

# The Canadian Bee Journal

Published Monthly

New Series  
Vol. 12, No. 2

BRANTFORD, CAN., SEPT., 1904

Whole No.  
475

## Bee-Keeping Experiments

At the Dominion Experimental Farm  
Apiary, Ottawa.

By Mr. John Fixter

Mr. President. Ladies and Gentlemen: When our secretary wrote me, asking me to take part in this meeting, I wrote and told him that I would be pleased to do anything to forward the interests of bee-keeping. I asked him to allow me to take up the management of an apiary, and to explain the different appliances that I have used, with the object of learning something from our older friends here. I am out much among the farmers, attending Farmers' Institutes, and I never fail to bring up the bee-keepers' side of the question. I attended some twenty meetings in our own county and gave a short talk and explained as you see here on the charts the different appliances and how to work them, and I had hoped that the would put me on the program for an evening session, so that those who are interested might come and listen. My instructions might not be the same as those of some here, but that was my

object, to try to learn something from them. However, he placed me on the program to give the results of experiments, I have a few of them here. Most of you are aware that we had a very poor season in our district, and we were not able to carry out all the experiments that were planned, but I think the few we have may be of interest to you.

### Experiments to Test Whether Moisture Would Affect Bees in Their Winter Quarters.

Four pails of water were arranged on a table in such a way that three colonies of bees would rest on the edges of the pails. The hives were arranged as follows: The wooden covers were removed and the propolis quilt left on each hive; over this a strip of sacking six inches wide was placed, extending from each outside pail, the ends being well down in the water to act as a conductor of moisture. The bottom boards were loosened, and a one-inch block was placed under each corner between the bottom board and the brood chamber, to give extra ventilation in the hive. The bees came out in excellent condition. The proximity to the water did not appear to injure them in any way.

I have the same thing on this year, and hope to test it a little more fully.

The object of this experiment was, so many people write to us and say they have a very damp cellar, is it safe to put bees in it? From this experiment I would say that the dampness of the cellar does not matter so much if they have it well ventilated so that here is no bad odor. I do not care then if there is a running stream through it. I know of cellars in this district where there are running streams through them, and wells in them, but they carry out a thorough ventilating system.

Mr. Morrison: Would a running stream not give perfect ventilation?

Mr. Fixter: It may.

Mr. Holterman: More than that, a cellar through which a stream runs is not necessarily a damp cellar at all; it may be a dry cellar.

Mr. Post: That agrees with my experience of ventilation.

Mr. Hall: The moisture makes no difference at all if the ventilation is right.

Mr. Dickenson: Temperature has quite a bit to do with it.

#### Feeding Bees in Their Winter Quarters.

Owing to the past unfavorable season for honey gathering in the Ottawa Valley, many letters have been received from people who have only a few colonies of bees, stating that when carrying their bees into winter quarters they had discovered there did not seem to be a sufficient store of honey in the hive to carry the bees through the winter. To gain information as to the best method of overcoming this difficulty, the following experiment was tried with six strong colonies of bees:

Four frames of sealed honey were taken from each of the six colonies, leaving the clusters on the four remaining frames. The four frames were left in the centre of the hive, with a division board at each side, and some light packing was placed between the division boards and the sides of the hive. The wooden covers were re-

moved and a large propolis quilt made of heavy canvas placed over the top of each hive. Over the top of the propolis quilt extra packing was placed to keep in the heat, absorb moisture and prevent draughts or upward ventilation. The bottom boards were left on as they came from the bee yard, leaving the entrance wide open.

The experiment was as follows:

1. Two colonies received maple sugar of the best quality.

2. Two colonies received candied honey and sugar.

3. Two colonies received partly filled sections of honey.

Each colony, when put on this test, weighed 31 pounds, and each was given five pounds of its particular food to start with. The experiment lasted from November 18th, 1902, to March 22nd, 1903.

The two colonies fed on maple sugar consumed 11 1-2 pounds each. They were examined every two weeks and water added to the sugar through holes in the tops of the cakes, keeping it soft and moist.

The two colonies fed on partly filled sections of honey consumed during the same time 14 3-4 pounds each. There was, for several reasons, considerable waste in this test, and if partly filled sections could be sold, even at a reduced price, it would be advisable to do so instead of feeding back.

The two colonies that were given candied honey consumed 10 3-4 lbs. each. The candied honey was moistened at intervals, which made it easier to suck up. Candied honey is made as follows:— Take good, thick, clover honey, and heat, (not boil) it until it becomes very thin, then stir in fine granulated sugar. After stirring in all the sugar the honey will absorb, take it out of the utensil in which it has been mixed, and thoroughly knead it with the hand. The kneading makes it more pliable and

soft, so that it absorbs, or, rather takes up more sugar. The kneading operation and the adding of fine sugar should be continued until the dough is so stiff as to be quite hard to work. It should then be allowed to stand for a day or two, and if at the end of that time it is so soft as to run or be sticky, a little more sugar should be kneaded in. It should be cut into convenient sized cakes and placed on top of the frames in such a way that the bees can get at it easily.

The colonies in all three tests came through in excellent condition. Any one of the three methods may be safely followed, but I would strongly recommend weighing all bees the first week in September. At that time every colony should have a good laying queen, and should weigh over 50 pounds. In seasons when there is no fall flow of honey all colonies in Langstroth hives weighing less than 50 pounds in September should be fed up to that weight at least. The best method of getting colonies up to the required weight is when extracting to save several full, well-sealed combs, then remove some of the light ones out of the hive, and replace them with the heavier full frames. If no honey is available feed sugar syrup. This latter plan is rather a tedious one, and great care must be taken not to daub the hive or appliances, as robbing at this season of the year is very easily started and very hard to stop.

Sugar syrup may be made as follows: Use the best grade of granulated sugar, two parts to one of water by weight. The water should first be brought to a boil, then the pan or vessel set back on the stove so that the boiling will not continue, but the water be kept sufficiently hot to dissolve all the sugar.

The sugar should be poured in slowly, and thoroughly stirred until all is dissolved. The syrup should then be fed in a luke warm condition.

I might say that the quantities of food consumed are great I think there is more consumed by reason of the disturbance caused the bees by my attending them during the winter. I like to go down and look, at them, and see what they are doing, like Mr. Hall. I think the consumption of honey or sugar might be lessened if the full amount were put on and they were left alone. The only thing that might be required is the moistening.

Mr. Dickenson: I don't agree with Mr. Fixter about going down and looking at them. I give them a good letting alone right in the cellar is more satisfactory.

Mr. Hall: That does not alter the pleasure of the thing at all.

Mr. Fixter: We do not always have bee-keepers to deal with, and you know that they will not attend to their bees the same as those who make a business of it; they never look at them from the time when they take off the surplus honey until they get frozen up in the winter, and we get letters day after day asking, What can we do to get them through the winter? and we carry on these tests to try and see just the best methods of overcoming their difficulties, but we try, if possible, to give them the other advice, to look after their colonies earlier in the season.

