bushel; also "Fay's Prolific" currant (a cross between the Cherry and Victoria) brought the propagator $20,000, and no doubt the originator twice that amount.

Now, when we consider the number of unisexual plants, like the Cob or Filbert nut, for example, in which the male and female flowers are separate and in different parts of the same tree, and in some of our domestic plants, like the hemp, hop and holly, in which the male and female blossoms are on different trees (read Darwin, page 73); also that some of our very best fruits, like the Bartlett pear and Northern Spy apple, are completely self-sterile, requiring the pollen from other members of the same family to fertilize them before we can indulge in their luscious fruits, we must acknowledge the existence and great value of some agency other than the wind to effect this fructification, and we must, without any doubt whatever, give the honey bee almost all the credit for the beautiful flowers that carpet this earth, and for the luscious fruits that are so priceless in contributing to our health.

And I now call your attention to the probable results from the storing of 1,000 pounds of honey, which means 7,000,000 loads carried by these insects, and if we multiply this by four, we have probably 28,000,000 visits to blossoms, carrying the life-giving pollen at each visit. Surely those who study this wonderful insect in all its workings with Nature will find

"Tongues in trees, books in running brooks,
Sermons in bees, and God in everything."

RENEWED GRANT FOR CO-OPERATIVE SPRAYING

The Ontario Department of Agriculture is again offering a grant to any five or more farmers or fruit-growers in the Province who will unite to form a fruit-growers' association for the proper spraying of their orchards. We understand that $6,000 is available for the purpose. There is no restriction this year as to the kind of machinery to be bought, as it was found that last year some of the best work was done with the large pumps, operated by hand-power, such as are now used at Simcoe and St. Catharines. Following is a copy of the regulations:

Regulations as to Coöperative Spraying

1. A grant will be made to any five or more farmers or fruit-growers who will unite to form a fruit-growers' association for the proper spraying of their orchards.

2. These grants will be distributed on the basis of so much per acre of efficient spraying, as determined by the inspection of the officials of this Department.

3. At least 25 acres of fruit must be thoroughly sprayed during the proper season by each association applying for a grant.

4. At least one acre of fruit must be sprayed on the farm of each of the parties subscribing to the above agreement.

5. Such associations, before receiving any portion of the grant, shall satisfy an inspector of the Department of Agriculture that the above conditions have been complied with. Such inspector shall have free access to the orchards throughout the season for this purpose.

6. Before the end of November a short report as to the results of the spraying and general crop conditions in the acreage covered shall be sent to the Department of Agriculture, on a form provided for that purpose.

7. No restriction as to the outfit to be purchased shall be made. It will pay to purchase the best equipment possible, as thorough work is absolutely necessary to success in spraying.

8. On request, the Department of Agriculture will, if possible, send a man well qualified in the preparation and application of the various spray mixtures to assist in starting the work or advise as to methods.

9. The grant will be payable on completion of the spraying season, and the receipt of a report from the inspector that the work has been carried out in accordance with above conditions.

10. Regularly organized coöperative fruit growers' associations will be given preference in the distribution of grants.

11. Where an association or member of an association has participated in the grants given during the previous year such association or member thereof shall be entitled to receive a grant on the acreage previously taken into reckoning at only one-half the amount given to newly organized associations.

12. All applications for consideration must be filed with the Department of Agriculture by June 1st.

NELSON MONTEITH,
Minister of Agriculture.

Toronto.

ADULTERATED HONEY

A Bad Sample Found in Toronto

I bought a 10-lb pail of honey from —— of this city, put up by ——. It is the worst adulterated honey I ever saw. It is an insult to the bee-keepers of Ontario to allow such stuff to be called honey and to be sold for pure honey to the public. I wrote Mr. —— ten days ago for an explanation about it, but have received no reply.

Has not the Ontario Bee-keepers' Association a standing committee to look after such adulterations? There used to be when I belonged to the O.B.K.A. Will you kindly give me the names of that committee and their addresses? If there is such a committee I can bring the matter to their notice. You will oblige if you give me the desired information as to how to proceed in the matter.

I intend to take up bee-keeping again in a short time. Honest bee-keepers cannot compete with those who adulterate honey as this now on the market here.

R. L. MEADE.

Toronto, May 21, 1908.

[In the above letter Mr. Meade has given us the names of the parties from whom he bought the honey, and also the party who put it up. For obvious reasons we have struck out the names. Their publication in this connection would be a serious matter for the C.B.J. if, from any reason, Mr. Meade has made a mistake. We have called Mr. Hodgett's attention to the matter, and he is taking steps to have a sample submitted to the Inland Revenue Department for analysis. We will publish the result when it is made known. If it is as bad as he states, the bee-keepers of this Province should know about it. Such stuff should be driven from the market, and it is the duty of all of us to assist Mr. Meade to get this case to the bottom.—Ed.]

CURED BY BEE STINGS

How a Schoolmaster Got Rid of Rheumatism

London, May 17.—There is a prevalent belief in many countries that the stings of bees act both protectively and as a cure for rheumatism.

Dr. Newton Friend, a reputable Suffolk physician, contributes to the current issue of Nature an account of a bee-sting cure which came under his personal observation.

Two or three years ago, he says, a schoolmaster who suffered severely from rheumatism in the back deliberately exposed his arms to the stings of bees. By the time his arms were well again his rheumatism had completely disappeared, and he has never had another attack.

The gentleman who took this heroic measure is now close to 50 years of age. —Toronto Globe.

THE FRANCO-BRITISH EXHIBITION

Will you allow me to inform your readers that a Congress of Bee-keepers will be held, under the presidency of Lord Avebury, at the Franco-British Exhibition, Shepherd's Bush, London, England, on Thursday, the 25th of June next.

The committee which has been appointed by the British Bee-keepers' Association to organize the Congress requests me to say that the Council of the Association will be glad if any of your readers can attend on that occasion.

J. B. LAMB,
Honorary Secretary of the
Congress Committee.

London, England, May 8, 1908.

[The above arrived too late for insertion in the May issue, notwithstanding that it was a few days late.—Ed.]

