

The  
**Canadian Bee Journal**

Devoted to the Interests of Bee-keepers

Vol. 16, No. 5.

MAY, 1908

\$1 Per Annum



D. W. Heise's Apiary, Bethesda, Ont.

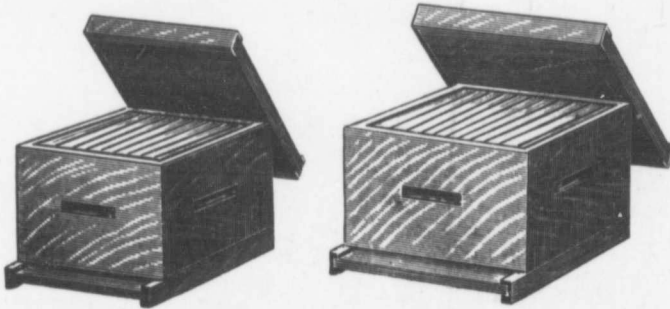
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# The Canadian Bee Journal

Devoted to the Interests of Bee Keepers

JAS. J. HURLEY, Editor

Published monthly by  
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## The Canadian Bee Journal

Brantford, Canada

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Vol. 16, No. 5.

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# The Canadian Bee Journal

Published Monthly

Vol. 16, No. 5.

MAY, 1908

Whole No. 519

D. M. Macdonald, Banff, comments as follows in the British Bee Journal (page 149):

**Comb Honey.**—A Canadian editor lately informed his readers that bees do not make wax for us to eat. Further, he thinks that both comb and honey should not be eaten, because Nature never so intended it. I put a cross against that statement, intending to make a comment thereon, but Mr. Hutchinson kindly supplies me with one as follows: "I recently met a bee-keeper who had been greatly troubled with constipation until he took up a regular diet of comb honey. Extracted honey was not effective in this direction, but honey in the comb had proved a radical remedy." A learned doctor assures us that persons whose digestion needs a little assistance will find comb honey just the thing. The wax furnishes a gentle stimulus to the digestive membranes. Comb honey, stand one up!

[We would not care to oppose such a strong combination as Mr. Macdonald and Mr. Hutchinson, for whose opinion we have the greatest respect. But we are still unconvinced that beeswax is an aid to digestion. Honey is certainly a laxative.—Ed.]

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"Mr. William McEvoy says that wholesale requeening should be done in nearly every apiary in Ontario. No one thing in the whole bee industry is so badly neglected as the queen business—the very thing that so much depends upon for our honey crops. (The key-stone of the arch is wobbly.) 'The side

of a cell is the bottom, the opposite side is the top; the bottom is one side, and the top the other.' (Mixed, but correct.)"

—D. M. Macdonald, in British Bee Journal.

[Wobbly? Yes, if she is old and exhausted. No, if she be young and fresh. It must be remembered that McEvoy gets as many eggs from his queens in one season as some bee-keepers get in two.—Ed.]

\*\*\*

Editor Hurley, of the Canadian Bee Journal, having claimed that he had converted a number of persons from comb honey to the extracted article by the plea that "wax is unhealthy and difficult to digest, as it must first melt in the stomach," Editor Hutchinson, of the Bee-Keepers' Review, "gets after" his Canadian brother with the remark that 130° is required to melt wax; the temperature of the body does not go above 98°; therefore, wax does not melt in the stomach. A correspondent points out to Editor Hutchinson that it requires 145° to melt wax. Finally, D. Anguish writes to Editor Hurley: "I think that is where the unhealthy part comes in with your customers—heating them up so hot as to melt the wax."—Irish Bee Journal.

[Wait till we meet 'em in Detroit next fall! We'll make it so hot for 'em that they will be able to melt up slum-gum without the aid of Herschiser's apparatus.—Ed.]

\*\*\*

"D. M. M.," writing in the British Bee Journal on "Stimulating With Combs of Honey," says: "A good fat

comb weighing from 6 lbs to 8 lbs is, in my opinion, the very best form of spring stimulation, and the manner of administering it is rather a minor matter. Scratch the face of the comb slightly to break the capping, thus giving the bees the scent of open honey-cells, and they will do all the rest. If weather is fine, the comb may be laid flat across the tops of the frames, with the bleeding honey gently percolating down over the cluster to such an extent that the drip will make them clean it up under compulsion, and you have an automatic generator of active breeding. The bees, acting on the belief that a flow is on, stoke the queen, thus compelling her to start and keep on ovipositing. Almost as good is it to place the comb **below** frames where an eke reposes beneath the body-box. Their intercourse between the cluster and the entrance almost instantaneously reveals to them that a new source of riches can be tapped, and straightway they proceed to transfer the store to combs in close proximity to the brood-nest. Both these places are superior to the generally chosen spot—namely, the comb just outside the cluster—because it is more necessary to carry honey either from above or below, and consequently it means more stimulation. Placed alongside, they are more generally content to accept it as a matter of course, and not as a new supply. Whatever stirs them up acts as an incentive to new effort." [The first part of the above is practically the same plan as Mr. McEvoy outlined in our last issue.—Ed.]

\* \* \*

We have received from the New Zealand Department of Agriculture two Bulletins, Nos. 5 and 18, all nicely illustrated. No. 5 deals with the subjects of (1) "Practical Advice" and (2) "Apiculture in Relation to Agriculture." No. 18 deals with the subjects of (1) "Advice to Beginners" and (2) "Bees in Relation to Flowers and Fruit Culture," all

by Isaac Hopkins, apiarian. The subjects are very practical and ably dealt with, and reflects great credit upon Mr. Hopkins and the Government which employs him. We will take the liberty of making a few extracts later. We regret to notice that in the list of periodicals given in No. 18 the Canadian Bee Journal is not named.

\* \* \*

Be sure and put up in a conspicuous place the notices that will be sent you by Secretary Hodgetts. There are a great many people who are yet ignorant of the law in reference to spraying trees while in bloom. Great injury might be done to some bee-keeper from the ignorance or carelessness of his neighbor.

\* \* \*

The cooperative sale of honey is now a live topic. We would like to hear further from some of our readers upon this important topic. In numbers there is wisdom. Do not leave all the discussion to Mr. Deadman and Mr. Chrysler. We would like to have an expression of opinion from the President of our Association upon this matter.

\* \* \*

The honey imports from abroad, amounting to about £35,000 per annum, imply, however, that the home production of honey is not equal to the demand, and that the inferior quality of the imported honey is indicated by the low price which it yields.—Mr. Garcke, in Bee-Keepers' Record (British).

\* \* \*

The season hereabouts has thus far been very bad for the bees. It has continued cold and wet. Dandelion has shown itself, but the bees have had no opportunity to work upon it. We examined our own bees on May 11th. Brood-rearing was well advanced, but stores nearly all gone. We feed them at once. We consider it most fortunate to have opened the hive at the opportune moment. Since that date they have been unable to gather anything.

Relative to of feeding in relative purpose that among t have, on inv tributed to G ander, speak Commenting Mr. Root say a late hone, wheat, and t into consider and many otl oppose early flow, and if feeding, surel, vantage to th if they had a fail to see a apology, for a buckwhe of bees is necce for buckwheat not a factor wards bringin dition. With weak in bees, condition, we all the eggs w could take car possible help c feeding is beyo hand, colonies the early spri have supers in ing the large again it would necessary to d father's apiary sheltered locat at the west, r stretch of swa The bees alway and every fall the fall and sp in abundance.

## Notes and Comments

(By J. L. Byer)

Relative to the much-discussed subject of feeding in the early spring for stimulative purposes, it is interesting to note that among the many correspondents who have, on invitation of Editor Root, contributed to *Gleanings*, only one, Mr. Alexander, speaks in favor of the system. Commenting on Mr. Alexander's views, Mr. Root says: "Our correspondent has a late honey-flow, mainly from buckwheat, and therefore this must be taken into consideration." Messrs. Gill, Hand and many other extensive producers who oppose early spring feeding have an early flow, and if there is any virtue in early feeding, surely it would be a greater advantage to them than would be the case if they had a late flow. Personally, we fail to see any logic in Editor Root's apology, for **anybody** can have bees ready for a **buckwheat** flow. For clover, a force of bees is necessary six weeks earlier than for buckwheat, and stimulative feeding is not a factor necessary or advisable towards bringing about this desirable condition. With colonies that have wintered weak in bees, but with queen in vigorous condition, we have invariably found that all the eggs would be laid that the bees could take care of. In this case how any possible help could come from stimulative feeding is beyond my ken. On the other hand, colonies that are strong in bees in the early spring nearly always have to have supers in fruit bloom, notwithstanding the large hives I use. In this case again it would be unwise or at least unnecessary to do any early feeding. My father's apiary is situated in a naturally sheltered location—high land and trees at the west, north and east and a low stretch of swampy ground on the south. The bees always winter good in this yard, and every fall we move some there for the fall and spring feed—the latter there in abundance. The large hives used there

(mostly 10 and 12-frame, frames one-half deeper than Langstroth) are at date of writing (April 30) boiling over with bees, drones are flying, and conditions seem more like June 1st than May 1st, when so far there has only been three days—April 22, 23 and 24—that bees could leave the yard. Pussy willows are just coming into bloom, yet if weather turns warm it will be necessary to put supers over these giant colonies to prevent swarming. Of course, these bees have Carniolan blood, and I never yet saw an instance of such early building up on the part of pure Italians. It was at this yard that we lost a valuable queen and swarm last spring during willow bloom, a circumstance over which Mr. Hershiser gently jabs the writer in a late issue of *Gleanings*, because I criticized his article wherein he advocates a wholesale interchange of brood frames and the building up of weak colonies at the expense of the stronger. While the rebuke is merited, yet I would remind friend Hershiser that this absconding took place when the early willows were in bloom, and the weather was of such a nature to forbid exposing the inside of a brood-nest, let alone the exchanging of brood frames from one hive to another.

The foregoing data is simply given to show that with a good strain of bees a colony will "get there" without any coddling and nursing during the early spring.