Mr. Sibbald: I suppose the experiment is all right, but I don't think it practicable to feed bees in winter. I think that should be emphasized. Feeding is only a last resort, and a poor resort at that.

Mr. Darling: I think any port in a storm. I should not wonder perhaps but Mr. Fixter has had over fifty letters this fall.

Mr. Holterman: There is one criticism which I wish to offer. I claim these groups are entirely too small for results of value. When you are dealing with living things you are getting on very dangerous ground. You will

get as much variation in groups as you will get variations after these conditions mentioned are put down.

Mr. Morrison: Mr. Fixter explained why he suggested winter feeding; it was not for the professional bee-keeper. I think there was enough last year if the moisture was going to kill them. No doubt Mr. Fixter will be quite willing to risk twelve with moisture in his experiments next time.

Mr. Webster: Have you ever tried feeding from the bottom? Get your feed warm and right close to the cluster. It works well.

#### Experiments With Sainfoin Clover

Sainfoin Clover has again attracted a great many bee-keepers and farmers who visited the Experimental Farm during the past year. The number of bees working on the sainfoin plots, against those working on white clover, alsike and bokhara clovers were quite noticeable in favor of the sainfoin. For fodder and as a fertilizer, it appears to be equal to alfalfa, and its habits and growth are very similar. The sainfoin being slightly finer in the stems, and having more of a scooling habit, will therefore make a much better pasture, especially for sheep.

**Soil:** The soil best suited for the growth of sainfoin seems to be a deep loam, containing a fair proportion of lime, with good, deep, natural drainage. It will, however, do well upon almost any soil that is well drained, providing it once becomes well rooted. It should never be sown on land in which the water level stands near the surface, or on land likely to be covered with water at any season of the year.

**Seeding:** The amount of seed usually sown is, to the acre, 30 or 40 pounds, that is with the hulls on. I would advise sowing the seed hulled, the same as you sow alfalfa. It is much easier sown and will germinate more quickly. With hulled seed, about 20

pounds per acre would be sufficient. If sown with oats, barley or wheat, not more than one half the ordinary amount of grain should be sown per acre, even then the young plants are apt to be killed by exposure to the sun when the nurse crop is removed, especially if hot, dry weather follows the cutting of the grain crop. Better results are usually obtained by sowing the seed alone. The best time to sow it is as soon as the ground can be got into good condition in the spring and danger of heavy frosts is passed. On the Experimental Farm sainfoin sown alone came into bloom in August, and gave a yield of one ton, 1,700 lbs. of dried fodder per acre. In the second year it came into bloom on June 1st, and lasted to the 24th of June. The second cutting bloomed July 27th to August 17th. Total cut of the two crops, four tons, 1,600 lbs. Those dates could be extended for honey gathering, but as the plants were in the best condition for fodder, it was thought best to cut on the latter dates. A third crop is usually allowed to grow for pasture, or in favorable seasons even the third crop might be cut for hay. The present sainfoin clover plots on the Experimental Farm have been grown: one plot, seven years, one plot three years, and a third plot sown in the spring of 1903. The plot that has been growing seven years is getting very thin, and should be plowed under. I would advise restoring every two or three years, as clovers are known to be one of the most valuable fertilizing plants grown.

**Cultivation:** Following are hints on preparation of the soil for growing clover, killing weeds of all kinds: Hay lands take a firm footed cultivator; put on narrow points, say 2 1/2 inches wide. Three horses will be required to draw this machine. Pass over your field first with the cultivator. In the second operation cross the cul-

tivating with the harrow. This will tear the sod into very small pieces, and they will dry out in the sun very quickly. The third time over the field should be with the cultivator in the opposite direction from the first, and next the harrow. By going over the field with your cultivator four times, you should have every particle of sod cut and dried out on the surface. All this working should be done on warm, sunny days. Later in the autumn this valuable mat of material should be plowed under to decay for a future crop. Stubble lands may be worked the same way. A second plan is, after the crop is taken off, to plow very shallow with a gang plow in a dry time, the land being then rolled and harrowed: It is left untouched until the grass and weeds start to grow. It is then harrowed and cultivated thoroughly at intervals to keep down all growth, and later in the autumn plowed or ribbed up with a double-mold board plow, into drills about 22 inches apart, and 8 to ten inches high. This is found to be a most satisfactory preparation of the soil for clover, corn, roots or grain. Where grain is grown the soil is ready for seeding at a considerably earlier period than where fall plowing is practised.

I had a great deal of trouble getting this sainfoin to germinate. The seed is enclosed in a small husk, and I would advise every person asking for sainfoin seed to have it shelled, that is, with the husk off it.

I speak of this plant as a fertilizing plant. The great value in all the clovers is that they are such deep rooters. With all those nodules that gather their food from the air, one cannot help but see that this would be a valuable fertilizing plant. Our friend, Professor Shutt, proposes next year, to take a spade and dig some of it up, and analyze the roots and find out what the value of it is as a fertilizer, and then he proposes to take a

certain sized plot, find its value as a honey-producing plant. The dairy men do not allow their cows to run on the commons, and expect them to fill the pail with milk. We should not think of allowing our bees to do so and expect them to give us one hundred or two hundred pounds of honey. We must provide for them. We think that this plant is one of the best, that is grown so far. We all have faith in the small white clover, but if you had been at the Experimental Farm at the time the white clover was on and sainfoin was on, you would have seen that the white clover was not to be compared with the value of this clover as a honey-producing plant.

Mr. McEvoy: What would it be worth a bushel?

Mr. Fixter: I think Rennie sells it at fifteen cents a pound.

Mr. Dickenson: Have you tested the quality of the honey from it?

Mr. Fixter: We have not.

Mr. Lott: What has been your experience with sainfoin as a honey-producing plant?

Mr. Fixter: My experience is this: We have not grown it in large fields, we have never gathered it in any quantity to say that it is a great honey-producing plant. We have our small plots of different clovers, and we take notes of them at the different seasons of the year, the dates of blooming and so on. Here is the white clover plot, and maybe you can count the bees, you can see five, six, eight or ten; you come to the alfalfa, and may be you do not see a bee at all, or may be one or two on the tops of the bloom; you come to the sainfoin, and you can count one hundred bees in some spots where you would see eight or ten on the white clover.

Mr. Lott:—A neighbor of mine has a small field of sainfoin, and one of alfalfa, and from early morning until sundown, you will find the bees in quantity upon

the sainfoin. Whether it secretes honey rapidly or not I do not know, but on days when no other nectar will secrete I have noticed them from early morning till night upon this sainfoin; I have noticed something similar on the large white clover, but I do not know as to the quantity of nectar that would be secreted in the sainfoin.

Mr. Webster: I think my friend is no bee hunter, or he would soon tell whether they were getting honey. I know very quickly when the bees are filled with honey.

Mr. Edmonson: I would like to ask Mr. Fixter about the quality of hay as between alfalfa and sainfoin.

Mr. Fixter: There has been no regular analysis made of it, but when sainfoin is cured as hay it is beautiful, and is readily eaten by the cattle.