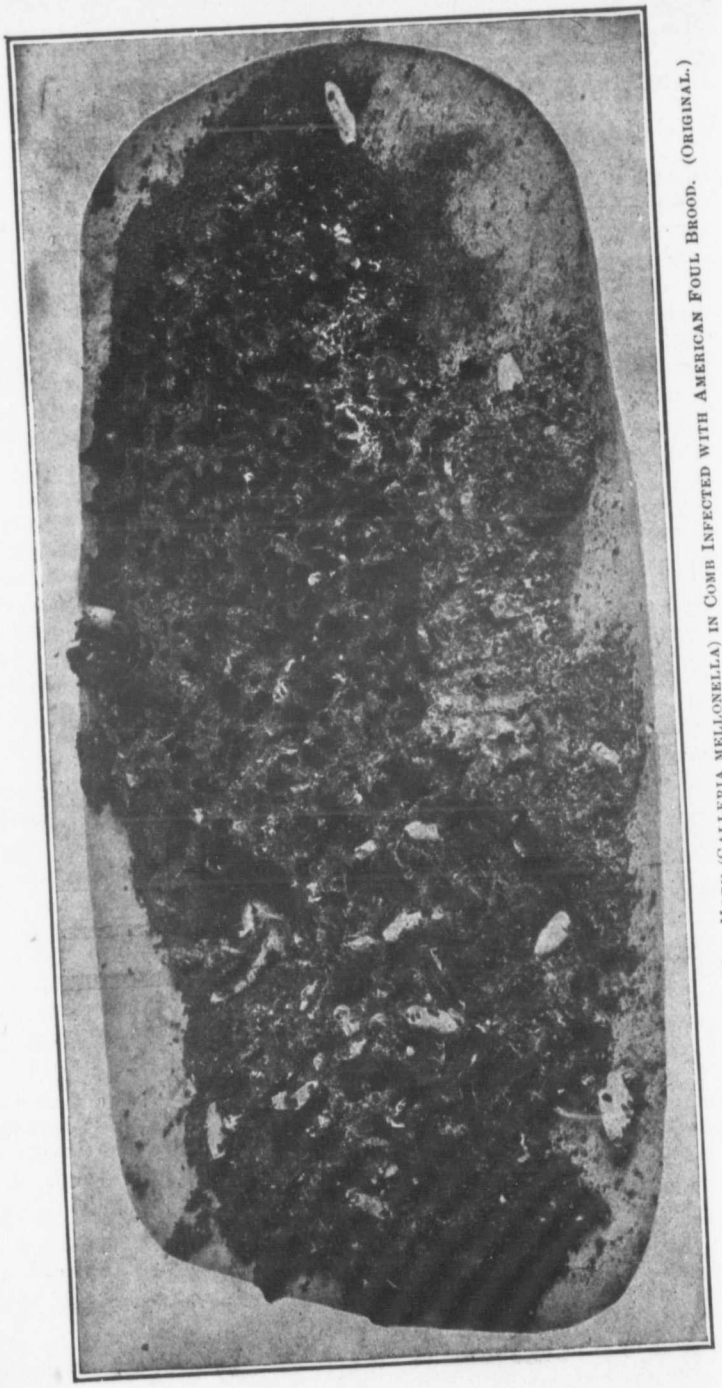

PLATE I.—WORK OF THE LARGE WAX MOTH (GALLERIA MELLONELLA) IN COMB INFECTED WITH AMERICAN FOUL BROOD. (ORIGINAL.)

WAX MOTH

By E

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WAX MOTHS AND AMERICAN FOUL BROOD

By E. F. Phillips, Ph.D.

U. S. DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY
Bulletin No. 75, Part II.

Introduction

It has generally been held by bee-keepers that, while the wax moths often cause considerable damage by destroying surplus combs and in other ways, they were not an unmixed evil, for by destroying combs infected with brood disease they were supposed to remove the infection. Text-books on apiculture and articles in various bee journals have repeatedly reiterated this statement . Evidently no person has seen fit to look into the question thoroughly, and it is the object of the present paper to record some observations which have been made.

When a bee larva dies from infection of American foul brood, it decays rapidly, and the mass becomes ropy, so that if a small stick or pin is inserted in the decayed mass and removed, the larval material adheres to it and will string out for an inch or more. This ropiness of the dead larva is very characteristic of this brood disease. Seemingly this ropiness makes it impossible for the bees to remove the infected material, and when the decayed mass dries down it forms a scale which adheres so tightly to the lower side wall of the cell that it cannot be removed without tearing the wax wall.

As the disease progresses in the colony the various cells of the brood chamber come to contain diseased larvæ and, later, scales formed of dried larvæ. It is probable that after a cell once comes to contain a diseased larva, it is almost impossible for another larva to reach maturity in a healthy condition, consequently the number of bees which reach the adult condition is constantly reduced and, as the old field bees die and are not fully replaced, the colony becomes weakened and finally dies out completely.

As long as the colony is strong the wax moths can do no damage, but as the bees decrease in number the combs offer a foothold to one or other of the moths and within a very short time the whole hive is one mass of wax moth tunnels, larval excreta and cocoons. The combs are completely destroyed, and nothing remains but the web and a mass of débris on the hive bottoms. If the moth larvæ actually ate the infected material, they would serve to remove the infection where the bee-keeper is too careless to do so—as is too frequently the case.

The two wax moths differ greatly in their habits in some respects, but it is not the purpose of this paper to discuss these points. The large wax moth (Galleria mellonella L.) is the most widely distributed, and is found in practically every part of the United States, and probably wherever the honey bee is now kept. The lesser wax moth (Achroia grisella Fab.), on the other hand, is not so widely distributed, but it is known to exist in various localities in this country.

Work of the Large Wax Moth

(Galleria mellonella L.)

Plate I is from a photograph of a comb, infected with American foul brood, on which larvæ of the large wax moth were placed. The comb was placed in a box to exclude light and was laid flat on a piece of paper. The larvæ at first worked on the under side of the comb, but gradually they got to the upper surface. It will be noticed that in one part of the comb the lower side walls of the cells remain intact; here the dried-down scales of American foul brood were thickest, and evidently this was the centre of the brood during the time of infection. The remainder of the area formerly occupied by comb is nothing but débris, with a few scales scattered here and there. Evidently only where scales are thick do they hold to-

PLATE I.—WORK OF THE LARGE WAX MOTH (GALLERIA MELLONELLA) IN COMB INFECTED WITH AMERICAN FOUL BROOD. (ORIGINAL.)