Various results have been reported by different bee-keepers who have tried Mr. Alexander's plan of saving a very weak colony by putting it over the top of a strong stock. Two reasons have stood in the way of my trying the plan—bees mostly packed either in cases or individually, hence impractical to tier up in the early spring, and again we seldom have real weak colonies that it would be worth while trying to save. True, we have winter losses, but the bees nearly always

die outright, and as a rule the few weak colonies in the yard have old, failing queens. Perhaps we should be ashamed to make this latter confession, but from observation I am convinced that "there are others," so shall console myself with that thought. However, on April 17th, we found a case that gave us a chance to try the doubling-up plan. Two colonies in single cases, hives with loose bottom boards, stood side by side. One, a hybrid stock, was very strong; while no combs were lifted out, yet brood could be seen from the top in seven out of the ten deep frames. The other, a pure Italian, with young queen bought last fall, had not over a cupful of bees, and while the combs were clean, the queen nice and lively, yet there was no brood. Just before leaving the yard, about 3 p.m., the cover and packing was taken off the colony, a queen-excluder put on, with a single sheet of newspaper on top. The weak stock was placed over this, and all packed snugly and warm around sides and top of hive. After leaving, we had doubts as to whether the bees would chew holes through the paper or not, but thought we would take chances, as, to tell the truth, we had not much faith in ever seeing the queen in upper hive alive again. One week later (April 24) we were driving past this same yard, and, although weather was cool, couldn't resist going in and having a look at this double-decker. As we took off the packing, was surprised at the amount of heat on top of the hive, but as the quilt was taken off the cause was apparent. The frames were literally boiling over with bees, and honey and pollen, the first of the season, brought in the two previous days from soft maple, was much in evidence. Lifting out a frame at one side and glancing down, we found that the paper sheet had disappeared, with the exception of a small bit at one corner of the hive. In the third comb we found eggs and larvæ, showing that up to the

present our ratio in queen-saving was 100 per cent. Naturally we felt like throwing up our hat into the air, but, as the weather was chilly, refrained from such risky demonstrations. To be sure, the queen in upper chamber may yet disappear; shall report later on how things pan out in our dual-queen experiments.

[Mr. Frank Adams, of Brantford, winters his bees in the cellar. He has tried this plan of Alexander, and puts a queen-excluder between. He reports the plan as most satisfactory.—Ed.]

Since penning that note re wax presses for April C.B.J., Mr. Sibbald writes me that, judging from what I say, the press we used has too large a tank, hence requires too much hot water. Am inclined to think there is something in the claim, and, as intimated in April "Notes," we have not yet tried the hot-water machine with comb, so the slum-gum tests are not sufficient to laud or condemn the machine. Quite a few have already tried the Sibbald machine, and speak highly of it, and the writer would not wish to speak unfairly of the press, and perhaps be the means of deterring some from trying this system of wax-rendering. Be it understood we have no personal interest in the matter of wax presses, as regards their sale, and anything we have written has simply been in accord with our opinions, based on experiments with the different machines.

#### That Fishing Trip

Naturally of a sensitive nature, imagine, Mr. Editor, our mortification on seeing our "failings" exposed to the public by E. G. Hand, he no doubt being in collusion with your worthy self to help the matter along. "When you hear him coming." Such an insinuation is indeed hard to bear with. When we found our friend at the station awaiting our arrival, was under the impression that the Hall-

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burton express (record—10 miles an hour) had warned him of our coming, but it seems otherwise. And then, because I wouldn't go out on the lake with him in a frail "birchbark," he chooses to poke fun at me. Then as to those grasshoppers; the way he had me sprinting after them, no wonder if we imagined that we were carrying too much adipose tissue, and that our friend suspected we were too heavy for his craft, hence this flesh-reducing exercise. And see here! Who claimed to be able to "clip" a queen on the wing? Reduce the speed of those "hoppers" to a walk, or even a run, and we undertake to pare off their wings as fast as they come along. Never mind, Ernest, all these misrepresentations won't be forgotten, and when I come to Fenelon Falls this summer, will act as "green" as ever as regards handling the oars, and shall insist on you rowing me around again in that "ten-ton skiff." Forewarned is forearmed, so would advise you to at once take up a course in muscular development.

#### MIDDLESEX BEE-KEEPERS' CONVENTION

On Saturday, May 2nd, there was an excellent turnout of bee-keepers at the City Hall, London. President F. J. Miller called upon George Kimball for an address. Mr. Kimball advocated a winter repository, made above ground, in preference to outside wintering. His beehouse was made with 4-inch hollow wall, then 12 inches sawdust, and outside of this 8 inches of a hollow wall. There was six inches of sawdust packing above. He also had a 6-inch-square pipe bringing fresh air into the cellar, and another taking the foul air from the cellar; both pipes went up in the air, like a chimney. Unlike most bee-keepers, Mr. Kimball did not consider the variations of temperature, as a result of being above the ground, injurious.

John McEwen, in an excellent address, advocated outside wintering, but wanted the apiary sheltered from strong wind. His apiary was east of his house. His loss for years had been in a place angling across the rows, where the west and southwest winds could strike. He had planted a spruce hedge, and, until high enough, was using lumber to break the wind, and this year he had no loss. R. F. Holtermann gave a similar instance, confirming Mr. McEwen's statement.

For spring management, Mr. McEwen, who winters his bees packed on their summer stands, as soon as weather in spring will permit, fills combs with syrup made in the proportion of two of granulated sugar to one of water. The two combs next the hive walls are taken out, and the combs with syrup put in. This syrup can be used by the bees for brood-rearing, and gives them a great stimulus. When the combs are put in the hive, the entrance is contracted from four inches to one-half. The bees show a little excitement the day the feeding is done, but none after the entrance is enlarged to its normal size.

Secretary E. Barnard began winter preparations in the preceding July, when old queens in the apiary were displaced by young. He found that where there was no fall flow and a young queen, the queen would lay eggs, but the bees destroyed them, not being willing to feed the larvæ. If there was an old queen, and he stimulated the colony, the old queen would not lay; so he wanted a young queen, and to stimulate to produce young bees to go into winter quarters.

Robert Wallace was a strong advocate of feeding bees water with salt, having it convenient in the apiary at all times. James Armstrong endorsed Mr. Wallace's statement. He considered an excellent plan was to build a trough six feet long, half-filling it with sawdust, and then soaking this with water. Mr. McEwen used wooden boxes, about a foot square,

with floats; he put a tablespoonful of salt to a gallon of water. His two boxes hold 25 pounds of water, and on Friday, May 1st, he found it necessary to fill these feeders three times, so fast did the bees take the water.

W. A. Hill, St. Thomas, gave a talk on the development of the extracted honey trade. The greatest difficulty beekeepers had to contend with was the thought that honey when granulated was sugar. He made a display many years ago of 800 pounds of granulated honey in glass at the Southern Counties Fair. It surprised people.

The advisability of packing colonies with flax, chaff or forest leaves was discussed. F. A. Gemmill preferred leaves; Messrs. D. Anguish and President Miller preferred the flax.

Foul brood matters received considerable attention. It was thought that a larger Government grant and more inspectors would be needed to stamp out the disease, and the following resolution was passed: "That the Middlesex Beekeepers' Association would earnestly point out the need of a larger Government grant and more inspectors to stamp out the disease known as foul brood."

In the discussion some thought it would be well to have an inspector residing in the county.

A pleasant event in connection with the meeting was the election of Mr. R. F. Holtermann to honorary membership in the Association, in consideration of services rendered from time to time.

#### COMMUNICATION

The last number of the Canadian Bee Journal is to hand. You are putting in good sound articles. It should be of practical use to Canadian bee-keepers, and I trust it is being well supported by them. It deserves to be.

F. W. JONES.

April 24, 1908.

#### HE HAS DUG HIMSELF OUT

Friend Anguish has survived the winter's snow. He comes up as chirpy as a spring chicken. A man who can have his bees hanging out in large clusters at this time of year must certainly have some good pointers stored away in his brain box. If we could only get him to use his pen as he uses his head we would be happy. He is a bit too brief this time:

"I see that you imagined that I was snowed under. We had a lovely lot of snow all winter, but not enough to quite snow me under. It is cold enough to-day (April 23) for myself and the bees to have our winter coats on yet.

"Don't take the coats or packing off the bees for some time yet, as there is likely to be several cold spells. If you do, there is likelihood of brood getting chilled.

"Don't fail to put your best energies into your bee business this summer, and see how it turns out, for that is where so many of us fail—we have something else to engage our attention, the bees are neglected, and then it is all laid to bad luck. There is no such thing; it is bad management. There was quite a number of bees lost last winter, notwithstanding that there has not been so favorable a winter for a number of years, and there has not been a season for a number of years when the outlook for getting a good crop and good prices was so favorable. There is very little honey left and less bees to gather it than there was a few years ago, and more people in the West to consume it, so **don't neglect your bees.**"

D. ANGUISH.

Now is the time for careful management. See that your bees have plenty of food and water. Do not hesitate to feed if stores are short.

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Purple Valley

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Lindsay, April

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## D. ANGUISH.

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## SPRING REPORTS

I have twenty hives of bees. I wintered them in the cellar, and they are all alive yet. My hives are large—twenty-one inches square inside. I have one swarm in a section of a cedar tree, which I cut down and carried home. It is five feet long, and is full of comb and bees from top to bottom. I left it out all winter, standing on a piece of plank, with a piece of inch board on the top end. It has been there for six years, and they seem to stand the winter well. There is about two inches of half-decayed material all round inside, that acts as an absorbent—a hint to bee-keepers—and besides there is the bark on the outside—a bad conductor of cold. They did not have a flight since some time in November until 12th of March.

PETER CAMERON.

Purple Valley, Ont.

At this date no reliable report can be given as to how the bees have wintered, but some bee-keepers in this district have lost a good many colonies, and expect to lose more before we get settled weather. My loss is about 10 per cent., with a few light. Nearly all that I have lost had honey only for winter stores. Some colonies cleaned out over 40 pounds, and were all dead. Others that were fed with sugar came out nice and clean, and will have enough and to spare. The season is late and nothing done on the land around here.

JAS. STORER.

Lindsay, April 11, 1908.

Colonies all living yet.