Mr. Chisholm: What is it like for pasture?

Mr. Fixter: We were always unfortunate in having our gates wide open to the public, and sometimes cattle came in as trespassers, and this autumn after everything was dead, the sainfoin was green, and those cattle made a bee line for that plot and ate it down.

I have an excellent private method for the cultivation of land, and it would come in all right at this meeting of the Association showing how to get your soil in proper condition for this clover, and any time during the meeting I shall be glad to describe it. It will only take a few moments.

Mr. Holterman: I believe Mr. Fixter has a very good plant. I was at Ottawa and saw it. I hope the experiment will be carried on more extensively, and this is a direction in which the Government can do good for us.

Mr. Morrison moved, seconded by Mr. Holterman, that this Association ask Mr. Fixter to allow his paper on the cultivation of land to be published in the annual report.—Carried.

Mr. Lott: I have heard from Mr. Wooten that in England where this clover is used, to a very great extent, that it makes the whitest, clearest, and best honey on the English market.

Mr. Hall moved, seconded by Mr. McEvoy, that the management of the Experimental Farm at Ottawa be asked to put in a larger area of sainfoin clover for the purpose of obtaining a surplus from it, so that tests may be made of the quality of the honey.—Carried.

#### Experiments in Wiring Frames.

(Mr. Fixter, in speaking of this experiment, illustrated his remarks with a number of frames wired with a different number of wires, both perpendicularly and horizontally.)

In this first frame which I shall show you, you will see there are seven wires running perpendicularly. Put in sufficient wiring to carry your combs. I think wiring your foundation is a grand arrangement because you can use a much lighter foundation than you can if you do not wire at all, or if you only have a few strands. If we can save half the weight of our foundation, why not do it? I have tried and experimented this year with the section foundation. I took the frames that had the seven wires, and placed my board in behind with a small wedge at the bottom. We lay our foundation on, and have an arrangement for pressing the wire into the wax so that our section foundation stays in that frame perfectly. If you take special care in having the lower sheet close to the upper, the bees form the cells there nearly as large. If we can save that much money in wax in using thinner foundation, why not do it? My opinion from this one test is that we can use a thinner foundation and have it in better shape than by using a heavier foundation. We kept on going down till we got down to wiring at one end with four wires. What was the trouble? The trouble was with the thin wax, we

could not use the section foundation in that one at all; those wires sagged and in some instances it broke down entirely. As I am a firm believer in full sheets of foundation, I say, wire your frames every time, either up and down, or across. The object of testing those different methods, is to find out which is the best. We hope by other tests to say which we think is the best. We have wired crosswise, we found the trouble with that was if you have a heavy swarm to put on there they are liable to bend those wires down with the foundation, especially on a warm day; and very often with the four wires I have found the foundation doubled over and a great deal of trouble in cutting it out and getting it into place again. If you prefer the wire horizontally, I will say put in two more wires than we have here, but I would recommend the perpendicular.

Mr. Lott: What is the amount of time that you would consider necessary to wire frames for the brood chamber in the top story?

Mr. Fixter: I think a man could put one of them in in about two minutes. We can do this in the winter; we do not have to handle our foundation then. We place the frame in a vise. After you get to know just where to drive your staples, you do not need to have a measure, or you can just mark a stick off in the places where you want it, and lay it right in front of your vise, and you can see where to run your pencil across. Then run a very sharp awl through those different places, then tie on your wire with one end, twist it on, up, down and through till you get to the other end; or if your wiring gets tedious and troublesome, run it from one end to the other and fasten it. Different bee-keepers have different methods. I have shipped bees to the Experimental Farms in Manitoba, and Nova Scotia, and never had a frame break down or a colony smother

on the road. Of course the frames were all wired.

Mr. McEvoy: My boy and two others wired twelve hundred of those in a couple of days, and two of the boys were little fellows.

Mr. Fixter: We tried different plans with cross wires, and down to two, which is almost useless, and even down to one, so that I would say wire thoroughly, and go at it and try it, and you will find it is not such a hard job at all. I think there could be some improvement made on this little machine that we pressed the wire into the wax with.

Mr. Hall: I am an old hard egg. I kicked against wiring for fifteen years, and four years ago I put in six hundred wired frames, and I was so pleased with them I put in eight hundred, and last year nine hundred. When you run the wheel over the wire you crimp that wire, and that stops the wax from pulling down. I want my wax to go to the top, of my frame, and then I have no place for the bees to go through. I put eight wires and that draws the bottom up, and to get over that difficulty I take some No. 9 fence wire, and put a piece perpendicularly in the centre, and you can hardly pull the frames together. With the perpendicular wires I have never had the frame break down: with it wired horizontally, I have had them break down from the top.

Mr. Holmes: Why not make the bottom bar slightly heavier instead of using the fence wire?

Mr. Hall: Because there is more wood for the bees to go around. I want that top bar heavy because when I shake my bees off I want to give my frame a crack.

Mr. Byer: Mr. President, I don't know what I can add by way of value to what has already been said. I suppose it will be necessary for me to conduct a sort of review of three or four different items taken up, and all these

items have been discussed.

In regard to Mr. Fixter's experiment in cellar wintering, I am at this disadvantage. I have never had much experience and what knowledge I have is theoretical. Last winter I wintered thirty colonies in one cellar, and fifty in another, and as near as I could tell they were both about the same temperature. One cellar was in sandy soil, and the other clay soil, and quite damp, and I had taken no extra precautions for ventilation. Those in the sandy soil wintered in good shape, while the others came out in bad shape. I don't think it is a fair test to put pails of water in the cellar: I do not think it will affect it a particle. It is a different thing from putting bees in a cellar that is naturally damp. I have a cellar in mind where a spring is running through it, but that cellar is perfectly dry.

With regard to feeding in winter, I will make no comments. Mr. Fixter gave some directions as to how to prepare the food for wintering and feeding sugar syrup. I am not living in a buckwheat belt and although sugar feeding for bees is condemned I think this year if I had kept out sealed combs enough to put my bees all up for the winter, I would have taken the biggest part of my extracting supers, I fed this fall a quantity of sugar. I had my sugar in 100 pound sacks. I would go out to an apiary with three or four hundred pounds and take the boiler used for heating water and put one pound of water to two of sugar, and bring them to a sharp boil. Dump one hundred pounds of this in a storage tank and in a few minutes I would have one hundred and fifty pounds of syrup. I fed my three yards with all I had to feed them in three days.

With regard to sainfoin, I think it is well to encourage the growth of it, providing that we know what the honey will be. It may be something like alfalfa, the bees work on it freely

but I never could see that the bees got anything appreciably. Such might be the case with sainfoin.

In regard to the last matter taken up, I wire horizontally. I use a very deep frame, twelve inches, and I have never had any trouble.

Mr. Darling: I would like to ask Mr. Fixter if he used fine granulated sugar, or pulverized?

Mr. Fixter: Not pulverized.

I think Mr. Hall has a better plan than any of us.