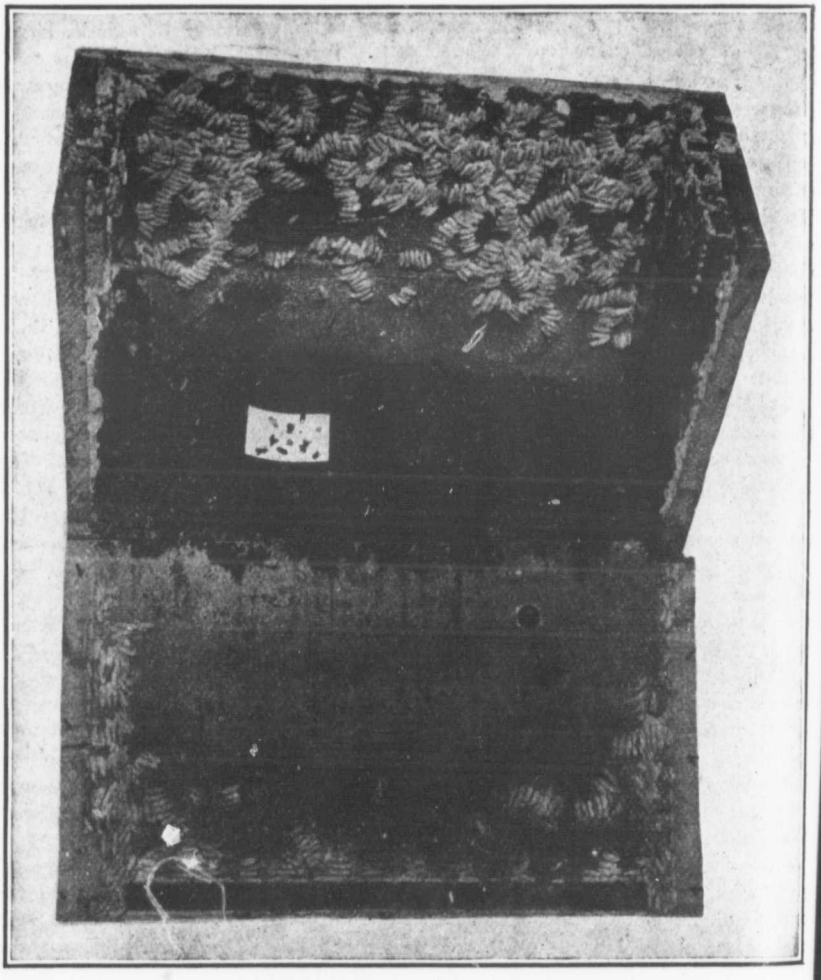

PLATE II.—HIVE INFECTED WITH AMERICAN FOUL BROOD, THE FRAMES REMOVED TO SHOW WORK OF THE LARGE WAX MOTH (GALLERIA MELLONELLA.) (ORIGINAL.)

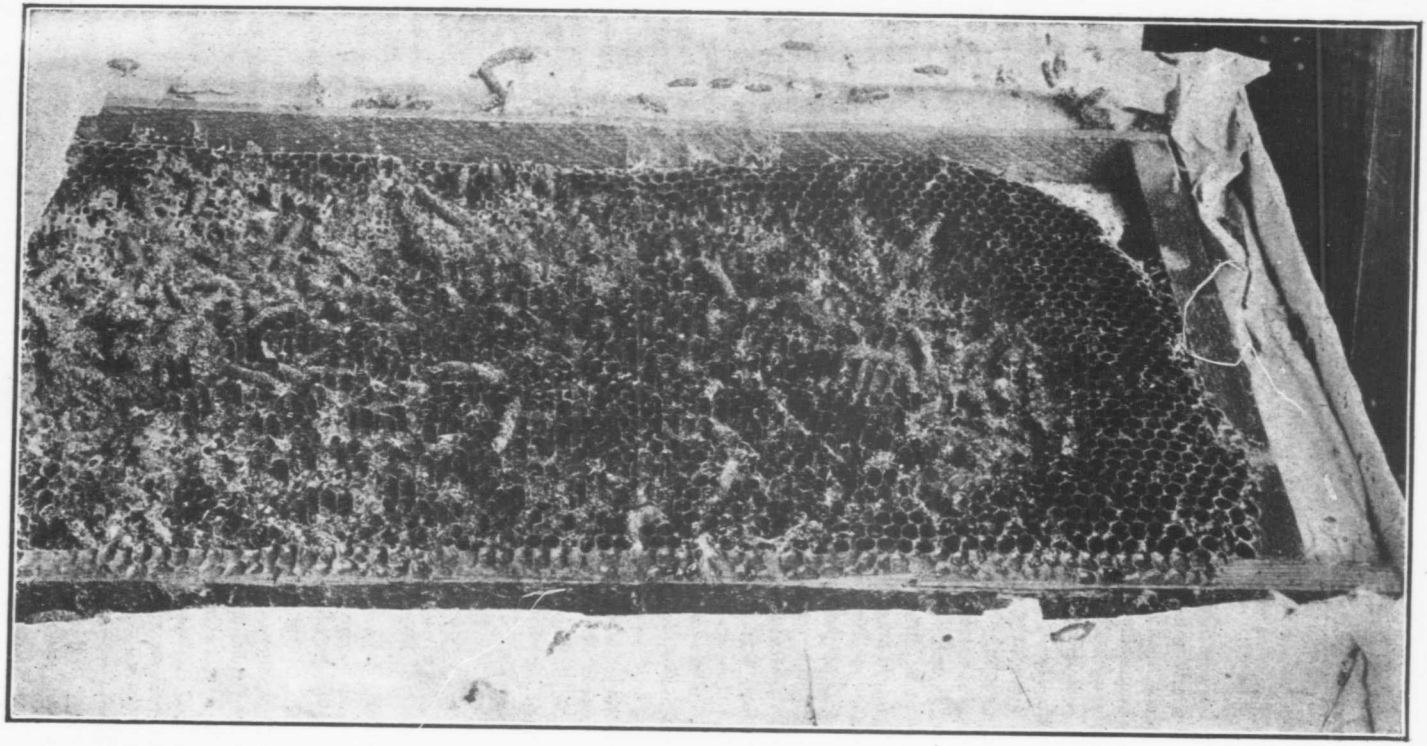

PLATE III.—WORK OF THE LESSER WAX MOTH (ACHROIA GRISELLA) IN COMB INFECTED WITH AMERICAN FOUL BROOD. (ORIGINAL.)

gether enough to stand upright. To show how the scales stand up, the web was removed from the surface. The background of the photograph is merely a piece of paper.

Plate II is a photograph of a rough box used for a hive during some experiments in producing American foul brood by the feeding of pure cultures of Bacillus larvæ. The five frames of this small hive contained thousands of the dried-down scales so characteristic of this disease. The box was put away in a closet and the large wax moth got into it, with the result that all the combs were completely destroyed. The webs and empty frames were removed for this photograph. The black mass in the bottom of the box is composed of larval feces and scales in about equal proportion by volume. On account of the reduction of the photograph the scales do not appear plainly; nevertheless, this demonstrates what becomes of the scales of American foul brood in a set of combs destroyed by Galleria mellonella. A few scales are seen placed on a card resting on the mass of feces and scales.

Mr. Burton N. Gates, of this Bureau, took some of these scales and put them in a small box with small larvæ of Galleria mellonella. The scales remained untouched and the larvæ died, evidently of starvation.

Work of the Lesser Wax Moth

Plate III is a photograph of a comb taken from a colony which had died of American foul brood. It was obtained by the author in June, 1906, near Fillmore, Ventura County, Cal., and is of interest as coming from an apiary which in less than two years had been reduced from about 200 colonies to 15 by the ravages of this disease. When the apiary was visited there were 151 hives in place, and of these 136 contained no bees. This comb was wrapped up and put away for future study, but became infested with Achroia grisella. Whether it contained eggs when taken in the apiary or whether the moths entered after the comb reached Washington is not known.