W. BEUGLAS.

Bees have wintered well here, and although the spring has been very cold and backward, so that the bees could fly only on four days, they are seemingly all in excellent condition, excepting one that

was badly affected with dysentery, but with proper attention I think it will pull through. It was a strong colony last fall, and was not fed any syrup. The honey in the hive may have been the cause, but I am not sure, as the entrance of all colonies were buried in several feet of snow for over a month, and they may have somewhat smothered. I didn't need to shovel any snow to keep the hives covered; it got there itself. Two days before March 12th, when bees had their first flight, one could merely see the tops of the packing cases. Holes were dug about three feet square into the snow in front of all the hives, and straw scattered into them, and there were surprisingly few bees lost. I cannot speak too highly in favor of storm doors for hive entrances as a protection from snow in the winter and from cold winds in the spring and fall. All entrances were clean and dry when dug out. I keep the storm doors closed all the time, except when the weather is fit for bees to fly, then close them again at night. I have a stick with a shingle nail driven into it near the end, and can either open or close the doors as fast as I have a mind to walk past the hives—a grand thing for fat and lazy men that don't want to stoop.

D. MEUSER.

Elmwood, Ont.

P.S.—Some time ago I read an article in a religious paper, stating that some spoke in tongues at a certain gathering at Mt. Joy, Ont. Methinks it must have been Mr. J. L. Byer merely reciting his first lessons in French and German (page 49, C.B.J.).

D.M.

Bees have come out of winter quarters this spring very good, both from cellar and summer stands. They are now gathering pollen from the alders.

I have found what I think is an improvement in melting up combs by crushing up the combs or cells when cold and

dry. When cells are crumbled up they cannot hold the wax when pressed. I use a small round wooden mallet to crumble up the cells, placing the comb on the work bench. When crushed I sweep it into a box for melting. Mr. Editor, what do you or your readers think of this plan?

JOHN BAILEY, SR.

[The idea seems to be a good one, and should be followed up. Its only drawback appears to be the labor involved where one has a very large quantity. But this could be met by using a heavier-weighted tool—a posthole-packer, for instance. Have any of our readers experience along this line?—Ed.]

We took a drive to our outyard a few days ago. About half of the colonies were hanging out, with large clusters, and the balance very strong. It was a nice and pleasing sight at this time of year. We have no loss out of one hundred colonies, and the home yard has the same record. If there be any honey in the flowers this season we expect to get our share.

D. ANGUISH.

[We congratulate you, friend Anguish. That is a splendid report.—Ed.]

#### THE DAIRY AND COLD STORAGE COMMISSIONER'S REPORT

The annual report of J. A. Ruddick, Dominion Dairy and Cold Storage Commissioner, has just come to hand in a volume of 174 pages. It deals with the work of four important divisions of the Department of Agriculture, namely, Dairying, Fruit, Extension of Markets, and Cold Storage, is well illustrated with half-tones, and contains maps showing the various fruit-growing districts of the Dominion.

In the section devoted to dairying, the Commissioner reviews the dairy industry, and gives some interesting figures bear-

ing on the trade. A large amount of space is devoted to a complete report of the Cow Testing Associations. A review of the apple industry of Canada by Mr. McNeill is a feature of the section devoted to Fruit, and the working of the Fruit Marks Act is dealt with at some length.

The methods which are employed to improve the handling of perishable products receive considerable attention, and the report shows what is being done along this line.

Under the head of Cold Storage the various services are described and some general information on the subject is also given.

There has been prepared along with this report, but published separately, a map showing the approximate location of all the cheese factories and creameries in Canada. The report makes interesting and instructive reading for any person connected with the industries touched upon. Copies may be secured by application to the Dairy and Cold Storage Commissioner, Ottawa.

#### YORK COUNTY ASSOCIATION

The spring meeting of the York County Association will be held in Markham on May 23rd. Mr. Holtermann and others are likely to be in attendance. A good attendance and an interesting meeting is expected.

#### ADVERTISE IN THE C.B.J.

It pays to advertise in the C.B.J. when you have bees to sell. I sold my bees a few days ago to Mr. Wm. Abbott, a young married man, of Centralia, Ont. Mr. Abbott is an intelligent, enterprising Bee-keeper, and we expect to hear a good report from his apiary next fall, when the honey season closes.

GEORGE OTT.

Arkona, Ont.

#### IS BEES

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**IS BEESWAX GOOD FOOD?**

It will be noticed, by comments appearing elsewhere in this issue, that a remark of ours published in the December C.B.J., to the effect that beeswax eaten with comb honey had no food value, and was not easily digested, has created considerable interest. On this we invited criticism. In the January Bee-Keepers' Review, Brother Hutchinson comments as follows:

Once an idea takes possession of the public mind, it is difficult of eradication, no matter how erroneous, or how many times it is contradicted or disproved. For instance, most people know that beeswax is indigestible, and they immediately jump to the conclusion that its consumption in the shape of comb honey is an injury to the digestion. In fact, this is one of the stock arguments used in favor of extracted honey as compared with comb honey. For instance, in the December issue of the Canadian Bee Journal is found the following editorial:

"We have been frequently asked by our customers which is the best—comb or extracted honey. We invariably reply, 'Extracted honey is by far the best.' Then we back it up with the following arguments—listen, and tell us if we are right or wrong. We say this: 'In eating comb honey, you cannot put anything else in your mouth at the same time, or if you do you must swallow the wax. There are no food values in the wax, and it is difficult to digest, as it must first melt in the stomach. In eating comb honey with nothing else in the mouth one gets the taste in too concentrated a form, and many persons feel a choking sensation as a result; others can eat but very little of it and are repelled; while if the extracted honey is eaten, it may be taken clear if desired, or taken with the bread or cake, and will not be found irritating to the throat, and no wax is put into the stomach. The bees make wax to store their honey in; they do not make it to eat. We do not think that honey and the comb should be eaten. We do not believe that Nature so intended it.' There are a number of persons in our minds whom we have converted in this matter. It is more profitable, too, to produce the extracted article. What

"have our comb honey men got to say to this? Don't get after us too severely."

Bro. Hurley, I have no desire to get after you "severely," as I believe that, like the rest of us, you sincerely desire to arrive at the truth; hence, you will be glad to have your attention called to the fact that wax does not "melt" in the stomach. A temperature of about 130° is needed to melt wax, while the temperature of the body does not go above blood heat—about 98°. Still further, although wax does not melt, and is indigestible, it is actually an aid to digestion. On this point I never saw a better explanation than that given 25 years ago by Prof. Jared Hasbrouck, at that time living in New Jersey. The article that he wrote on this subject was published in the Bee-Keepers' Magazine, and reads as follows:

So much is said now-a-days by such influential men as King, Dadant, Jones and many others, to "boom" extracted honey, that it seems necessary that something should be said to recall the claims of comb honey, that its virtues may not be forgotten and its production neglected. It may be that, for the present, more money can be made in running bees for extracted honey—five dollars to one, as Jones says; but I think I can see reasons why, with increased production, we may expect extracted honey to depreciate in price much faster than comb honey. Extracted honey must always compete with similar sweets, such as sugar, molasses, syrups and glucose, and its principal recommendation will be its novelty or cheapness; while it is weighted in the race for popularity by its inconvenient tendency to candy and is immediately exposed to the suspicion of being adulterated. On the other hand, comb honey stands without a rival—a thing sui generis—captivating to the eye—the symbol of sweetness—a royal luxury. But so industriously have they who ought to know better talked about the enormity of eating indigestible wax, that the proper use of comb honey is almost a lost art. People struggle to reject every flake of wax, or else eat their hot biscuit and honey as a forbidden indulgence, dared with full expectation of gripes and nightmares as a penalty. The fact is, that comb honey is one of the most wholesome

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GEORGE OTT.

foods ever eaten. It will make hot biscuit and fresh bread easily digestible. These alone are rightly considered much harder of digestion than stale bread, from the fact that they pack, in chewing, into masses impermeable to the solvent juices of the digestive organs, but when they are eaten with comb honey, the delicate flakes of wax prevent the packing, while the honey, pervading the whole mass, is readily dissolved out, leaving free access for the gastric juice to all parts of the food. The scales of wax, **though indigestible**—[He admits it is indigestible.—Ed. C. B. J.]—are soft and smooth, and will not irritate the most delicate membrane.

But besides being a delicious and wholesome article of food, I regard comb honey as a specific cure for many difficulties of digestion and irregularity of the bowels. In our day, drugs are at a discount for the treatment of chronic diseases, and people are generally seeking health from a proper selection of foods instead of medicines. For a long time Graham bread and bran crackers have been prescribed by the medical faculty for dyspeptic affections and obstinate constipation; but the doctors are about finding out that these things will ruin the digestion of anything but a horse, as the rough, silicious scales of bran irritate and lacerate the delicate membranes of the digestive organs, to their speedy ruin. I can assure all persons whose digestion needs a little assistance that they will find in comb honey, eaten wax and all, just the thing to help them—and a very agreeable medicine to take it is, too.

The flakes of wax furnish a gentle stimulus to the digestive membranes, without in any way injuring them. To bee-keepers I would say, produce extracted honey by all means, if you can make more money by it; but for your own bread and butter, and hot biscuits and hot cakes, use comb honey, without being anxious to save all the wax to make up into foundation, and see if it isn't the best way to eat honey.

I might add that I recently met a bee-keeper who had been greatly troubled with constipation until he took up a regular diet of **comb honey**. Extracted honey

was not effective in this direction, but honey in the comb had proved a radical remedy, probably for the very reasons mentioned by the Professor.