Mr. Hall: My plan for making sugar-syrup is not Hall's plan at all; he uses it because it is a good plan, and you will use it too when you know. I have two out apiaries, and if the bees want feeding, I would have to bother the women at the house at those apiaries, and I am a little diffident about annoying the women, for I want to keep on the good side of the ladies. I gave up making the two pounds of sugar and one pound of water. I put pound for pound of granulated sugar, and water, and stir it up with a garden hoe about three times, and then go back again and stir it up again. Then I will have a fine liquid, perfectly transparent, and it will never granulate. I use cold water. The bees will take down from my 30-lb. feeders very often twenty-four pounds in a night. If they want twenty pounds of feed you will have to give them twenty pounds of syrup. September is the right month to feed in.

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If you have secured a good crop of honey, and you are offered a fair price for it, sell it. It may bring a better price later in the season, and it may not. Even though it should you will have no occasion to mourn if you have gotten a reasonable profit on what you have produced. It has been too wet for bees to do their best in Missouri and Kansas, and all of the Central West, but the prospects are for a larger and longer honey flow, and a bigger crop than has been produced for many years.—Modern Farmer.



## Hints for Beginners

R. F. HOLTERMANN

After having the right blood to winter to the best advantage there is the question of hive. Upon this not much will be said by me, and argument of no profit might arise. Twenty odd years of bee-keeping, correspondence, and contact with many bee-keepers, has convinced me that bees may be wintered in almost, if not every, hive in use, providing the conditions are right otherwise. A perfect cellar in our Canadian climate will always be ahead of the best outside conditions obtainable. I am convinced of this, and many more have learned this by sad experience last season. But I wish to speak of the condition of the brood chamber. The combs of the hive should be right. Crooked combs which have been changed from the relative position in which they were in when built, are not desirable at any season of the year, not even in winter. One of many advantages in the use of full sheets of foundation is straight combs, which will maintain a proper bee space no matter where put. Colonies with combs giving, owing to crookedness, twice the bee space on one side and none on the other hinder the stock from doing its best, and may even lead to dissatisfaction and swarming out.

Combs clogged with pollen sometimes due to the colony having been queenless for an abnormal time, should be removed. These conditions should be looked to. "The constitution should be right," as our friend, Mr. McEvoy, says, and his years of experience examining this part of the hive should make him a master in this matter. Now contract,

as soon as the brood hatches sufficiently, the brood chamber to the size the bees will cover comfortably, and to give them sufficient room to hold the stores needed for winter and early spring. Each good colony should have not less than 25 pounds of stores for winter and spring. Weaker colonies require slightly less, but not much. Feed granulated sugar, and get the best, this kind found upon the market which when boiled shows bluing, and in fact some of the sugar shows it in the barrel, avoid, yes more, do not use it, even if it is bounty fed.

Brantford, Ont.

When desiring to requeen, don't make the colony queenless before receiving the new queen. Wait until after the new queen has arrived.

Don't form a nucleus, to take the new queen, before the queen is received. It will be time enough after she comes.

These two "don't's" are suggested by the fact that we have known bee-keepers to unqueen a colony, and also form a nucleus, before ordering the queens for them. This might be all right if one were certain that he would receive the needed queens within the next 48 hours. But even if queens are advertised, and sent, "by return mail," the mails may be delayed, or the advertiser may not in every instance be able to send the queens so promptly. At any rate, there is no necessity of the bee-keeper doing a thing before the queens ordered are on hand. It is not safe to take any other course, for if there should be much delay in getting the queens it might be almost impossible to introduce them successfully, and yet it would be no fault of the queen breeder.—American Bee Journal.

A hive is better if the front faces the south or east, as the bees will get out to work much earlier in the morning and work later in the evening than they would if the hive fronted to the north.—Modern Farmer.

# THE CANADIAN BEE JOURNAL

Devoted to the Interests of Bee-keepers.

Published Monthly by

**Goold, Shapley & Muir Co.  
Limited**

**Brantford - - - Canada**

Editor, W. J. Craig.

**BRA TFORD, SEPTEMBER, 1904.**

## EDITORIAL NOTES.

Arrange to attend the Ontario Bee-keepers' Convention and the Flower, Fruit and Honey Show in Toronto, November 8 to 12. A profitable time is anticipated. The program and particulars will appear in the next issue of The Journal.

## HONEY EXHIBITS AT THE NATIONAL EXHIBITION TORONTO

Considering the season the displays of honey at the National Exhibition now in progress, is very good, indeed, and reflects much credit upon the exhibitors. The quality of the honey, however, is not nearly up to its usual standard of excellence, the color of the extracted is perceptibly "off," and in some instances the flavor is strangely indefinite. The comb shows more than the ordinary number of unsealed and empty cells around the out-edges, and the shady cappings indicate a slow finish. Buyers, however, are less critical owing to the scarcity, and good prices are being realized. Extracted 8 and 8 1-2c per pound; No. 1 comb, \$2 and \$2.25 per dozen crate, wholesale.

We noticed the following red tickets in this department :

Best 50 lbs. Granulated Clover, Arthur Laing, Hamilton.

Best 50 lbs. Granulated Linden, Geo. Laing, Milton.

Best 500 lbs. Liquid Extracted, R. H.

Smith, St. Thomas.

Best 500 lbs. Comb, H. G. Sibbald, Claude.

Best 24 Sections Comb, H. G. Sibbald, Claude.

Best 100 lbs. Liquid Extracted Linden, George Laing Milton.

Best 100 lbs. Liquid Extracted Clover George Laing, Milton.

Best 100 lbs. Liquid Extracted, any variety, R. H. Smith, St. Thomas.

Best 20 lbs. Liquid Extracted Clover, George Laing, Milton.

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## NEW INVENTIONS AT THE NATIONAL EXHIBITION, TORONTO

Mr. R. H. Smith's combined portico gate and alighting board, described in our issue of May last, was awarded first prize and his concrete hive stand fourth prize, in order of merit in this section.

A tank for liquifying honey arranged with a water jacket underneath and all around, exhibited by Mr. E. Grainger, of E. Grainger & Co., Toronto, was awarded second prize. The tank can be used on an ordinary stove or on a small gas or coal oil stove, and would be very convenient for retailing honey, as the water once warm retains the heat in the honey for a long time after the fire is removed, and will run easily.

Third prize for invention was awarded Mr. Arthur Laing, Hamilton, for a wide frame for comb honey, with fence separators.

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In a personal letter to the editor of this journal, Mr. George Johnston of the Statistical Branch, Department of Agriculture, Ottawa, who is very much interested in the bee-keeping industry of this country, as well as being quite an extensive bee-keeper himself, gives the following startling figures of losses during the past season.

"We certainly had a severe loss in our bees here, and I lost all I had in

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Nova Scotia. East of the Ottawa I think more than 75 per cent. of the colonies were lost. That would mean fifty-three or fifty-four thousand colonies dead, leaving not more than 17,000 that came through the winter, while 50 per cent. lost of the number west of the Ottawa would leave a stock of bees not more than 60,000, giving in all 77,000, where the census of 1901 gave a total of 190,000.