It is obvious from this illustration that the larvæ have not eaten the scales formed by dried-down larvæ which died of American foul brood. This comb was not cleaned of wax and illustrated very nicely the characteristic work of this moth.

After the photograph was taken the scales were picked out of the frame and this material was used in some of the inoculation experiments recorded in Circular No. 94; obviously, therefore, the material was still infectious.

Conclusion

In the control of brood diseases of bees the constant reinfection of apiaries from diseased combs of colonies in a wild state is one of the things which must be combated constantly. It is not difficult for a bee-keeper to rid his own apiary of disease, but he must constantly watch for an introduction of the disease from wild bees or an adjoining apiary. If then the wax moths actually destroyed the infected combs of wild colonies or of colonies in the apiaries of careless bee-keepers, they would be a benefit to the industry to that extent. Naturally if the moth larvæ eat out everything except the scales, and these drop to the bottom, as shown in Plate II, they are less available to other bees. If sufficiently covered with débris, they are to some extent removed from robbing workers.

These results prove conclusively that the two wax moths, Galleria mellonella and Achroia grisella, do not eat the scales formed from larvæ which have died of American foul brood. It is clear, therefore, that infectious material in a colony dying of this disease remains even after the comb is destroyed. The one point in favor of these moths, from a bee-keeper's standpoint, is therefore disproven.

RE-QUEENING

(Bee-Keepers' Review, April)

Mr. J. H. Collins, of Bardwell, Kentucky, writes me of a plan he uses in re-queening, whereby it is not even necessary to hunt up the old queen. Here is the plan:

Prepare a super or upper story by boring two holes near its lower edge. Cover one hole with a piece of queen-excluding zinc, and fit into the other a tube, several inches long, made of wire cloth. A tube half an inch in diameter and six inches long is large enough. Lay a queen-excluder over the brood-nest of the hive that is to be re-queened, set on the super prepared as just described, having the openings over the entrance to the lower hive, and put into the super two combs of brood. The bees from below will come up and cover the brood, when they should be cut off from the lower hive by putting a piece of wire cloth between the upper and lower hives. The warm air and odor from the lower hive can come up into the super, but the bees in the latter must use for an entrance the holes that were bored, one covered with queen-excluding metal, and the other furnished with a tube of wire cloth.

The next step is to furnish this super with either a ripe queen-cell or a virgin queen. When ready to mate, the queen will leave the hive by the way of the wire cloth tube, but is almost certain not to find the outer opening upon her return, and to be attracted to the lower entrance by the crowd of bees passing out and in. The young queen is vigorous, slim and spry, while the old queen is more feeble, slower and clumsy from her load of eggs. The result is that the young queen comes off victorious.

[This looks like a good plan, and appears easy. But would it not be an awful nuisance to be boring all these holes in our hives, with the consequent trouble of covering them all up again? Would not Doolittle's plan be better: "Hatch a young queen in an upper storey, and shake her with the rest of the bees below or in front of the entrance, when she will surely supersede the old queen."—Ed.]

TREATMENT OF OLD COMBS FOR WAX

I notice by May C.B.J. that Mr. John Bailey, Sr., suggests a plan of treatment for old combs before rendering, and you, in your foot-note, ask if any of your readers have experience along this line?

If old combs are to be boiled and then pressed there is not much, if any, need of their being smashed up, but if old combs are to be steamed, I consider there is no better plan than to throw them into a box and chop them up with a good sharp spade, then soak for some time in warmish water, so that any pollen would be thoroughly saturated, after which the comb can be gathered up in double handfuls and the water squeezed out, the several handfuls broken up with the fingers into the wax-renderer, and they are in about the best possible shape for operations.

Regarding wax presses, I got out one two years ago, which was written up in the C.B.J., probably about this time of year. It is adapted to using either steam or hot water, and the get-up is on the Hatch-Gemmill plan. Mr. Deadman, of Brussels, can testify to this, as he was here when I first started it and turned on the steam. It was got up with a view to either using steam or hot water. I consider it would be too expensive to put on the market.

Ideal bee weather since the 16th inst. Bees are "improving each shining hour."

D. CHALMERS.

Poole, Ont., May 28, 1908.

MAY CROP BULLETIN

The following information regarding agricultural conditions in the Province about the middle of May has been issued by the Ontario Department of Agriculture:

Fall Wheat.—While correspondents are not nearly unanimous, the general tenor of reports regarding fall wheat is favorable. In most cases the crop entered the winter a little short in top, but snow fell early and lay on the ground nearly all the season, thus affording good protection, except on knolls where the young plants were exposed, and in some of the fence corners, where the crop was smothered. Early sown wheat did better than that put in later, and the crop did best on rolling land. The greatest injury to the growing wheat was caused by the ice forming in low places during the wet and cold days of the latter part of March and the beginning of April, resulting in a number of patchy fields. There will be only a small area plowed up, however, as most of the thin or bare spots will be sown to spring grains, chiefly barley, in order to save the catch of grass. The lesson of the year is the old one of the benefit of drainage, as several correspondents point out that most of the injury to the crop occurred on low-lying and undrained land. There is but little difference to note in the condition of fall wheat in the various districts, although the best showing must be credited to the Lake Erie counties.

Winter Rye.—This crop wintered even better than fall wheat, but it is not largely grown for grain, being raised chiefly for pasture, green feed, and for turning under for manure.

Clover.—Correspondents are much divided in their opinions regarding the condition and prospects of the clover crop, descriptions ranging from "excellent" to "poor." A number of the returns from the Lake Erie district claim that the fields never looked better at this season, and other western counties send more or less cheerful reports; but some of the returns from the eastern half of the Province are far from encouraging, although a number of good fields are also reported. The drouth of the early part of last summer hindering a successful "catch," the too close pasturing of fields by live stock in the fall, owing to the scarcity of fodder, and the trying effects of the frosts of early spring on low and wet spots, are given as the chief causes of failure by those who report unfavorably. Very little will be plowed under, as the warm rains falling as correspondents wrote were reviving the fields wonderfully. Several correspondents speak of alsike as doing much better than clover.

Vegetation.—The spring promised to open early, but cold, wet weather prevailed later and delayed growth. As correspondents wrote, however, warm rains with bright weather was rushing vegetation along, and although growth was a week or two later than in some seasons, it was nearly a week earlier than last year. Grass is relatively more advanced than tree growth.

Live Stock.—All classes of live stock faced the winter with a poor prospect of fodder supply, as hay and grain were both scarce and dear. In order to meet the situation a large number of horses, cattle and swine were sold at sacrifice prices, but even then fears were expressed by some as to the possibility of bringing the remaining animals through in any form better than that of mere sustenance. It is the general opinion that the average condition of live stock is much better than was expected, and the provident handling of fodder supplies has shown that Ontario farmers as a class are well capable of meeting such an emergency. No disease of an epidemic nature has been reported amongst live stock. Horses are described as being rather thin, but they are in fair working condition.