[We are indebted to Brother Hutchinson for the above very lucid article. He has handled us gently but firmly. The writer does not profess to be an authority on this matter, and is willing to take lessons thereon. What we wrote was the result of inferences only. In this we are not alone. Mr. Hutchinson stated that wax melted at a temperature of 130°—inference only, by his own admission. C. P. Dadant corrects him and states that pure beeswax does not melt below 144°. "Americana" states that it takes 155°. We feel obliged, therefore, to make some explanation for having made the statement. In the first place, we were told by a medical friend that wax was an indigestible substance, and therefore not good for the stomach. This, coupled with our own experience in eating comb honey, brought a measure of conviction to our mind. It has been our experience when eating comb honey that there was an instinctive disinclination to swallow the wax. In the process of chewing the honey was separated from the wax and swallowed, while the wax remained in the mouth, and chewing could be continued indefinitely, finally to be ejected. This is precisely the same experience that you have when chewing gum. There is no inclination to swallow—no muscular action of the throat prompting the act of swallowing. Now take a piece of bacon and chew it in the mouth as long as possible—till it becomes a fine pulp well mixed with saliva. It requires an act of the will to resist the act of swallowing, whereas with wax it requires an act of the will to force the act of swallowing. This is so with the writer, at least. From this we drew the inference that there was some instinctive, undefinable intelligence prompting the ejection of the wax. When we wrote "It is difficult to digest, as it

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haps committed an error in using the  
word "melt." This seems to be the word  
that so shocked C. P. Dadant when writ-  
ing in the February American Bee Jour-  
nal. It is true we did not choose the best  
word to scientifically express our thought.  
But we would like to ask here, What  
kind of food is that which requires 144°  
or 155° to melt? How often do we hear  
the expression in reference to some nice  
ripe fruit, that "it fairly melts in the  
mouth?" It was in this sense that we  
used the word "melt." In the article  
above quoted by Mr. Hutchinson, Prof.  
Jared Hasbrouck admits that wax is in-  
digestible. That wax is indigestible can  
be proven by the fact that mastication  
has no effect upon it. Neither the saliva  
of the mouth, nor the solvent juices of  
the digestive organs, have any effect upon  
it. Boil wax as long as you may—melt  
it and re-melt it—and it is wax still;  
while carbohydrates and albuminoids are  
made more easy to digest by being cook-  
ed. Now what is digestion? It is a  
"melting," disintegrating, dissolving pro-  
cess—a process of Hydration. In the  
Standard dictionary we find the following  
definition of digestion: "The process by  
which the functions of the salivary, gas-  
tric and intestinal glands, the pancreas  
and the liver contribute, of so dissolving  
and chemically changing the food taken  
in that it can be assimilated by the blood  
and furnish nutriment to the body; the  
separation of the nutritious from the  
waste elements; conversion of food into  
chyme, preparatory to assimilation." The  
action of water upon wax when boiling  
(or rather its lack of action and non-  
mixing) proves that there is no hydra-  
tion, and without hydration there can be  
no digestion. Without digestion there is  
no nutrition. Now what is nutrition?  
Nutrition is digestion plus absorption plus  
assimilation. If the saliva and gastric  
juices cannot dissolve it in the first stom-  
ach, it cannot be digested in the second

stomach—the duodenum. In a word, it  
passes away as a waste product. The  
only possible use it can have in the diges-  
tive organs is a mechanical action, some-  
what analagous to the sand and gravel  
that is so necessary to a hen. Prof. Jared  
Hasbrouck's statements about "the deli-  
cate flakes of wax" is pure rubbish. It  
is true that the manufacture of wax by  
the bees is in "flakes," but when wax is  
melted or eaten, even though it be sub-  
mitted to a severe mastication, it does  
not resume a "flaky" character. We  
fear the Professor must have been suffer-  
ing from an acute attack of indigestion  
brought about by his "hot biscuits,"  
and, in gratitude to the soothing effects  
and fine flavor of the honey, proceeded to  
write the above panegyric quoted by Bro.  
Hutchinson. We trust that we may not  
again so shock our good brother C. P.  
Dadant. Perhaps it was out of kindness  
to us that he refrained from mentioning  
the C.B.J. as the journal in which the  
"assertion" appeared when criticizing it  
in the A.B.J. In closing this too-long  
argument we wish to say that we are  
still of the opinion that the medicinal  
value of comb honey lies entirely in the  
honey—it is a soothing, gentle laxative.  
Comb honey may aid digestion by reason  
of the wax mixed with it—but thus far  
we have failed to see it. We wish it  
understood, however, that this argument  
does not carry with it a desire to injure  
the sale of that most delicious article—  
comb honey. Our only desire is to bring  
out what is scientifically true. If the  
authorities say we are wrong, we will  
gladly and gracefully submit to their su-  
perior judgment.—Ed.]

Apropos of the above we append the  
following:

#### Comb Honey Versus Extracted

E. D. Townsend, in the Bee-Keepers'  
Review, tells about trying side by side  
for a number of years colonies producing  
comb honey and others producing extract-  
ed, and says:

"After these years of comparison of results between colonies worked for comb honey and those worked for extracted honey, we (the boys and I) have come to the conclusion that, after the yards are established, we can work three yards for extracted honey with the same labor that it requires to work one yard for comb honey, and harvest just as many dollars' worth of honey from each of the extracted yards."

Editor Hutchinson adds this:—

"Leonard Griggs, of this place, runs three apiaries, and has been producing both comb and extracted honey, and last fall he told me most emphatically that he was going to cut out comb honey, as he found that it cost him three times the labor, besides making a complication in the management."

Editor York adds this:—

"This should cause the man who has never tried producing anything but comb honey to do some thinking. It does not necessarily follow, however, that every bee-keeper can make three times as much with extracted as with comb. There are many intelligent bee-keepers who have had experience in producing both kinds of honey, who yet continue producing comb honey in part or wholly. They would hardly do so unless in their locality and under their conditions there was money in doing so. 'Let each man be fully assured in his own mind.'"

#### SPRAYING FRUIT TREES IN BLOOM ILLEGAL

We have been asked to publish the law against the spraying of fruit trees when in bloom. Below is a copy of the notice sent out by the Department of Agriculture, a number of which, we believe, are sent to all members of the O.B.K.A.:

#### WARNING!

#### Against Spraying Fruit Trees in Full Bloom

The Ontario Bee-keepers' Association desire to draw the attention of the public to the fact that a number of members suffer from persons spraying fruit trees in full bloom, their bees being killed from

the poison in the spraying mixture. This practice is prohibited by an Act of Parliament assented to in 1892, the provisions of which are as follows:

- (1) No person in spraying or sprinkling fruit trees during the period within which such trees are in full bloom shall use, or cause to be used, any mixture containing PARIS GREEN or any other poisonous substance injurious to bees.
- (2) Any person contravening the provisions of this Act shall, on summary conviction thereof, before a Justice of the Peace, be subject to a penalty of not less than \$1.00 or more than \$5.00, with or without costs of prosecution, and in case of a fine or a fine and costs being awarded, and of the same not being upon conviction forthwith paid, the Justice may commit the offender to the common gaol, there to be imprisoned for any term not exceeding thirty days, unless the fine and costs are sooner paid.

The best fruit growers consider spraying, during the period of full bloom, as a useless waste of material, and harmful to the setting of fruit. It is universally condemned by entomologists in every part of America. The recommended formulas as sent out by both the Federal and Provincial Departments of Agriculture state distinctly to spray apple orchards with Bordeaux and Paris Green: (1) Just as leaf buds are expanding; (2) just before blossoms open; (3) just after blossoms fall; (4) every ten days later if required.

Bee-keepers and fruit growers are both urged to see that this harmful practice is stopped.

It is hoped that the law will not have to be applied, as most persons are unaware of the harm that they do themselves as well as the bee-keepers.

Signed on behalf of the Executive Committee of the Ontario Bee-keepers' Association.

F. J. MILLER,      P. W. HODGETTS,  
President,                      Secretary.

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**A CANADIAN REPORTER FOR THE NATIONAL**

A reporter for the coming National Convention is one of the things to be looked after with care. Possibly not more than 10 per cent. of the members can attend the convention; the rest must depend upon a printed report of what was said and done. They pay their money to support the Association, and we owe it to them to give them a complete and accurate report. The best reporter that we have ever employed is Mr. George Angus, of Toronto, Ontario, Canada. He has had a lot of experience in reporting bee conventions, has caught on to the technical terms, and furnishes a report all correctly worded and ready to be handed over to the printer without correction. I am pleased to be able to announce that we have secured his services for the coming convention at Detroit, and those who find it impossible to attend may comfort themselves in knowing that they can sit at their own firesides and read exactly what was said and done.

W. Z. HUTCHINSON,  
Secretary N.B.K.A.

**ADVICE FOR MR. BELL**

In your issue for April I observe an article by Rev. Wm. Bell. An editorial foot-note suggests that some other Western bee-keeper may be able to offer help. My experience has been so different to Mr. Bell's that I find it difficult to understand how his troubles have arisen. There can be practically no climatic difference between his situation and mine, and the only reason for the spring dwindling which he deprecates that I can think of is an apiary unsheltered from the wind. I do not think it possible to keep bees profitably here unless there is a considerable amount of bluff to break the wind. The single-walled, eight-frame hive cannot account for the trouble, as I

use them exclusively and have yet to see my first case of spring dwindling. I started with a single colony eleven years ago, and lost it and the swarm it cast in the winter. The following spring I bought another colony, and since then I have increased steadily, till I have ninety-six colonies at the present time. I have even greater difficulty in understanding how Mr. Bell has been so unlucky in wintering. My cellar (which I described in a recent number of Gleanings) is not to be compared to his as a winter repository for bees. It is under a dwelling house, has clay floor and sides, is always more or less damp, and in it I am accustomed to store and pulp roots throughout the winter. Yet this is my record for the past three years:

Winter 1905-06, 50 colonies—no loss.

Winter 1906-07, 70 colonies—no loss.

Winter 1907-08, 98 colonies—two lost from want of stores.

Showing a total loss in the three winters of about 1 per cent. I fear that this letter will not prove very helpful to Mr. Bell, and indeed the only suggestion that I can offer is that he should requeen all his colonies this year with queens from some reliable breeder. I am entirely of Mr. McEvoy's opinion that poor queens account for most of the spring trouble, and in this country, where apiaries are few and wild bees non-existent, the need of an occasional change of blood is imperative.

The article by me in the April C.B.J. should have been headed "The Economics of Bee Culture," not "The Enemies of Bee Culture."

WM. L. COUPER.

**DUCKS IN THE APIARY**

In a recent issue of Gleanings in Bee Culture, under the above heading, B. F. Miller, of Memphis, Tenn., asks the question: "How would it do to keep ducks in the apiary, for keeping down the

HODGETTS,  
Secretary.

grass? Would they eat the bees?" To which that journal's Editor replies: "We hardly think so, as we had ducks in our bee-yard all last season, and experienced no trouble."

On reading the above article I was reminded of the experience of a bee-keeper of my acquaintance living in the vicinity of Toronto, Ont., who owned a flock of ducks that by some means acquired a taste for bees. Every morning when the door of their pen was opened they would hasten to the bee-yard with all the speed that feet and wings afforded, quacking with delight at the prospect of a renewal of acquaintance with the residents. If the bees did not respond to their Hellos by coming to the door to meet them, they tapped on the bottom boards with their bills, which brought the bees out in full force, and then began "the feast of the ducks," accompanied by many a shrug and squirm and shake of the head and twirl of the neck. That bee-keeper found it profitable to get rid of his ducks.