This is a terrible death rate, and at \$2 a colony the loss through last winter's action would not be far from a quarter of a million of dollars for bees alone, to say nothing of the loss of honey thought not having the bees. If the whole 77,000 give off two swarms this season we would still be 69,000 or 70,000 colonies short of what we were in 1900.

These facts will serve to show the loss sustained by the country. They also suggest the advisability of a conference of the keepers for the purpose of studying the causes of the exceptionally high mortality and the means for preventing its recurrence.

Have you any theory to account for the untoward experience of last winter?

I think that the lesson to be learned is that bees must be put in well-ventilated cellars—nineteen years out of twenty we may do very well without cellaring, the twentieth tells the tale of our climate."

Mr. Johnson's suggestion regarding a conference of bee-keepers to discuss the cause and prevention of such losses is an excellent one. The Ontario Association will hold their convention early in November, and we presume that the subject will receive a large place on the program. So far as we can learn, however, of the conditions that brought about the disaster, we believe that bee-keepers had become less careful in their fall preparations,

owing to the number of favorable winters that had gone before, when any ordinary preparation and precaution sufficed to bring their bees through to the following spring.

We do not doubt the advantages of a first-class cellar, in such a winter as last, for the majority of bee-keepers. Such men as F. J. Miller, of London, with over 300 colonies, and Wm. McEvoy, Woodburn, with about 200, outdoor winterers, say that the season only served to confirm them in their purpose to continue their present system. Of course, we must remember that there is great difference between the climate of Southern Ontario, and Quebec and Nova Scotia.

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#### TO CANADIAN BEE-JOURNAL READERS.

The annual convention of the National Bee-Keepers' Association will be held September 27-30, in the auditorium of the Christian Endeavor Hotel, within one hundred feet of the south entrance of the St. Louis World's Fair, Vice-Pres. C. B. Dadant has just returned from the fair, and has secured the best possible for the members.

Special rates:—Send at once 50c. to General Manager N. E. France of Platterville, Wis., to secure charter certificate at above hotel—\$1 a day lodging, or \$2 a day board and lodging. Otherwise, higher rates will be charged. Make it a point to attend the fair the week before or after the convention, and thus continue your board rates. Other hotels near, but higher rates charged. Market street cars west bound in front of Union depot will bring you to above hotel without transfer. Missouri State Bee-Keepers' convention in same hall, September 26.

N. E. FRANCE.

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We sympathize with Mr. and Mrs. Harry Sibbald, in the death of their infant girl, who passed away August 17th.

## NOTES AND COMMENTS

By a York County Bee-Keeper.

### Cuban Competition in the Honey Market.

While Mr. W. K. Morrison and other prominent writers have scouted the idea of Cuban honey ever being a serious factor in the American and Canadian markets, conditions at present seem to be disproving their arguments. It is said that W. L. Coggs shall was asked why he was putting so many bees in Cuba. He replied that he "wanted to be on the other side of the fence when the rabbit got out." Editor Hill of "American Bee-Keeper," commenting on this, thinks the "rabbit" is now out, and in support of his contentions refers to the very low price of extracted honey in the different markets of the Union. He gives as an example the case of a correspondent who this season produced about 80,000 pounds of honey, and who made a trip of over 1,000 miles to New York only to hear Cuban honey talk on all sides, the largest buyer in the city being at the time in Cuba investigating the honey situation. With Cuban honey being quoted at the present time at 26 cents per gallon at Havana, and this, too, in a poor season, to the writer it seems a foregone conclusion that Cuba is bound to be a serious menace to our bee-keeping friends over the line, and to a lesser extent to we Canucks as well. Just last week a representative of one of our large confectioners informed me that they use large quantities of Cuban honey. Another extensive manufacturer of a different line of goods told me they didn't want any more Cuban honey. To use his own words: "It is too dirty, always

full of dead bees and other trash." One would think there would be but a very small margin of profit to the producer after the freight, and duty of three cents per pound was paid. However, there is no doubt, that even in the face of all this, considerable of their honey finds its way into Canada.

### Outyards: How Far From Home Should They Be?

Mr Townsend, of Michigan, who is writing a series of excellent articles for "The Review," thinks it advisable to have the different yards on different kinds of pasturage, even if one has to go quite a distance to have these conditions. For instance, he has one yard in a white clover, and fall flowers district; one in an alsike and basswood locality, and another in a raspberry location; not much chance of an entire failure in all three yards! Not all of us are so fortunate in our surroundings. However, I am quite sure that the bees are much better scattered in smaller apiaries, even a few miles away, than to have them all grouped at home in one yard as advocated by Mr. Alexander of New York. This year my crop would have been extremely slim if all my bees had been at home, as each of the two outyards, one eight miles and the other only three and a half miles away, produced more than double the amount per colony than the home bees. In each yard the pasture was identical to all appearances.

### That Artificial Comb Honey Canard.

Some things die hard, even after receiving many knockout blows. One of the most tenacious bits of falsehood that bee-keepers have to contend with is the "scientific pleasantry" that Prof. Wiley gave to the public some years ago, and although the artificial comb honey yarn has been proven false again and again, it keeps popping up occasionally in different papers throughout the country. In view of this a corre-

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spondent in "Gleanings" thinks the matter should be given as much publicity as possible at St. Louis. Editor Root suggests that a reward of \$1,000 should be offered to anyone who can find two sections **exactly** alike. Of course, if the comb was made by machinery, all cells, sealed or unsealed, pop-holes, etc., would be the same in all sections. Not much likelihood of anybody getting the \$1,000.

**Superseding: Who Should See to It; The Bees or Bee-Keeper?**

With Mr. Doolittle and other masters telling us to leave the matter to the bees, such advice as "if a queen dares to live more than a year kill her," is apt to put the beginner in doubt as to what course to pursue. We are inclined to agree with Dr. Miller, who says "he would rather stand in the middle." While I have had some queens that would have been better killed off before they were one year old, on the other hand, have a number of three-year-olds that gave splendid service this past season. No doubt but in the majority of cases the bees will supersede a failing queen, yet I have known them to carry such a queen through a whole season and made no effort to supersede. Certainly in a case like this it will pay the apiarist to step in and take a hand in the government of the hive.

**Bees Do Not Always Store, Though They Visit Blossoms Freely.**

Many a time have I heard it remarked that sweet clover must be a splendid honey plant "because the bees are always swarming on the blossom." While this is always the case, yet with us have never known any nectar to be stored from sweet clover. Perhaps acreage is too limited, yet I firmly believe that the plant seldom secretes nectar lavishly.

This past season if one went through the woods during basswood bloom he would certainly have thought honey

was coming in freely judging by the way bees were swarming on the blossoms. A visit to the apiary would, however, soon change such an opinion as I don't think two hundred pounds was gathered by our three yards all put together. In my opinion, basswood this season secreted nectar in about the same way sweet clover ordinarily does, viz: very small quantities, in fact, just enough to entice the bees to visit the bloom, and at a time when there was a dearth of other honey producing flora.