Aside from mild forms of distemper and indigestion—attributed by some to so much chaffy stuff having to be eaten—they may be counted as being in good general health. Some correspondents complain of too many old horses being kept. Cattle have not fared so well as horses, and, as a rule, were quite thin when turned on the grass. Some correspondents complain that lack of straw for bedding has resulted in some cattle being affected by a stiffening of the limbs. It is also claimed that more barrenness has prevailed amongst cows, and that a larger proportion than ordinarily of those calving have died. The general opinion is that fewer cattle than usual will be exported this year. Fat stock are scarce, and store cattle are not as plentiful as in more recent years, although a few correspondents claim to have the usual suply of stockers on hand. One return is to the effect that it will be another year before Ontario cattle conditions will right themselves. Sheep have done better than any other class of farm animals, and have been most fortunate in lambing. Some complaints are made of "grub in the head," and the dog nuisance is referred to several times. Swine are thin, and are not to be found in as large numbers as last year. So many brood sows were sold just before the winter, owing to the scarcity of feed, that it is doubtful if the fall delivery of bacon hogs will be anything near the record of more recent years. A form of crippling among swine, attributed to rheumatism, is reported in various localities. The good growing weather of the middle of May was greatly welcomed by owners of live stock, and many animals were then on the grass.

Supplies.—Hay was so scarce and dear last fall that much anxiety was felt by many as to whether they could pull along until the new growth was available. Some farmers were forced to buy hay, but the bulk of those owning live stock, by careful feeding, came through the winter without having to resort to purchasing, and a number of persons who were holding surplus hay over for famine prices are now willing to sell at from $4 to $6 a ton less than was offered for it in the fall. Oats have not been so scarce and high in price for years, although here and there a few farmers report a fair supply on hand. Most of the wheat has been sold, and the supply in the barns is much less than is usual at this time of the year. More farmers than ever are buying flour, and are feeding or selling all their wheat.

Fruit Trees.—Orchards have come through the winter in good condition, having suffered less than usual from severe cold, ice storms, mice, etc. The San Jose scale and the oyster-shell bark louse are reported at various points, but the spraying campaign is being more vigorously entered upon than ever, and more attention generally is now being paid to orchard trees. Fruit buds promise a good yield should rain hold up during the period of bloom. In short, the spring outlook was never better for Ontario fruit.

Spring Seeding.—In the Lake Erie district seeding was almost completed by the middle of May, and in some of the other western counties work was also well advanced, although hindered somewhat by rain. In the eastern half of the Province, more particularly in the St. Lawrence and Ottawa counties, heavy rains have kept farmers off the land, except in most favorably situated places, and much spring sowing remained to be done. Early in the season the land everywhere was in more or less good tilth, but in many sections the wet weather has made the soil rather sad and lumpy for best results. The bulk of the seed sown has caught nicely, and with favorable weather continuing spring grains will get off to a fair start. Fears are expressed by some correspondents that corn, potatoes and roots will be rather late in planting.

BEE-KEEPING IN LONDON

Daily Mirror's Two Hives Installed on the Office Roof

Two colonies of bees, numbering 50,000 in all, were installed on the roof of the Daily Mirror offices in Whitefriars street, London, E. C., yesterday morning.

These bees have been imported into the heart of the City as an experiment. The Daily Mirror has arranged with Messrs. Abbott Brothers, the well-known bee specialists, of Southall, to demonstrate the practicability of bee-keeping in London.

Messrs. Abbott installed the two hives of bees on the Daily Mirror roof, and will keep the colonies under close observation during the coming months, frequently weighing and examining the honeycombs and testing the quality of the honey. Endeavors will also be made to note to what parks and gardens the insects fly in search of food.

One of Messrs. Abbott's experts, who superintended the erection of the two hives, said that if bees can flourish on the Daily Mirror roof they could flourish anywhere.

These hives are of a very different character. One is a conventional thatched straw skep, such as is seen in cottage gardens, and contains a colony of pure English bees; the other is a wooden hive of the very latest pattern, containing every facility for collecting the honey, and furnished with the most up-to-date fittings. A colony of hybrid Italian-English bees occupies this.

The two hives, side by side, are particularly interesting, since they illustrate one of the crudest and the most advanced method of bee-keeping.

Yesterday was far from an ideal day on which to instal two stocks of bees into new and most unusual surroundings, but, despite the falling rain, the transfer of the insects from the travelling box in which they were brought from Southall early in the morning into their new homes was effected with very little trouble.

A few of the bees flew about wildly, evidently amazed at the environment of chimney-stacks and telephone wires which replaced the green fields and hedgerows they were accustomed to, but the great majority stuck closely to the combs, enclosed in wooden frames, as they were lifted from the box to the hive.

After a few minutes both colonies settled down to a quiet day "indoors." The rain and the gloom outside were not attractive, and not a gleam of sunshine broke through the clouds to entice the busy workers to fly afield in search of blossoms.

Early in the afternoon a few bees emerged for a preliminary voyage, but they found the weather conditions too forbidding, and soon sought the shelter of the hive again. By 4 o'clock all was quiet in the hives.

Given a sunny day to-day, the bees should be off soon after sunrise in search of nectar. Their task will not be an easy one, for their best feeding-grounds of any size are well over a mile away.

But bees will wander as far as three miles from the hive in search of honey, and two miles is quite a fair range to allow them. This latter distance brings a number of green spots within range.

Within a two-mile radius of Whitefriars street may be found St. James' and the Green Parks, a portion of Regent's Park, as well as the Bloomsbury squares, the Temple and the Embankment Gardens. The three-mile radius includes a large portion of Hyde Park and a part of Southwark Park.

Any fruit trees in blossom that may exist within three miles of the Daily Mirror offices will prove a certain bait for the Daily Mirror bee colonies. Later, lime trees in bloom will be sought keenly by the insects, since limes provide abundant honey.

The results obtained by this interesting experiment should be of the greatest interest to Londoners, for it will prove whether bees can live in the heart of the City, whether in such circumstances they can flourish and multiply, and whether from the parks, gardens, squares and open spaces of the metropolis 50,000 bees can procure sufficient food to secrete enough honey to be of a practical use.

If these things prove to be the case, then an interesting, instructive and profitable hobby is open to dwellers in the most crowded parts of the city, and for the initial outlay of a couple of pounds any man may ensure an annual supply of fresh honey being added to the family larder.