I place this incident side by side with the other to show the bee-keeper who has developed a penchant for these animated lawn-mowers that there are ducks and ducks, and that it would be wise for him to find out whether the ducks he would use for this purpose belong to the bee-eating or non-bee-eating class before introducing them to his yard, lest he regret.

M.B.T.

#### MEETING OF THE CO-OPERATIVE COMMITTEE OF THE ONTARIO BEE-KEEPERS' ASSOCIATION

At our meeting of the Coöperative Committee of the Ontario Bee-keepers' Association, which was held in my office on April 21st, a full discussion took place as to what could be done the present year along these lines. It was felt by all of the members that at first no elaborate scheme could be undertaken. The question of suitable inspection of honey

was one of importance, and it was felt that to work up a trade in large quantities for such markets as the Northwest, it would be necessary to have the goods thoroughly inspected and guaranteed before shipment. It was finally decided to ask the Honey Exchange Committee to get from the bee-keepers in the Province some idea of the amount of surplus honey which they would have for sale at the price fixed by this Committee. Such a list would be printed and distributed by the Secretary of the Association to all enquiring parties, as well as the large wholesale houses throughout this Province and in the West. This would tend to bring together the honey producer and the wholesale buyer, and would probably result in more satisfactory and prompt sales than have taken place in the past.

It was felt that some of our reliable and well-known bee-keepers in the various sections could easily undertake the inspection at small cost. By keeping a register of the quantities of honey for sale and the grades of the same, the Secretary would be in a position in many cases to help in the sale of the goods.

As the Department is exhibiting our Ontario honey in the west this present summer, there will doubtless be enquiries from that part of the country for honey in quantities during the present season. The local Societies should do all in their power to help in this matter by, if necessary, combining their season's surplus product, so that the Secretary of the Provincial Association could inform intending purchasers where a carload lot or more could be procured from one neighborhood.

By working the present season in this small way, it was felt that perhaps it would develop into something more elaborate during the coming years, as has been the case in the coöperative handling and selling of fruit.

P. W. HODGETTS.

Toronto, May 6, 1908.

Lette

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Mr.

Your letter and in reply very important sifted out. We take it for a fine no foul brood County, or else published in your no ill-will against otherwise wish if they are un- foul brood in them our sympathy know all too well in the immediate vicinity there is not here there were five wiped out by of foul brood, exist, but almost any one wishes brood inspection previous to last season good account of to back me up in If we had no to receive such Mr. Armstrong been wiped out ally that this fine some as a very from last season our locality that another season Then to get their can rest in any place be followed up ground all being how is the inspection to cope with the all the counties well as Oxford ; What is to become of the colonies while Norfolk the bees to be wiped

## Letters to the Editor

### THAT NORFOLK RESOLUTION

#### Mr. Beaupre Explains

Your letter of the 9th inst. received, and in reply would say that I deem it very important that this thing should be sifted out. We here in our Association take it for a fact that there is practically no foul brood east of Northumberland County, or else it would not have been published in your journal. Now we bear no ill-will against those down east, but otherwise wish them all success, and that if they are unfortunate enough to have foul brood in their midst, we extend to them our sympathy, for we ourselves know all too well what it is. In my immediate vicinity I can truthfully say that there is not half as many bee-keepers as there were five years ago, the bees being wiped out by no other cause than that of foul brood, known by the inspector to exist, but almost entirely neglected. If any one wishes to know the quality of foul brood inspection as done in our part previous to last season, I can give a very good account of it, and I have good men to back me up in what I say.

If we had not been fortunate enough to receive such an efficient inspector as Mr. Armstrong we would very soon have been wiped out entirely. I know personally that this foul brood is treated by some as a very light affair, but I know from last season's work of inspection in our locality that it will take an inspector another season to get over our county. Then to get things in shape so that we can rest in any security it would have to be followed up the next season, the ground all being gone over again. Now how is the inspector in this district able to cope with the situation when he has all the counties as far as Windsor, as well as Oxford and Brant, to inspect? What is to become of these other counties while Norfolk is being cleaned. Are the bees to be wiped out? I tell you that

if all counties are affected as Norfolk has been and is, that an inspector to each county is none too much to handle it in time and give justice to all. There is no use of an inspector jumping about from one place to another if he ever expects to clean it up, but he must go over all the ground thoroughly, finding every colony as he goes along. Unless it is done this way, we shall always expect to have it lurking about. Now, do we expect the Government to do all this for us, or are we as bee-keepers willing to rise in all our might and cease to be at loggerheads one with another and unitedly work together? It is to the best interest of all concerned to have it cleaned up as soon as possible, and in this way it would not cost one-half as much in the end as if it was to hang fire for several years. I must say right here that Mr. Holtermann was not at the bottom of this. The President of our Association was the one to bring this up, and it was the unanimous vote of the meeting that the said resolution be adopted. I tell you right here that we are beginning to awaken in old Norfolk and get this thing cleaned up. If we don't look after it ourselves, why no one else will be around looking for the job very soon. You may use this letter, or any part of it, for publication if you wish; in fact, I would rather have it all come out. I doubt not but what Mr. Holtermann is blamed for this almost entirely, but he is not responsible for it. Hoping this will prove satisfactory. If there is any other point you should wish to know more about, kindly let me know, and I will try and explain it as fully as I can.

LEE BEAUPRE.

Simcoe, Ont.

[Mr. Beaupre has written very strongly. We are very much surprised to hear that foul brood is so bad in Norfolk. We have not Mr. Armstrong's report before us, but we do not remember that he pictured matters so badly as the above.

However, notwithstanding what the conditions may be, we do not think our Norfolk friends acted wisely in passing that resolution. They have stirred up their friends in the east to the point of antagonizing them, while what they needed was their sympathy and support. It never pays to rob Peter to pay Paul; it offends Peter and his friends. Your letter, friend Beaupre, is not a justification for the resolution. We are still of the opinion that it was very unwise. It would have been much better to have presented your case before the Minister of Agriculture, and asked for extra assistance to combat the conditions which you say exist. You would not then have antagonized the bee-keepers of another inspectorial district. All would then have been disposed to give you their assistance and support. There is a considerable amount of ill-feeling in regard to this foul brood question. Your resolution did not allay or improve matters; it only added fuel to the flames. This is the worst thing that could have happened at this particular juncture. Both Mr. Byer and Mr. Holmes are good men in their respective positions, and we trust that the Minister of Agriculture will pay no heed to any agitation coming from one district affecting another. We are told that much of this agitation is the outcome of personal animosity. We are reluctant to believe this. We trust that in future calmness and wise counsels will prevail.—Ed.]

#### Mr. Grosgean Explains

In common with scores of bee-keepers, I was surprised to note the extraordinary resolution adopted by the Norfolk Bee-keepers' Association, requesting the Minister of Agriculture to cut off the foul brood inspectors in all the counties of Ontario east of Northumberland County. This action seems to be based upon a statement which you credited to me in the Canadian Bee Journal of February

last. With what information I received from bee conventions in the past, and what I can learn at present, the Eastern counties are not infected with foul brood to any considerable extent. At the same time, I have reason to believe the disease may exist in isolated apiaries in the sixteen counties comprising the Eastern District. It would, therefore, be most unwise to deprive this large territory of its inspectors. It would be just as rational to dismiss the medical health officer in every municipality which had not infectious or contagious diseases within its borders.

There was nothing very clever about adopting that resolution at the Norfolk bee meeting. It was more like a spoilt boy who after eating his pie wants what was given to his brother.

I see Mr. R. Holtermann was present and took part in the meeting at Simcoe. He has long advocated the appointment of six inspectors throughout the Province. Did he protest against a resolution recommending the cutting-off of half the Province from having an inspector? Mr. B. Holmes should be left to look after the interests of the East and Mr. J. L. Byer his district, as at present they are capable men for the positions.

JOHN L. GROSGEAN.

Cobourg, May 9th.

[It was what you, my dear Grosgean, said in a former issue that gave rise to the Norfolk resolution. You scolded us for not "giving the right view about foul brood." It is very unfortunate that you did not give the right view yourself when writing. If you had qualified your statement then as you do in the above letter, the probabilities are the resolution would never have been passed.—Ed.]

#### MR. LAING'S FEEDER

At the convention at Toronto last November, after your remarks in reference to the Canadian Bee Journal, I got up

and said that we were not a to our Canada I thought we in writing for to make it a to see that r marked improv far I have kept have continued ped on my toe you know one here goes. I e large feeder to hive, with a h about three inc of an inch wid feeder of simil not on, this hol piece of heavy one end, and t late hive, all swing this bit the hole.

The feeder h side, bored full light wire nails projecting abou inch, so as to l from the botto bees can go do float, thus carry syrup. The floa end and two on same as the bo at all times at a ends and sides, all around it, under it, so it dry, and there i drowning a sing The ends and made of 3/8-inch are made of Pa nailed around th I chose this ma any possibility of heat, but, of cou for sides if they

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## FEEDER

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and said that I thought as bee-keepers we were not as loyal as we ought to be to our Canadian Journal, intimating that I thought we should take more interest in writing for the Journal and helping to make it a success; and I am pleased to see that recently there has been a marked improvement in this respect. So far I have kept quiet, and perhaps would have continued mum if you hadn't stepped on my toes, and when you do that you know one is very likely to squeal, so here goes. I exhibited at Toronto Fair a large feeder to attach to the back end of hive, with a hole cut through the hive about three inches long by three-quarters of an inch wide, to connect with hole in feeder of similar size. When feeder is not on, this hole in hive is covered with a piece of heavy tin, with a screw through one end, and to attach feeder, or ventilate hive, all you have to do is to swing this bit of tin down, opening the hole.

The feeder has a fine wooden float inside, bored full of holes, and has four light wire nails driven in the bottom, but projecting about five-sixteenths of an inch, so as to keep the float that much from the bottom of the feeder, so the bees can go down and work under the float, thus carrying up every particle of syrup. The float also has a nail in each end and two on each side, projecting the same as the bottom ones, so it is kept at all times at about equal distance from ends and sides, and the bees can work all around it, as well as through and under it, so it is cleaned out perfectly dry, and there is almost no possibility of drowning a single bee.