York County, Ont.

**THE HONEY CROP—1904.**

Editor of Canadian Bee Journal:

Dear Sir,—Having received a report and estimate of prices that should be paid for honey, I would like to say a few words in The Canadian Bee Journal. The task of estimating the crop harvested, bearing in mind the features likely to influence the price of that crop is an exceedingly difficult one, and a matter in which we are all likely to err. Last year I thought the price of extracted honey was over-estimated and time showed this to be correct. This year I believe that it has been underestimated. Going by the answers to requests for reports the price set upon, 7 1-2c in barrels, may be justifiable, but right here comes in the lack of value in data secured for years. The best bee-keepers' reports do not vary as much from year to year as the reports would from men who are not members of the associations, and yet, perhaps, the larger half of the bees in Canada have been in the hands of these men. Perhaps half a crop has been harvested by the bees living, but I do not believe that there is half the amount of honey for sale that there was a year ago. Many of the men who are not members of any association, and from whom the committee that has this work in hand re-

ceive no data, are completely wiped out and will have no honey to sell. Many others have but little, and honey is not only scarcer, but it is more in the hands of parties who will not sacrifice. More than that, commission men and others have been buying up honey at prices quite equal to the prices given as our selling price, showing the faith these men have in an advancing price. Fruit is not nearly as plentiful as last year, and at present writing the Northwest is promising to be prosperous enough to take a large quantity of honey. I believe that honey will advance easily a cent beyond the price named. Of course I may be wrong, but I think not.

R. F. HOLTERMANN.

Brantford, Ont., August 25, 1904.

#### HONEY CROP REPORTS.

Bees in this part of New Brunswick have not done very much since the middle of July. They did well up to swarming time. Many bee-keepers lost their bees last winter, and, by the way matters look just now, losses will be heavy this winter unless there is a good fall flow. I have 125 colonies. Flow commenced about the middle of August last year, and they filled up well for winter.

GEORGE F. BEACH,

Charlotte County, N.B.,  
August 8th, 1904.

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The honey crop in New Brunswick, Nova Scotia and Prince Edward Island is much better than expected. Although there were heavy losses among the careless bee-keepers in certain districts, the majority wintered well, especially in cellars, and a fair crop of clover honey has been secured. Comb is now on the market, and prospects are good for the fall flow of buckwheat and goldenrod, which are now in blossom, although weather is unusually dry. There appears to be about the usual amount of honey offered, but the honey

is very badly put up, preventing quick sales.

THE FAWCETT HONEY CO., LTD.

Carey A. Fawcett, Secy.  
Westmoreland County, N.B.

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The honey season has been a little better than the average here. This is a very poor place for bees, owing to the prevalence of high, cold winds during the early part of summer, and the lack of rain puts an end to the flow very early. No surplus after the middle of July some seasons. At the latest it is over by the first week in August, and no fall flow. From 30 lbs. to 40 lbs. per colony, spring count off strong and fairly strong colonies, is about the average. I cannot report regarding the other parts of the province, but I believe that some districts are very suitable for bee-keeping. It is only by prevention of swarming that I can get as much surplus as I do. I had only two colonies swarm out this season.

W. FISHER,

Vancouver, B.C., August 1st.

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(We regret that these reports came too late for insertion in last issue. They will, however, give our readers an idea of conditions in the far east and west. —Ed.)

Professor Robert Koch, the greatest of living bacteriologists, who discovered the tubercle bacillus and many more, has been wisely freed from all teaching duties, and is to devote the whole of his time to research, the German government providing him with a laboratory at the public expense. The wisdom of this course can be appreciated only by those who know how many brilliant careers of research have been arrested by appointments to professorial chairs. Koch's successor in his chair at Berlin and in another post is Professor Gaffky, the co-discoverer of the typhoid bacillus.

## THE SENSE OF SMELL IN THE BEES

[By Dr. E. F. Phillips, University of  
Pennsylvania.] \*

Any one who has observed bees has seen that they are guided very largely in their movements by the sense of smell. Bees have been known to fly a mile or more over water to reach flowers on an opposite bank, toward which they could be guided only by the scent.

The celebrated naturalist Huber first discovered that the organs of smell in the bee are located in the antennae, and he performed some interesting experiments by cutting off the antennae, and thus depriving the bees of their power of detecting odors. I have recently repeated some of his experiments on workers, drones and queens, with some modifications, and all my results confirm his position.

Concerning the queen, Huber says: "When one of her antennae is cut off, no change takes place in the behavior of the queen. If you cut off both antennae, near the head, this mother, formerly held in such high consideration by her people, loses all her influence, and even the maternal instinct disappears. Instead of laying her eggs in the cells, she drops them here and there." As is well known a young virgin queen is normally accepted without any difficulty by any colony, which had been queenless long enough to know its queenless condition. In experimenting along this line I cut the antennae from a virgin queen about three hours old, and put her on the comb of an observatory hive, and she was at once balled. This was repeated with another hive. She was rescued from the workers and confined in the hive in an introducing-cage, conta-

ining candy, but in a short time died, probably of starvation, for I am sure she was not stung by the bees in the ball, for she was taken out at once, and I never lost sight of her. Although there was candy in her cage, she evidently did not recognize it as food, since she was not attracted to it by smell, and on account of the loss of her antennae she was not fed through the meshes of the wire cloth.

When the workers are deprived of their antennae they remain inactive in the hive, and soon desert it since they are attracted only by light. I cut the antennae from several workers, and marked them on the thorax, to make it more easy to follow their actions, and then put them in an observatory hive from which they had been taken. The other bees at once recognized that there was something wrong with them, and gathered round them much as they surround the queen, and repeatedly tried to feed them; but the injured workers could not guide their tongues, and consequently did not take food readily. One worker with its antennae off, was put on the alighting board of its own hive, but was at once repelled and carried away by one of its own hive-mates.

Drones act in a very similar manner, but are frequently rejected by the workers as soon as they are put in the hive. Huber reports that, as soon as the light was excluded from his observatory hive, although it was late in the afternoon and no drones were flying out, the drones from which the antennae had been cut, deserted the hive, since light was the only thing that attracted them.

From these observations it seems clear bees recognize each other very largely by scent, but also by touch. The workers and drones operated on were returned to their own hive, and we would suppose that they retained the odor of that hive; but since they were not able to extend their antennae to other bees,

they were at once recognized as differing in some way, and received different attention. Langstroth says of these experiments, "The inference is obvious, that a bee deprived of her antennae, loses the use of her intellect," but this statement should be modified somewhat, for the intellect is in no way influenced by the operation. The bee continues to respond normally to all sensations which it has the organs to receive, for we see that light still attracts them as it did before; but on account of the one-sided reception of stimuli its actions become abnormal.

It yet remains to be seen which segments of the antennae receive certain odors, for probably they are not all alike. It has been found in ants that the different segments of the antennae perceive different kinds of odors, and the same is very probably true for bees.