THE SCIENTIFIC SIDE OF APICULTURE

(Dr. Thos. S. Elliott, in Bee-Keepers' Record)

Mr. Hayes, in a paper read before the British Bee-keepers' Association in October, 1907, showed how botany may aid us in the detection of adulteration of honey. Absence of pollen grains in a sample will indicate substitution of glucose or some other material for honey, whilst a sample of honey containing pollen grains which are not found in any English bee-flowers will be proved to be of foreign origin. The subject has not yet received the attention it deserves, but I think that in the not distant future a microscopic collection of pollen grains will be a useful, if not necessary, part of the armaniarium of the honey-analyst, and that we may some day be able to tell the source or sources of origin of any sample of honey, and not only the sources, but the amount of honey derived from each source, by the relative proportions of the different varieties of pollen grains present. Chemistry teaches us the composition of honey, wax, pollen and the foods supplied to the larvæ of queen, drone and worker, but it is of practical use chiefly in the detection of adulteration of honey. Honey and glucose have about the same percentage of compositions, but in the polariscope we have an instrument which will generally detect adulteration.

A FEW MORE DON'TS FROM MR. ANGUISH

Don't fail to attend the convention at Detroit this fall, for I see by C.B.J., page 165, that there is to be a warm spell for a few of us comb honey producers without the aid of Herschiser's apparatus. We will try and be there prepared.

Don't attempt to produce comb honey by the old method, by putting sections on colonies with a few unfinished from last season for bait. That is something of the past. This is the reason that so many condemn comb honey production, and cry out through the journals that they can make so much more money producing extracted. Try a new method by shaking a very heavy colony, or a colony that has got two bodies full of bees, on one body, and put sections on, and you will need no bait sections to induce the bees up into sections. You will be surprised how soon you will have to put an extra comb honey super on if honey is coming in. My method of producing comb honey is all done by the shook system, and I can make more money from comb honey than I can out of extracted.

Don't try to produce comb honey on a weak or medium colony, for it cannot be done.

Our bees had a booming time all through April and dandelion bloom. One colony swarmed on the 18th of May, before we got them out of packing, and a large number were preparing, but we got after them and stopped that, and got them doing something better, drawing out foundation and preparing for the clover flow, and it looks at present as if we will not be disappointed, for the clover never looked better.

D. ANGUISH.

GERMAN DEMAND FOR CANADIAN HONEY

There appears to be no reason why Canadian honey should not enjoy a larger sale on the British market than it does at the present time, writes John B. Jackson, Canadian Commercial Agent in Leeds and Hull, England. From such countries as Jamaica and Australia considerable quantities of this product arrive; in fact, only recently a large consignment of 444 barrels, weighing close upon 40 tons, was imported into the above district from Chili. The largest honey-buyers in Britain are undoubtedly those firms engaged in the manufacture of patent medicines, sweetmeats and confectionery goods. At the same time, however, it should also be of interest to those dealers in Canada who may be inclined to open up the trade to know that large quantities of honey are used in the lager beer industry in Germany. Indeed, manufacturers in that country are said to be keen competitors with local buyers for the supplies that reach English ports. When imported in anything like large quantities, this commodity is generally sent in barrels holding from 1½ to 6 cwts. Canadian exporters, however, would do well to remember that, as there are so many sources of supply, it is necessary to always forward samples when submitting prices to English buyers.

DRY AS A CHIP

How many times have we uttered the words "Dry as a chip" when we have disappointingly gone to the bread or cake tin in the pantry only to find a whole half cake dried out and unappetizing? Or perhaps we have put up a fine lunch in the morning, to find that at noon-time when we have come to lay out our cake at the family picnic it is almost spoiled by its long jaunt over the hills.

Our baker friends have long known of a way of preventing the coming about of these calamities, and that in a most economical way. You perhaps as a child remember having eaten with a relish when going to the bake shop on an errand those animal cakes, large, thick ginger cakes, that are always moist and fresh, no matter how long they may have lain in the shop window? Well, the "trick of the trade" the baker here brings into play to keep his articles fresh is the use of honey in his cakes. For the lighter cakes light and mild honey is used, and for the heavier and coarser cakes the dark, strong-flavored honeys, such as buckwheat honey, are used, bringing with its use that rich flavor of the cakes the children like so well.

By this we do not mean that honey should be indiscriminately poured into every combination of rich cake, but there are a number of excellent recipes for using honey in gems, cookies, fruit cakes and layer cakes, all of which are worthy of investigation by the thoughtful and careful housewife. The recipes are too long a list to be detailed here, but can surely be easily gotten somewhere. Try the bee journals or the producer of the honey sold in your locality. The grocer may not know the recipes, but he will probably be glad to give you the name of his honey producer. It is worth investigating, we believe.

A QUERY

I would like to ask you, through your valuable paper, to decide as to an argument on hives. If two strong colonies are on each side of a weak one, are they any more likely to rob it than the same two colonies on one side of it, if the hives were about four feet apart and no other bees within a mile?

G. S. YEARLEY.

Falkenburg, Ont.

[We cannot possibly see that it would make any difference.—Ed.]

Letters to the Editor

THE CO-OPERATIVE SALE OF HONEY

Owing to the fact that I am neither an orator or a writer, it is rather difficult for me to offer any remarks, as requested, on the matter of coöperation in the sale of honey. But I assure you the several articles from the pens of Messrs. Chrysler and Deadman are read and appreciated by your readers, as also by the readers of the Farmer's Advocate. Of course, it is a well-known fact, to those who had the privilege of attending our last annual meeting, that Messrs. Chrysler and Deadman were not dead men in any sense of the word, and that it seemed far from their intentions just at that time to beat their swords into ploughshares. So, Mr. Editor, it might be dangerous ground for a fellow like me to tread.

However, in my humble opinion, the day for successful coöperation for the sale of honey in Canada is far distant; in fact, a myth only.

Mr. Deadman says in one paragraph: "A Coöperative Association that would handle only first-class honey could never be launched, much less exist." Then he goes on to enumerate in another part of his article a number of grades of honey, and how it would have to be disposed of, which would require an expert like himself to do it. Mr. Deadman concludes his article by telling your readers to advertise their honey for sale, and they will not require the help of a coöperative society to dispose of it. Right you are, Mr. Deadman. The producer, as a rule, is the proper person to dispose of his own goods in ninety-nine cases out of a hundred. This may not be good grammar, but it is good business.

Mr. Chrysler's article in the same issue of the C.B.J. is simply a reply to Mr. Deadman's article, given very sincerely, from his own point of view, from which every reader of the C.B.J. can draw his own conclusion. He says in one part of his excellent reply that a salesman could sell the product of several producers, or the whole Association, with less comparative expense, when making a specialty of it, etc. But, my dear Mr. Chrysler, admitting all you say along these lines, where are you going to get a salesman worthy of that position simply for the fun of it? You would have to pay him well—not only his time, but his travelling expenses as well—and where are you going to get the money to do it with? Now, think a moment, and see if the expense of keeping that salesman would not cost you more than the profit there would be in it. I am sure Mr. Chrysler is perfectly right when he says at the close of his reply to Mr. Deadman that there is something wrong when the producer does not receive more than one-third to one-half of what the consumer is paying for it. That one paragraph alone of Mr. Chrysler's reply to Mr. Deadman goes to show the utter uselessness of a Coöperative Association for the sale of our honey. Let the producer and consumer get acquainted with each other, shake hands and be good friends, and both will get along together O.K., like the two farmers who had a dispute over some trivial affair, and were about to resort to the courts to settle their little dispute. Finally one of the farmers went to a city lawyer with his case, and after hearing his story the lawyer told him that he was already engaged by the other farmer, but would give him a letter of introduction to another lawyer, whom he was sure would take the case. This agreed to, the farmer left the lawyer's office to go to the other, but decided he would read what that lawyer had said to the other. The letter of introduction was brief:

"Dear Mr. So-and-So,—Two fat geese. You pluck one, and I'll pluck the other."