The ends and bottom of this feeder are made of  $\frac{3}{8}$ -inch lumber, and the sides are made of Paroid roofing, with strips nailed around the edges to hold it solid. I chose this material for sides to avoid any possibility of their checking with the heat, but, of course, one could use boards for sides if they preferred.

Now if you will refer to Page 30, January issue of the C.B.J., you will find that the principle and application of this feeder which I have just outlined is almost identical with the one there outlined, though the material of which it is constructed is different.

Now you seem to think this feeder is nothing like equal to the Alexander, judging from your comments, and I am free to admit that the Alexander is a good feeder, but I can imagine a host of trouble with the Alexander feeder. For instance, you say, just place feeder at the back of the bottom board and draw the hive back over it, when, of course, it is inferred that everything will be lovely. Well, Sir, judging from what I have seen around this country of hive foundations, I think about 95 out of 100 times you would have a genuine circus, and if the man was given to the use of profanity the air would probably smell of sulphur if he had to adjust many of those feeders; in fact, the Alexander feeder will not work with any degree of satisfaction whatever unless you have a real good foundation and reasonably level, whereas the feeder outlined by Rev. Mr. Charbonneau, similar to my own, can be applied to any hive, irrespective of what kind of a foundation it has, or whether it is level or otherwise.

The galvanized metal would be poor material for a feeder for cool weather, and I think it is possible that for cool weather the Alexander feeder might be a little warmer for the bees, but as far as adjusting the feeder to the hive, once the holes are made, and the nails on which I hang mine I could put on 100, I think, in thirty minutes. You say you could not use this feeder without removing the packing. Well, in the name of wonder, how would you put an Alexander on a packed hive? Further, you say with the Alexander you do not have to open the hive. Good point, Mr. Editor—a dandy point; and that is one of the

great attractions of my feeder. Furthermore, if you want to move the hive you are feeding, pick up the hive and walk along. The feeder will go, too, as they two are one for the time being. Another point—the Alexander only holds about a quart, while mine holds about a gallon.

Now, Mr. Editor, I think Rev. Mr. Charbonneau has a splendid feeder, if his construction is O.K., and I believe for universal use it is away ahead of the Alexander feeder in every respect, with the possible exception of very cool weather, and the majority of bee-keepers consider that a very poor time to feed bees.

You say the Alexander allows you to feed without opening the hive. That is a fine feature, and one of the most attractive in connection with my feeder; in fact, my feeder can be applied, removed or filled in ten seconds. Wishing you success with the Journal, and hoping that our bees will be well fed at all times, whether we use the Charbonneau, Alexander, Miller, Laing or some other feeder, I remain, fraternally yours,

A. LAING.

[My dear Mr. Laing, you are entirely in error in your assumptions. Unfortunately, we were unable to visit the Toronto Fair last season, and knew nothing about your feeder. We were entirely unaware that your toes projected into our vicinity. Certainly had we known them to be there we would have stepped more lightly. We gave Mr. Charbonneau the best advice we could at the moment. We recommended the Alexander feeder because we knew absolutely nothing about yours. We thank you very much for having "got up and said," etc., but let us say here that if all our friends had waited till we stepped on their toes before addressing us, the C.B.J. would have been a slim affair. Further, you say that if we had not stepped on the aforesaid toes you would perhaps have continued to keep

mum. Well! That is hardly "helping us to make it a success." However, we will say that we are somewhat glad that we have stepped on those invisible toes, as it has induced you to give us a real good talk on feeders. We hope that your feeder will prove a success, as we believe it will. If you will kindly intimate to us when those toes of yours will again protrude into our vicinity, we will take the trouble to jump on them next time, if it will produce like results.—Ed.]

### THE CO-OPERATIVE SALE OF HONEY

With your permission I wish to refer to an article in the Farmer's Advocate of March 5th, by Mr. Chrysler. In this he refers to mine in the Farmer's Advocate of January 9th. He makes no attempt to disprove what I stated, that the benefits to be derived from coöperation in the sale of apples cannot accrue from coöperation in the sale of honey. As Mr. Chrysler would be the first one to contradict my statements if not true, we must come to the conclusion that the statements were facts. Now Mr. Chrysler, as a leader in the movement, should have known this long ago; and if he did, it has been misleading, to say the least, to always bring in as an argument in favor of his scheme the success that has attended coöperation in the sale of apples.

There is only one thing I stated that he takes exception to, viz., the impossibility of having a satisfactory grading of honey, and asks the question, "Who grades it now?" and "Is coöperation going to make conditions worse?" and, without quoting more than necessary, he says: "Now Mr. Deadman has bought honey for years from as many parts of the Province as an association would expect to collect its supply from. Mr. Deadman must either grade the honey satisfactorily, or it is done unsatisfactorily. If he is a failure at grading it, he must surely

have that miser calls it, to sell it first place, I think that Mr. Chrysler question at issue planation as the have to get better things, at least. when one handles is no grading to (unripe honey at to sell. Easy, is here the weakness relation comes in. tion that would honey could never exist. When a h \$25 or more into tion he does it to and just so soon tempt to grade: just so soon will h If it could be sh that his honey wa—a very difficult remain with the a is his honey—well, I me being so foolish earned money wi hew. I think M asking questions could have been how how he wo grading. As brief favor to show tl ave a satisfactor grading of extract mpted once, and ways will be. gin with clover ot to make mat: an we can help, and the worst N another lot, nea which we will call mple is not as go an No. 4; this wo Those who are ney know that t

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have that miserable, unripe stuff, as he calls it, to sell to his customers." In the first place, I must say that I am surprised that Mr. Chrysler should try to avoid the question at issue by making such an explanation as that. I am afraid he will have to get better posted about some things, at least. He should know that when one handles first-class honey there is no grading to do, and as I will not buy unripe honey at any price, I have none to sell. Easy, is it not? But it is just here the weakness of a coöperative association comes in. A coöperative association that would only handle first-class honey could never be launched, much less exist. When a honey producer pays his \$25 or more into a coöperative association he does it to help to sell his honey, and just so soon as you reject and attempt to grade and classify his honey, just so soon will he want his money back. If it could be shown to his satisfaction that his honey was inferior to some other—a very difficult matter to do—he might remain with the association; but to reject his honey—well, I can hardly conceive of one being so foolish as to invest his hard-earned money with that possibility in view. I think Mr. Chrysler, instead of asking questions so easily answered, should have been more to the point to show how he would make a success at grading. As briefly as possible I will endeavor to show that it is impossible to have a satisfactory and understandable grading of extracted honey. It was attempted once, and proved a failure, and always will be. For example, we will begin with clover honey, and, in order not to make matters more complicated than we can help, will call the best No. 1 and the worst No. 4. Now there will be another lot, nearer No. 1 than No. 4, which we will call No. 2. Then another sample is not as good as No. 2, but better than No. 4; this we will designate as No. 3. Those who are at all familiar with honey know that this is not overdrawn;

in fact, it does not go far enough. The same can be said of buckwheat, or of basswood. Then comes the combination of clover with just enough buckwheat to spoil it, both as to flavor and appearance. Then there is other honey, known as spring bloom, that there may be a surplus of, and that may get mixed in and render the very best honey inferior, and that would make it impossible to grade satisfactorily, and that could be described and understood, the same as when speaking of apples as No. 1 and 2, etc. For instance, a prospective buyer writes to the manager of a coöperative association for honey. He is told that the association has some No. 1, 2, 3 and 4 in clover, also as many grades in basswood, and as many grades of either of these, either in combination with each other or with some inferior. Now does Mr. Chrysler pretend to say that a standard for each of these could be set up so that it could be bought and sold the same as apples are? The prospective buyer would have to have a sample to be sure of what he is getting. He writes back for this. As I said before, our association is in a worse position than the producer to sell from sample. We will suppose that samples are sent. Then whose honey are these to be taken from?—for we must reasonably suppose that several members will have honey that is graded the same number, and a close record would be required to be kept so as not to get this sample business mixed up. In a coöperative association, every pound of honey that is short of being first-class must be graded in some way, or an injustice is being done to some one. It is just here that a coöperative association is working at a disadvantage. In the first place, a beekeeper who produces only a first-class article is better out of it, because what is gain to some one who has inferior honey is loss to him, as his honey, by mixing with some not as good, would render the inferior saleable.

Again, a coöperative association is working at a disadvantage in having to handle honey that is not first-class. With fruit it is another matter, for a barrel of No. 2 may be just as good value—eat as well and no difference in value for cooking—as No. 1, and an association does not lower its standard of good goods by selling any grade of fruit. Not so with the honey, however, and an association that sells inferior honey, except for manufacturing purposes, would never build up a trade for their output, and the manager who would expect to be counted a fit subject for an insane asylum. Not only must a co-operative association be a failure from a financial standpoint, but it should be discouraged, from the simple fact that it would have a tendency to encourage the production of inferior honey, because it would be lost sight of in the general mix-up.

The other thing Mr. Chrysler comments on is what I stated about prices. Just here, again, he falls into error by supposing things, and by believing all that is told him. He is not the first one, though, who before to-day has worked out a line of argument on supposition. He says: "If I am correctly informed, he paid as little as 3 cents per pound less than the market price." If Mr. Chrysler, in the Farmer's Advocate or any as good, can prove the truth of that, I wish he would. I deny such allegation, and when either abuse or personal matters are brought into an argument, while not pleasant, I take it as an indication of weakness in my opponent's position. I think Mr. Chrysler has got things mixed again. It may be this he refers to: Last year I bought in advance a bee-keeper's crop of honey at a stated figure. As the price of honey advanced I paid him just \$52.80 more than I promised for only 1,920 pounds. If his proposed coöperative association will do better than this, it will be to their credit.

As to Mr. Chrysler's explanation as to bee-keepers becoming shareholders, at \$25 per share, the limit being ten shares, he does not say what the inducement is to take more than one share, nor why he limits it to ten shares, unless it be that prohibited things are frequently more valued, and the more shares, I suppose, the more "easy," because one would hardly invest more than necessary, unless he had votes to correspond; and if this be the case, then it is worse for the "other fellow" who has small investment in shares, but possibly more in honey, as he would have to fall in with the majority.