#### Division of Labor Among Bees.

Baron von Berlepsch, in *The Bienenzeitung* for 1867, records some careful experiments conducted by him to find out at what age the worker bee normally leaves the hive. The method used by him was to put an Italian queen in a colony of common black bees, and then watch the young Italian workers as they appeared. This was done several times, and each time the time of the first flight of the young bees was recorded, and they were then followed until they became field bees. This was probably the most careful observation made up to that time, and a good deal has since been added.

Without going into all the details of the records of von Berlepsch and others, we can briefly outline the history of a common worker during the summer months. After leaving its cell in the brood-frame the young bee remains in the hive for at least seven days, generally nine. For the first day or two it is weak, and does no work of any kind; but later it takes up the work of nursing the larvae. If there

is any wax to build, it is the younger bees that secrete it. At about the age of seven to nine days, depending on the weather to a great extent, the bees begin to take short flights, in front of the hive entrance on warm afternoons, not to collect honey or pollen, but to cleanse themselves; and in these first flights, they rarely fly more than a few feet from the hive, and on their return they take up again their labors of nursing, and wax-building.

When about sixteen to twenty days old they begin to take short foraging trips, and normally never do any other work until they die. It need scarcely be added, that when only old bees are present in the hive, they do the nursing and cell-building; but under the usual conditions each worker goes through this life-cycle.

Two or three points are worthy of consideration in this connection. In swarming, the young bees as well as the old, fly from the hive and leave with the swarm, so we may conclude that it is not weakness that keeps the bees in the hive, or that limits their earliest flights to a few feet from the entrance. We know, too, that the sense of smell is very highly developed in bees, and in their early flights they might easily be guided by this sense entirely, so that, if quite blind, they could find their way back to the hive. We may, then, conclude that sight is not a highly important sense to the bee up to the time it begins to take foraging trips. Even in swarming, when the young bees do fly for some distance, they are doubtless kept from wandering too far by the scent, which we know is present in a swarm.

In seeking for an explanation for the habits of any animal, it is advisable, if possible, to compare these habits with those of some other animal, nearly related, or of somewhat similar habits. Ants, which belong to the same order of insects, the "Hymenoptera", also have a queen, males (or drones)



and undeveloped females. The undeveloped females are either workers or soldiers for the protection of the colony. In some species there is more than one kind of worker, and the different types have different duties to perform. In such cases the workers do the same kind of work all their lives, and the soldiers are for the protection of the colony only, and do none of the work which belongs to the workers. Here, then, the division of labor is carried on to a much higher degree, and the individual is destined to certain duties by its very structure. In the bee the same thing is brought about by the bees taking up various duties at different ages. If the division of labor in ants is caused by structural differences, how are we to account for the same thing in bees where we do not have more than one type of worker?

We may explain this by saying that the bee knows by instinct that it must make cells and feed the larvae while it is young; but instinct is blamed with too many things already, and it is better to find, if possible, some real cause than to fool ourselves by attributing all the actions to a thing which we cannot define. I do not mean to imply that it is impossible for instinct to bring this about, but I think it very improbable, and personally, prefer some other explanation.

In my work on "Compound Eyes." I notice that the entire eye is covered by unbranched hairs; and in trying to find some use for these I was entirely at sea until I noticed, that, although the young bees have their eyes well covered, the field bees have almost every hair removed. These hairs are so dense in the young bees that it is difficult to conceive of them seeing anything clearly; but there is no such obstruction for old bees. Then it occurred to me that possibly this was in some way connected with the division of labor which we find.

It has been shown that a young bee can get along without sight, since none of its actions require acute vision, and the presence of these hairs indicates that it is probably nearly blind. Can we not then, explain the confinement of the young bees to inside duties of the hive by the fact that it can see to do nothing else? We do not call it instinct when a soldier ant protects the colony and does none of the work of the workers, since it is structurally unable to care for the larvae, and it is equally unnecessary to attribute to instinct the fact that the young bee does not gather honey, since it cannot see to fly further from the hive than the distance to which scent will guide it. There may be some other structural differences between young and old bees, but it seems to me that these small hairs must be of great importance to the colony in compelling bees to do the different kinds of work. Old bees can build comb and feed larvae, but do so only when it is absolutely necessary; but a young bee can do nothing else.—Gleanings in Bee Culture.

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\*Dr. Phillips, who is a trained zoologist in the regular employ of the University of Pennsylvania, writes these scientific articles from his studies and observations of the bees, and their habits, at the home of the editor of "Gleanings in Bee Culture."

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A roused-up, or angered, colony will sometimes decline to be subdued by smoke. The moment the smoker is laid down, dozens of angry bees attack the operator. Such behavior is characteristic of the Cyprians. The proper treatment is to close the hive, and the entrance, and then drum, or pound, on the hive a short time, when the bees will fill themselves with honey and may be handled with ease. Some one (I think it was Mr. L. A. Aspinwall) called my attention to this point while I was out on one of my inspection trips.—Bee-keepers' Review.

## The Handling and Care of Honey After it is Extracted

In handling honey after it is extracted we work on the theory that the quicker it is canned, after the impurities have separated, the better the honey. After honey is well-ripened on the hive, it is a question whether it can be improved by any practical known method, but all will probably agree that the body and flavor can be practically ruined by a little carelessness, or inexperience in handling.

### Keep Dampness Away From Honey.

With the method we are about to describe, dampness is the only thing we have to guard against; and, as our honey remains in the tank only one day, all we have to do, when through extracting for the day, is to shut up the extracting house as close as possible, so that the damp night air will not penetrate the house; in fact, when we open the door the next morning, the air inside will feel warm and dry, showing that a part of the heat of the previous day has been retained over night, making an ideal place for the honey in the tank to clarify itself. We prefer our tanks large enough so that an ordinary day's extracting will fill one full, and another, say, one-half full; then, when practical, one goes ahead in the morning and skims, and cans, the partly full tank, to make room for the forenoon's extracting; and then there are usually odd times, before the room is needed, to can up the honey in the other tank.

### Skimming Honey.

In skimming honey we use a large iron spoon, the honey being of so heavy body it is not practical to use a very

large skimmer; then we do, not try to get the skimmings all off clean, unless it is the last time, when we want to draw all the honey out of the tank. It does not take long to run over a tank with this small skimmer, as we work right along lively, no matter if we do get quite a lot of honey with the skimmings, as we set the pail aside, and at night, when through uncapping, we empty it in the uncapping tank, and the honey will drip down through the cappings, while the particles of comb will stay with the cappings, where we want them, to be made into wax.

### No Necessity for Straining Honey.

You will notice that, with this method of working, there is no need of a strainer. No matter how much you strain honey, it needs skimming, anyhow, so the straining does not help any; besides, it requires some work to arrange a practical strainer. Then there is the washing and care; more work all for nothing. The gates to our tanks are now placed close to the bottom. When we first began using tanks, we worked on the principle of drawing out the centre, so the gates were placed four inches above the bottom, but we soon found that there was nothing settled to the bottom, so now we place the gates clear to the bottom, and this allows us to draw that much more honey before the scum begins to come through the gate. Our benches that the tanks set on are made the right height, so that the gate will be about two inches above the 60-lb can when sitting on the scales.