So the farmers settled their own little case out of court, which, I think, in the

majority of cases, would be the best plan for both producers and consumers. I may be wrongly informed, but I think a number of our most successful honey producers in southwestern Ontario—men such as Dickinson, McEvoy, Sibbald and many others—have already disposed of some very large crops of honey to advantage without the aid of middlemen or coöperative associations. For my own part, I only wish I could produce all the honey I could dispose of to the consumers, and I think, if the voice of the Ontario Bee-keepers' Association was heard, that I am not alone in the wish I have just made.

So, Mr. Editor, if you cannot read my scribbling, you have a wastebasket; and if you can read it, and think it of no use to put such an article in the columns of the C.B.J., I would say again, you have a wastebasket, that can perhaps hold it until you have a chance to consign it to the flames.

W. J. BROWN.

L'Orignal, Ont., May 30.

THAT NORFOLK RESOLUTION

In your March number I notice what purports to be an account of a bee-keepers' meeting in the County of Norfolk, and I am somewhat mystified by a curious resolution in reference to foul brood and apiary inspectors, said to have been passed at that meeting. I would really like to see the man who moved the resolution, and also the resolution itself. It certainly is a curiosity, and should occupy a prominent place in a museum. A resolution that "we would earnestly solicit" the Minister of Agriculture to so manipulate an Act of the Legislature of the Province of Ontario as to deprive all Eastern Ontario of any benefit arising from the provisions of that Act! Surely the Hon. Minister of Agriculture must have been amused at such a lofty (?) proposition, and his thoughts in reference to the same will probably not find expression in words to the public.

May it not be possible, Mr. Editor, that this resolution was passed in a great hurry, without proper thought, and under a peculiar, selfish impulse of the moment, and that the mover and seconder are sorry, very sorry, for it even now?

I am loath to think that there are men in the ranks of bee-keepers who on serious second consideration would entertain such a narrow, selfish proposition for one moment.

The disease (foul brood) may not be so prevalent with us as it is in the County of Norfolk, but it is a well-known fact that bee-keepers in these eastern counties have suffered in years past, and we in Eastern Ontario will look with confidence to the Department of which the Hon. Nelson Monteith is head for a modicum of the protection afforded by apiary inspectors, to the end that the spread of foul brood among our bees be as far as possible averted.

J. C. STUART.

Dalmeny, May 1st.

Canadian National Exhibition, Toronto

HONEY AND APIARIAN PRODUCTS

Entries Close: Wednesday, August 12th. Fee: 25 cents each entry.

The Exhibits in this Department will be exhibited in the new Agricultural Hall.

All Exhibitors must be bona-fide bee-keepers.

The prizes are awarded only for the quantity of honey specified in the various sections.

Exhibitors must not change their exhibits after the judges have given their awards.

Exhibitors selling honey during the Exhibition will not be allowed to make any removal from their regular exhibit, but may have a special supply at hand from which the honey sold may be taken.

In the solicitation of customers no unseemly noise will be permitted.

A breach of these rules will forfeit any prizes that may be awarded.

All exhibits in this department to be in place and arranged on Monday, Sept. 5th.

Exhibits in this department will be judged by points.

CLASS 254

Sec.		1st	2nd	3rd	4th
1.	Best and most attractive display of 50 lbs of extracted granulated Clover Honey, in glass, 25 points for quality, 75 points for display	$5	$4	$2	$1
2.	Best and most attractive display of 50 lbs of extracted granulated Linden Honey, in glass, 25 points for quality, 75 points for display	5	4	2	1
3.	Best display (Clover, Linden, Buckwheat or Thistle) of 300 lbs of liquid extracted Honey, not less than 150 lbs must be in glass, quality to count 80 points, display 20 points	18	12	8	5
4.	Best 300 lbs (Clover, Linden, Buckwheat or Thistle) of Comb Honey, in sections, quality to count 100 points, display 20 points	20	15	10	6
5.	Best 24 sections of Comb Honey (any variety), quality to be considered, clean sections and best filled	6	4	3	2
6.	Best 100 lbs of extracted liquid Linden Honey, in glass	7	5	3	2
7.	Best 100 lbs of extracted liquid Clover Honey, in glass	7	5	3	2
8.	Best 100 lbs of extracted liquid, A.O.V., in glass	7	5	3	2
9.	Best display of 100 lbs of extracted liquid Honey, any kind, display to count 80 points	7	5	3	..
10.	Best 20 lbs of extracted liquid Clover Honey, in glass	4	3	2	1
11.	Best 20 lbs of extracted liquid Linden Honey, in glass	4	3	2	1
12.	Best 20 lbs of extracted liquid Buckwheat Honey, in glass	4	3	2	1
13.	Best display of 200 lbs Comb and extract Honey suitable for a grocer's window or counter, space to be occupied not to exceed 6 feet square by 4 feet high	10	7	4	2
14.	Best and most attractive display of Beeswax, not less than 10 lbs	4	3	2	1
15.	Best 10 lbs Beeswax, soft, bright yellow wax to be given the preference	4	3	2	1
16.	Best exhibit of Italian Bees, with queen, in single comb observatory hive	7	5	3	..
17.	Best exhibit of Carniolian, with queen, in single comb observatory hive	7	5	3	..
18.	Best exhibit of Caucasian Bees, with queen, in single comb observatory hive	7	5	3	..
19.	Best and most practical new invention for the Apiarist, never shown before at an Exhibition of this Association	6	4	3	2
	To the Exhibitor making the largest, best and most attractive display	25	18	10	6

The first prize in section 20 is given by the **Ontario Bee-keepers' Association.**

Want and Exchange Column

Advertisements for this column will be received at the rate of 35 cents for 25 words, each additional word one cent. Payments strictly in advance, as the amounts are too small to permit of book-keeping. Write copy of ad. on a separate sheet from any other matter, and on one side of the paper only. Say plainly how many times ad. is to be inserted. Matter must reach us not later than the 23rd of each month.

FOR SALE—Ten two-storey Holtermann Langstroth Hives, with portico complete, all nailed and painted; frames wired.—G. H. EVANS, Napanee, Ont.