Mr. Chrysler's plan of engaging salesmen to work on commission is on a par with the rest of it. Would not a producer better sell his own honey and make this commission? Or how much commission would compensate one? As Mr. Chrysler has in view the great West in disposing of honey, how much, suppose you, would a producer get for his honey after paying one to go out under so much expense, to say nothing of the expense of the manager and others at home. And who, think you, would make the most bad debts, the bee-keeper selling his own honey, or a salesman whose commission was according to amount of sales made? I venture to say that business done the first year must be at a loss. A coöperative association is at a disadvantage here, as their remaining in business from year to year depends entirely on the supply from their members. With private individual handling honey, it is quite different. He can spend his capital as he chooses, and if he cannot sell honey procured from his own province he can import it, so as to hold his customers from year to year. This fact, along with his freedom to accept or reject any honey offered—something an association cannot do—is what Mr. Chrysler has apparently overlooked entirely.

One more question asked by Mr. Chrysler, which is entirely foreign to the sub-

ject, is: "Who have been advised to come out here? They are they want?" Within the year, of the quality and possible value, he is expected to be them busy. I think advertising with that; in fact, that advertising, as it is indication that a sale of honey. I advertising on the who has it to sell such an advertisement of the I columns of the I in the only four apiculture in C so long since t being it. I will any reader of to sell, advertise i require the help of on to dispose of

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#### Mr. Chr

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ject, is: "Who of the honey-buyers that have been advertising for honey has the grit to come out openly and publish the price they are willing to pay for what they want?" With the uncertainty, each year, of the quantity of honey available, and possible value of it, how could they be expected to do this? It might keep them busy. I think the buyers do enough advertising without running such risks as that; in fact, they are doing all the advertising, as it is, which is a pretty good indication that a coöperative association is not needed in Canada, at least for the sale of honey. What is wanted is more advertising on the part of the producer who has it to sell. I have never seen such an advertisement in the advertising columns of the Farmer's Advocate, and in the only journal devoted exclusively to apiculture in Canada, if ever there, it is so long since that I cannot remember seeing it. I will conclude by saying that any reader of this article has honey to sell, advertise it, and you will not require the help of a coöperative association to dispose of it.

G. A. DEADMAN.

Huron County, Ont.

**Mr. Chrysler Replies**

In replying to Mr. Deadman, I wish to say that lack of time prevents me from giving the subject the thought it deserves, but his reply is so misleading that I will answer a few of his assertions. In the first item he refers to, that I did not approve his statement that benefits could accrue from the sale of honey as from apples when sold in a coöperative way, Mr. Deadman did not raise any argument worthy of consideration. It is not a man making a statement that the goods business pays; another may say that groceries pay just as well. They have both been in existence for years, and who knows now, or what would result in proving, that one paid and the

other did not, for they both fail or they both succeed, owing entirely to the management that they receive.

Mr. Deadman says grading of honey was attempted once, but failed. That statement is as misleading as it is untrue. Grading in a coöperative way never failed anywhere that I know of—that is, coöperation of some kind.

This is the only way it was ever known to be a success, as far as I have been able to learn. It was never done in Canada anything further than by individuals, according to their own ideas. There have been no grading rules adopted in Canada. This is one thing we are needing to govern our sales of honey.

Mr. Deadman says that a coöperative association could never be launched, much less exist. What an assertion, devoid of argument or reason!

Mr. Deadman is also great at supposing things. If a coöperative association graded its honey, as he supposes it would, it would be at a disadvantage, and from what he writes one would think it was all nonsense to attempt to grade it; in fact, he says it is impossible, and that he does not do it himself. Yet he says he handles but one grade, and that the best grade. He certainly, then, has to select it, and if he selects it he grades it, or how does he know what he has got. Then Mr. Deadman launches out and supposes a coöperative association would necessarily have to make four grades of clover, four grades of basswood honey, and four grades each for every variety or kind of honey. He might just as well have suggested ten grades for each variety, for then the manager would reach the asylum much sooner, and it might be the best place, etc., etc. It is possible to make from four to ten grades of what Mr. Deadman or anybody else would collect as first-class honey; yes, four to ten grades of all kinds of apples, but we or they make just as many grades as wisdom and common-sense will be found ne-

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necessary to shape and meet the demands of trade.

Mr. Deadman does not tell us where the poor grade of honey goes, or should go. It is like Smith's dog, which was left at home, but when Smith gets to town he finds his dog there, too. Just so with the poor honey; it will meet the good somewhere unless it is put in its proper place. A coöperative association does not necessarily need to handle the poor grades of honey, but it would do the industry a great deal of benefit if it could direct that class of honey to the biscuit and other manufacturing users, where body, color and flavor does not impair it for their use.

Should a member have a grade of honey not first-class, and it was sold to manufacturers, he would realize as much or more for it than if sold to a buyer; he could have no just reason of complaint. If, on the other hand, he could do better, he is privileged to do so, and his (hard-earned) investment, as Mr. Deadman says, would reap him the benefit it would in any stock company. Mr. Deadman's criticism of the plan of incorporation, division of stock, etc., is not well taken. He may not know that the plan I outlined is not unlike other associations or companies organized for similar purposes. The plan has proved all that could be desired. Can Mr. Deadman or any one else suggest a better plan of incorporation? We want the best. In reference to the salesman, he refers to the great expense, etc. He says a producer had better sell his own honey. Why, yes, of course, that is what coöperation is intended for—the producers to sell their own honey to their own best interests outside of their own home trade. Mr. Deadman gets tangled in his own web. The honey buyer has the expense of buying as well as selling, the expenses of a salesman as well until he has a trade sufficient to dispense with his services, the expense of management, the interest

on his investment, risks, bad debts etc., which come out of the producer and consumer, and it cannot come from anywhere else. It will pay a honey producer to sell his own honey if he has the ability and time at his disposal, and from my own observation and experience it will pay a producer having the product of one hundred colonies of bees to market his own honey, even if he has to take to the road as a commercial man, and even go to the West in his own interest, rather than sell his crop in bulk to a buyer.

A salesman could sell the product of several producers or the whole association with less comparative expense, when making a specialty of it; could reduce the expenses to a minimum. These sales might not be required more than one or two seasons, as a trade would soon be established, and would ever grow as it deserved.

Mr. Deadman supposes again that an association would be obliged to depend entirely on the product of its members in order to keep going, while the buyer could buy foreign honey to keep him going to hold his trade; that an association could not do these things. Strange that Mr. Deadman does not know that an incorporated company can buy or sell on commission, import or export honey, or anything else, if it so chooses, in the interests of its members.

In regard to buyers withholding the prices from the public, I claim they do not need to if they wish to pay the market price. They will make a price in private way months before the crop is gathered; in fact, Mr. Deadman has just told us he bought in advance at a stated figure. If he can make a purchase at a stated figure months in advance in a private way, why can he not make his offer in a public way when the market is established?

The personal reference Mr. Deadman complains of was my reply to an empty out-of-place personal made in favor

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Chatham, Ont.

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Report From Swi

The Association published lately i its obs-ving bee at, 1906, to Oct report has some i winter of 1906-7 in Switzerland, e January and March. that low temperat consumption of t would have showi

himself in a former letter to the Advocate—that if he was creditably informed he paid as much as three cents per pound more for honey than some received. Can I not say with the same authority that, if I am creditably informed, he paid as much as three cents less than the market price, and that he may have paid as little as the other fellow, and I will add that he either did pay as much as three cents less than the market price, or else he paid as much as six cents per pound more than some received for their honey. That is not hard to prove.

Through Mr. Deadman's and my own assertions, buyers do differ from three to six cents per pound in the price they pay, or they pay as much as six cents less than the market price, and I understand it is for No. 1 honey, too.

Before going any further I wish it understood that I have no quarrel with a buyer for buying as cheaply as he can. There is, however, something wrong when the producer does not receive more than one-third to one-half of what the consumer is paying for it. It is useless to argue which would pay the best, the handling of apples or honey in a coöperative way, as long as success can be achieved on similar lines of management.

W. A. CHRYSLER.

Chatham, Ont.

**INTERESTING GERMAN ITEMS**

(Translated by Jacob Haberer)

**Report From Switzerland**

The Association of Swiss Bee Friends published lately its 23rd annual report of its observing bee stations from November 1st, 1906, to October 31st, 1907. This report has some interesting points. The winter of 1906-7 was a very severe one in Switzerland, especially January, February and March. If the idea is correct, that low temperature increases the honey consumption of the bees, that winter should have shown a large consumption,

but the report of the previous ten years gives the following results:

Average Consumed	Five		Mar. M'ths	
	gr.	gr.	gr.	gr.
During ten years.....	710	688	1,291	2,064
During 1906-07 .....	534	580	940	1,705
Difference .....	176	108	351	359

The conclusion which can be drawn from this report is that in cold weather the cluster of bees is more contracted, and therefore they use less food. The temperature alone is less responsible for the smaller consumption than perfect rest and quietness. In case of the latter, the colony's strength will not be used up so much, and much of the stores will be saved.

The number of dead bees was moderate. Smaller entrances proved fatal that winter; warm covering and lots of air through the entrances was the best plan for winter. Watering the hive has worked wonders where strong breeding was going on, as April was very cold. Altogether this report shows the great importance of such observing stations, and they should be arranged for in other places also.—Lux. Bienenzzeitung.

**The Stingless Bees of Brazil**

The Melipones and Trigones are two races of bees quite different from others.

Director Ihering of the State Museum in Ipiranga describes them in his Zoological Year Book as follows: They have no poison sting. Some kinds are quite harmless; others, again, fly about you and crawl in your ears and nose and your clothes and everywhere, and will trouble you very much; others will bite. The bite is poisonous and very painful and inflammatory. The Melipones and most of the Trigones make their nests in hollow trees. If the hollow is too large they build a wall around their combs, for which they use pitch and clay. Some of the Melipones build their nests in the ground, or even in the branches of trees. The combs are horizontal and flat, the cells are filled with food, mostly pollen. The egg is laid in such a cell and then closed up. The young brood is not fed otherwise. After the young bee is hatched the cell is torn down and not used again. The Melipones have the usual state system of queen and workers, but the queen does not enjoy the same attention and respect as with our bees. The workers do not guard her, and pay very little attention to her. They have brood the whole year round, and so the gathering of pollen is never interrupted. The Melipones live exclusively on honey, but the Trigones eat plant and animal substances, also the sweat of men, which makes them troublesome. The honey of the Melipones is very different; generally a little thin, and does not keep well, but can be improved by boiling. It tests very fine, and even better than that of other honey bees, but the honey of the Trigones is not so good. It is of a poor flavor, and some of it is poisonous. The natives carried on bee-keeping in early times. They have different names for some of the useful kinds of Melipones. They keep them in logs or boxes near their dwellings. The ants are a bad enemy of these bees; they kill them and take their honey. The wax of these stingless bees is not much use. Swarm-

ing is not much indulged in, and you cannot catch them. The population of this kind of bee is also variable. Some kinds have only about 3,000 per colony, other kinds from 70,000 to 80,000 bees.—Lux. Bienenzzeitung.