### Putting the Honey in the Cans.

We balance the scales at 62 1-2 lbs, the 2 1-2 lbs being the tare. This leaves 60 lbs net for each can, and is much more convenient than filling the can full, then weighing, as some do. In canning honey from these tanks, one soon learns the number of cans that can be drawn. The idea is to draw all we can without getting any skimmings.

ming in the can, when the balance in the bottom of the tank, is left there, and handled with the next batch. Now it happens some seasons that the honey is not properly cured, no matter how long left on the hives, and, as this thin honey rises to the top by a little care in canning, we are able to keep this thin honey by itself

It will be seen that our honey, as fast as canned, is put up directly into the cases and nailed up, and is ready for market the next day after extracting. Compare this method with that of storing honey in large tanks, open barrels, tubs, pails, in fact, anything that will hold honey.

#### Importance of Having Cans in Readiness.

Some people, apparently, do not have confidence enough in the business to buy their shipping cans until they know for certain just how much honey they will have; then they order their cans. At this time of year everybody wants cans; the jobber is, perhaps, out, causing a delay, then the freight is slow, and by the time the cans arrive the honey is candied, necessitating more work to melt it up and can it than it did to extract it in the first place. Then, many times, the bee-keeper is caught without anything to put his honey in, causing a loss that would pay for his storage several times over. Probably the greatest point in favor of canning honey as we go is the fact that not more than one bee-keeper in one hundred has a suitable place to keep honey in, so that the longer it is left open, the poorer it gets, both in body and flavor.

Let me repeat: have confidence in your business. Put in your stock of cans, or any other supplies you need, early; if the season should prove unfavorable, so you do not use them all this season, they will keep over all right. We have, at this writing, 50 cases of two 60-lb cans each, or enough

to hold 6,000 lbs of honey, stored away in each of our extracting houses, ready for next summer's use.—E. D. Townsend, in *Bee-Keepers' Review*.

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#### YOUNG BEES.

An impression prevails that the elder bees show great kindness and attention to the young. My own observation leads me to a contrary conclusion. They bestow care on the egg from the moment it is deposited in the cell, and seem to act on some definite plan in arranging its position. From the moment of hatching they give it the most assiduous attention and feed it carefully from day to day until the moment when they seal it up to undergo its wonderful metamorphosis. But from that period it receives no fostering or maternal care, nor even a nurse's aid and guidance. It spins its own cocoon, and is self-sufficient until it eats its way out, by the aid of its own sharp pincers, from the cell in which for nine days it is hermetically sealed. No helping hand is held out to it even then, for almost from the first moment of its fully-developed existence it becomes a laborer in a special sphere. On emerging from its cell it is incapable for an hour or two of much motion, and rests near its cradle, being often trampled under foot by the bees who, in their incessant energy, come in a steady stream from the fields. If it obtrudes itself on their line of march they simply disregard its existence, and ruthlessly hold on the even tenor of their way. In a very short time it sips from the nearest open cell, while at a very early period it proceeds to manufacture the chyle food its special set of glands so eminently fit it for preparing and administering to the just-hatched larvae.—D. D. M., in *British Bee Journal*.

# Queries —AND— Answers

Question 1:—What size of wintering cases would you advise to use for, say, two hives of each? What depth of packing under the hives, if any, and how much at the sides and ends, and what packing on top? Do you leave an air space on top of packing, under cover of case, and if so, how much? How high do you set your cases from the ground?

W. B.

Grandview, Ont.

(Answer) The wintering cases we use hold four hives, has two inches of loose, dry, forest leaves on the bottom. The hives, with covers removed, are placed close together on the leaves each pair facing in opposite directions. The fly holes in the cases are four inches long by two deep; a bridge three inches wide is placed on the alighting board of the hive to prevent the packing blocking the entrance. The three-inch space all around the outside is then packed with dry leaves. The space above the hives, eight inches, is filled with leaves, and loose slats laid on them to keep all compact, the slats will compress the leaves, and make one or two inches of space, sufficient for ventilation. The cover of the case must keep out rain or snow, and if it fits closely one or two augur holes for ventilation should be bored, on opposite sides of the case, and covered with wire cloth.

If the situation is dry, six inches will be sufficient height above the ground.

For packing two hives in a case you would require a case a little larger

than half the size required for four: we consider the case for the four hives the more economical.

Question 2: I find that I have two or three queenless colonies, which have been so for some time. What would you advise to do with them?

(Answer): It is sometimes a difficult matter to get bees that have been queenless for a length of time to accept a queen. If no laying workers were present, I would give them a frame of comb from another hive, containing eggs, or small larvae, and if they started queen cells, I would introduce a laying queen as soon as possible after removing the queen cell. If, however, they would not start queen cells, I would continue to give them a frame of brood occasionally, until they were in the humor to accept a queen.

St. Thomas, Ont.,

R.H.S.

When you take off your surplus honey, if it is intended for market, clean the sections carefully, and put them in a close fitting shipping case, in a room free from dust and dirt and bad odors. Honey should not be left exposed to dust and disagreeable odors. If it is it will soon be covered with dirt, and it taints from bad surroundings about as quickly as butter. There is no way to clean it after it is once covered with dust, and it should therefore receive careful attention as soon as it is taken from the bees. Never take it to market in the supers, if you want to secure the best price, but remember that in this age people are particularly about how a thing appears when it is put on the table. "Broken honey" may taste just as well, but the thrifty housewife prefers a neat, square cake that will not drip much, cut out a clean section, to put on with her best table linen when company comes, and she will pay more for it than she would for a lot of musty, broken comb honey. It always pays to put things up, especially honey, neat and clean.

—Modern Farmer.

### APIARIST ON A JAUNT.

Mr. John Fixter, farmer foreman and apiarist, Central Experimental Farm, returned Tuesday from a trip to Western Ontario, where he went to get some information in keeping bees, and particularly the treatment of foul brood. While away he visited the very large apiary of Mr. William McEvoy, Woodburn, Ont., the foul brood inspector for Ontario, and Mr. Fixter says he obtained some very valuable information from this noted bee-keeper, which will enable him to carry on the work at the Experimental Farm to better advantage than ever before. He states that Mr. McEvoy has 175 colonies in his apiary, but that he expects to go more extensively into the business now that

his sons are grown up and are taking a deep interest in the work. Largely due to his able management, Mr. McEvoy is one of the few who brought his bees successfully through the long, cold winter, which was a very severe one on the little honey-makers. The output of honey from Mr. McEvoy's apiary last year was loaded on seven heavy wagons and photographs (which were shown Mr. Fixter) taken of it. The honey brought Mr. McEvoy \$1,300; part of the shipment went to England and the balance to the Northwest. Mr. Fixter speaks very enthusiastically of the hospitality extended him by Mrs. McEvoy and her family, and says he will never forget the many valuable suggestions and pointers received from the veteran bee-keeper.—Ottawa Valley Journal.

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