FOR SALE—1 Extractor, 4 Langstroth Frame, Reversible, with large Honey Can and Strainer between the two, $18.00; 33 Langstroth 2-storey, 8-frame Hives, 7 Langstroth 2-storey, 12-frame Hives, with Huffman Frames, most all wired, $1.25 each 2-storey; 34 Queen Excluders, 12c each; 12 lbs Light Brood Foundation, full sheets, 40c per lb;; 12 Alexander Feeders, similar, larger, 12c; 1 Smoker, No. 3, 70c; 1 Bingham Honey Knife, 70c; 1 Tin Bucket for carrying full combs, 70c.—H. McLAREN, 110 Robert St., Toronto, Ont.

HONEY WANTED.—I will want a quantity of first-class Honey and would like to arrange for it now. I can supply Containers, 5 and 10-lb. pails or 60-lb. tins, in exchange for Honey. I do not handle Honey late in the season.
G A. DEADMAN, Brussels, Ont

CASH or this season's Wax or Honey for 100 well packed, permanent Yard Covers for 12 or 10-frame Langstroth hives at 10c each. Fifty first class 8-frame Langstroth Hives for comb or extracted honey, a bargain. Three first class Honey Knives, by mail, 60c. Two Storing Tanks each $3.00. Also Weed Process Foun ation, all grades (this year s) 2c. per lb. below regular prices —R. F. HOLTERMANN, Brantford, Ont.

CUSTOMERS who want the benefit of twenty-eight years' experience buying and rearing queens and handling bees: Price of untested Queens, each $1.00, six $5.00, per doz. $9.75; tested $2.00 each. — R. F. HOLTERMANN, Brantford, Ont.

FOR SALE GASOLINE ENGINE, suitable for extracting honey, churning, cutting out hive stuff, etc., will be s ld cheap for cash. Some Supplies at wholesale prices Address: ARTHUR LAING, Woodstock.

NOTES FOR BEE-KEEPERS FOR JUNE

Give plenty of room for surplus honey, and prevent swarming as far as possible.

Have hives in readiness in case they swarm. Do not extract any honey this month, allow it to ripen.

Renew all queens over two years old.

PRODUCTION AND CARE OF EXTRACTED HONEY

By E. F. Phillips, Ph. D.

(Continued from Page 195)

Square and round cans of various types are often used for smaller quantities. Barrels are preferred by some for large shipments for the baking and confectionery trade, but their use cannot always be advised. Before honey is put into it, a barrel must be thoroughly dry, and tight when dry, because of the fact that honey takes up a certain amount of moisture, and if, when the honey is put into it, the barrel is damp, the honey will absorb the moisture, causing the barrel to leak. Barrels also absorb a certain amount of honey. In dry climates particularly barrels should be used with caution.

When honey is packed in bottles, it is desirable that granulation be retarded, since a bottle of partially granulated honey is not attractive. To aid in the retarding of granulation, the honey should be entirely liquefied and thoroughly mixed in a large can and run into the bottle warm. The bottle should be as full as possible and sealed hermetically while still warm. Granulation usually begins on the edges of the top line of the honey and spreads rapidly from these points. This is probably because some honey gets upon the sides and partially dries. It is therefore desirable that the honey fill the bottle clear to the cover to prevent this. It must also be free of bubbles. Bottles may be hermetically sealed by using some style of clamp cover or by sealing a cork with a mixture of beeswax and resin. This mixture may be colored by the addition of a dye. Granulation may be considerably retarded by keeping the honey at a nearly uniform temperature. This should not be less than 65° F. and is much better at 90° to 100° F. While

the honey is in the hands of the producer or bottler, it may be kept liquid for a long time in this way, but of course when sold it is generally subject to changes of temperature. Honey, either in the comb or extracted, should never be kept in a cool or damp place.

The Production of "Candied" Honey

Honeys of the average type, relatively free from nonsugars, such as that made from alfalfa, soon granulate solid and are sometimes sold in bricks. Granulation may be hastened by changes of temperature and by stirring. If it is desired to have a can of honey granulate rapidly, it may be carried from a warm room outdoors in winter and back again at intervals of a day or two for a couple of weeks. If this is accompanied with occasional stirring when granulation first begins, the whole can will soon be a solid cake. Honey may also be poured into smaller receptacles, such as waterproof pasteboard carriers or oyster pails, and allowed to crystallize in the package in which it is to be sold. If allowed to granulate solid in a large tin can, the tin may be cut away and the honey cut into bricks with fine wire in the way that prints of butter are sometimes prepared.

A market for "honey bricks" must generally be built up locally, for as yet the general public has not learned to look for honey in such shape. The cost of the package is less than that of bottles, and the granulated honey is by some considered superior for table use to liquid honey. Several bee-keepers have used this method with success, and claim that it gives great satisfaction to their customers.

Honey Types

It is well known that honeys from different plants vary considerably in taste, color, granulation, etc. The taste and color are given to honey by the plants from which the nectar is derived. Granulation may be considered as a property of all honeys, or rather of the dextrose contained in all of them, and, from a study of the chemical composition of many samples, it seems probable that all honeys would crystallize were it not for the fact that some of them contain an excess of either non-crystallizable levulose or dextrin, gums and other nonsugars. The following table will make this point clear:

I. Normal honey (from nectaries of flowers).
  1. High purity (high in sugars, relatively low in dextrin, gums and other nonsugars).
    A. Levulose type, e. g., mangrove, tupelo, sage.
    B. Average type.
      a. High in sucrose, e. g., alfalfa.
      b. Low in sucrose, e. g., buckwheat.

2. Low purity (relatively high in dextrin, gums and other nonsugars, e.g., basswood, sumac, poplar, oak, hickory, apple, most tree honey).

II. Abnormal honey (not from nectaries of flowers; generally high in dextrin, gums, and other nonsugars).

1. Honeydew honey (from aphides and other insects).
2. Coniferous honey (plant exudations not from nectaries).

Honeys containing approximately the same amount of levulose and dextrose and which are high in sugars (average type) granulate readily. Very few honeys have more dextrose than levulose. If, however, the levulose is considerably greater than the dextrose (levulose type), or if the nonsugars are relatively high (low purity and abnormal honeys), granulation is retarded. Some honeydew granulates rapidly, but no abnormal honeys of that type were included in the samples examined, consequently they are not included in the table.

The use of the terms "high" and "low" purity in this table must not be taken to indicate the comparative values of the various honeys. Low-purity honeys which have relatively more dextrin, gums and other nonsugars are just as good honeys as those of the high-purity class. Abnormal honeys, however, are less desirable. The presence of the non-sugars in low-purity honeys may be due largely to a slight admixture of honeydew, since most honeys contain a trace of this. It must be remembered in considering this subject that practically no honey is from a single species of plant, and therefore they will vary considerably, according to the other nectars added to them, as well as according to local soil and climatic conditions.