#### Changing of Bee Hive Stands

Changing the stand of bee hives should only take place when really necessary, and then only with precaution, otherwise many bees will be lost. We usually make such a change in winter time, before they take a cleansing flight. Some years ago I had eight colonies under an old hollow apple tree. I had to set them in another place in the garden. After the first cleansing flight I was astonished to find a cluster of returned bees, about as large as a medium swarm, hanging on the hollow tree, because they had not found their old home near by. This was proof enough that even during the winter rest bees do not always forget their old location.—J. B. Kellen, in Lux. Bienenzzeitung.

#### Bee Eggs Hatched After Having Been Removed From the Hive for Five Days.

Last summer I had a queenless colony that had lost their virgin queen by swarming. As the colony was strong, I wanted to give them another queen. I closely examined the combs for brood, but there was none. At the same time I gave them some combs that were extracted five days before, and which had a few eggs in them. The next day I put in the queen. Three days later I was astonished to find the queen dead and neglected and the bees in the super, where they had started two queen cells from the eggs I considered dead or no good. The queen they raised was a good one.—P. Wegweiser.

#### Length of Bees' Tongues

Professor and Bee-keeper Kuljagin, of Russia, in measuring the tongues of bees

May 1908.

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per Kuljagin, of tongues of bees

of different races, found them from 5.92 mm. to 6.69 mm. long. In average the length of the Russian bee's tongue was 6.21 mm., the so-called long-tongued Americans 6.22 mm., the Italian 6.25 mm., and the Cyprian bee's 6.50 mm.—Lux. Bienenzeitung.

**Bees Have Wintered Well**

According to reports, bees have wintered well in Germany this year.

**BEE-KEEPING IN SIBERIA**

We are too apt to set down this country as one of snow and ice, forgetful of the fact that parts of it stretch down to a point further south than Scotland and several European countries. The summer over a very large area is tropical, lasting for more than five months. The country abounds with basswood or linden trees, as many as about twenty varieties being found, and as they bloom at different periods, this prolongs the flow. This is important, as almost all surplus honey is gathered from this bloom. Many carry on bee-keeping as a specialty, some keeping as many as six hundred hives in one apiary. In winter the bees are placed in cellars or various repositories, somewhat on the blockhouse principle. As they are buried there under snow for about seven months, very little honey is consumed during the winter, as the low uniform temperature keeps the cluster in a semi-dormant condition without any disturbance. When swarms come off, two or three are joined up to make a strong colony, weighing, it may be, from 10 lbs to 15 lbs of bees. Such a powerful lot may collect anywhere between 100 lbs and 200 lbs of honey. Innumerable straw hives are dotted all over the country, but many of the more forward apiarists are adopting more modern frame-hives, and the industry is making rapid advances. It is well known that in European Russia bee-keeping is very extensively carried

on. The late boom in Caucasians has still further helped to bring the industry into greater prominence in recent years.

**PRODUCTION AND CARE OF EXTRACTED HONEY**

By E. F. Phillips, Ph. D.

(Continued from Page 153)

with wire cloth tacked on the outside, the wire cloth extending above the window about six inches and held away from the side of the house by quarter-inch strips. Bees almost always crawl upward and they will crawl up the netting and out through the top openings, but other bees will not try to get in that way. A screen so arranged will allow a very large number of bees to escape very quickly. That the extracting room be "bee tight" is practically the only absolute requirement. Honey should never be extracted in the open air except during a heavy honey flow, when bees are not inclined to rob. Where several apiaries are under the management of one man, it is sometimes desirable to make a portable extracting house on wheels, so that it may be taken from place to place.

**UNCAPPING HONEY**

The honey, before it is extracted, must be uncapped, and this should be done with a long knife which is kept sharp, clean and warm. There are several types of uncapping knives. If a considerable amount of honey is to be extracted, it is desirable to have two or more knives for each operator, so that one may be heated in hot water as the other is used.

As the cappings of wax are cut off some honey flows out, and consequently the uncapping should be done over a regular uncapping box or can. This may be easily made at home to suit individual requirements, or any one of the several

types offered for sale may be used. The boxes are either made of metal or lined with tin to prevent the leakage of honey, and about halfway up is a heavy wire netting to catch the wax cappings and allow the honey to drain off into the lower compartment. This honey may later be added to what comes from the extractor.

#### THE EXTRACTOR

The extractor consists of two or more baskets into which the combs of honey are placed and which are revolved inside or with a can. The rotation drives out the honey by centrifugal force, leaving the cells empty, provided the uncapping has been thoroughly done. While the extractor is a very simple machine in principle, its construction has been the subject of much experimenting, and various types have been made. The best type of extractor has been found to be one in which the surrounding can is stationary and the baskets are arranged to revolve inside it. Some types are now made so that the baskets may be turned and both sides of a comb emptied without removing the frame from the basket of the extractor. The more elaborate types, holding several frames and driven by power, may be found described in catalogues of the dealers in bee-keepers' supplies.

The extracted honey flies to the side of the can and then runs to the bottom of the machine; it then runs off through an opening at the bottom into a vessel or tank for the purpose. As it leaves the extractor it should be run through a cheese cloth to remove any particles of wax or other foreign substance which may have got into it. The care of the honey will be described later.

Empty combs wet with honey should not be returned to the bees while extracting is in progress, for fear of inciting robbing. They may be piled up in the extracting room until the work is almost

completed and, if any additional honey-flow is expected, they may then be returned. If to be kept until the next year, they should be given to the bees for a short time to be cleaned of honey, and then removed and put away so that wax moths will not destroy them. The greatest essential in the production of the maximum amount of extracted honey is an adequate number of surplus combs.

#### The Ripening of Honey

When nectar is gathered from flowers by the worker bees, the amount of water contained in it is very high. It is generally supposed that, by the time bees reach the hive to deposit the nectar in the cells, part of this water has been removed; at any rate, during the process of ripening, the amount of water is very much reduced, until, in thoroughly ripened honey, it will not exceed 25 per cent. and is generally not more than 20 per cent. Some very ripe honeys will have as little as 12 per cent of water in them. If more than 25 per cent of water remains in the honey at the time of extraction, it will probably ferment. The ripening of honey consists not only of the evaporation of the surplus water of the nectar, but especially of the transformation of the sugars of the nectar into the levulose and dextrose of honey. Unripe honeys contain a larger proportion of sucrose or cane sugar, and it is probable that the longer the honey remains in the hive the less of sucrose will be found in the honey. While honeys vary all the way from zero to 8 or 10 per cent in their sucrose content, the purest honeys are those which contain the least. The official honey standard of the Association of Official Agricultural Chemists allows 8 per cent of sucrose in honey.

It is the policy of most bee-keepers to allow this ripening to take place in the hive by waiting until the honey is almost or entirely capped, and this is un-

doubtedly the a matter of honey which long time has more of the ch By ripening in characteristic fl than is possible hive.

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doubtedly the preferable method. It is a matter of common observation that honey which remains in the hive for a long time has a better "body" and has more of the characteristic honey aroma. By ripening in the hive honey gets its characteristic flavor to a greater extent than is possible in evaporation outside the hive.

Several machines have been devised for the artificial ripening of honey which has been extracted "green," that is, with too great a water content. The principle on which all of these are constructed is the application of heat, not to exceed 160° F., for a sufficient time to reduce the amount of water present to about 20 per cent. Either sun heat or artificial heat may be used. In the western part of the United States honey may be, and usually is, extracted before it is all capped, because it is the general practice of bee-keepers to run the honey directly from the extractor into large tanks, sometimes holding several dozens, out in the open, covered with porous cloth tightly tied down to exclude bees. Many of these tanks are constructed at the top, leaving only a comparatively small opening. On account of the extreme dryness of the atmosphere and total lack of rain during the dry season, this partial evaporation outside of the hive takes place very rapidly.

The advocates of ripening outside of the hive argue that, if honey is extracted before all the water is removed from it, the bees have less to do inside the hive, and can devote almost all their time to gathering nectar in the field. This obviously should result in an increased amount of nectar and, consequently, provided the average will produce it, in an increased amount of honey. They argue that it is possible to detect any difference between honey ripened inside the hive and that ripened outside, as far as flavor is concerned, but this is a point on which many other bee-keepers and experts in honey tasting do not agree with them.

It must be admitted that, for general sale, the delicate aromas of well-ripened honey are not necessary, since the purchasing public is, as a rule, not educated on this point; but it certainly pays to produce the very best article possible for the further education of the trade, and, therefore, a thorough ripening inside the hive is very much preferable. To insure this, it is better to tier up the hives rather than extract as soon as a hive body is full.

On all honeys, after extracting, if allowed to stand in a vessel, a scum will rise to the top, made up of impurities, such as wax, brood, dead bees, and particles of dirt which may get into it. This is particularly the case with honeys which are extracted when not thoroughly ripened. In all cases honey should be strained as it leaves the extractor and subsequently skimmed until no further impurities come to the top. It is frequently the practice to draw honey from the bottom of the tank in which the honey is stored through a "honey gate," so that the impurities do not get into the smaller receptacles in which the honey is to be packed.

The thorough ripening of honey cannot be too strongly recommended. Honey attracts moisture, and there is always a tendency for a very thin layer to form on the top in which the water content is very high. In such a film the amount of sugar is low, the acetic-acid-forming bacteria can grow rapidly, and the honey becomes sour. In thoroughly ripened honey it is very probable that a film of thinner honey is always present, but in such a case the sugar content is so high that the bacteria cannot grow.

It is desirable that honeys from different sources be kept separate as far as possible if the product is to be used for the bottling trade. This can be done only by extracting at the close of each honey-flow. While it is probably impossible to get a honey from only one species of plant, ex-

cept under the most unusual circumstances, at the same time honey may generally be removed at the close of each flow, so that the total quantity will have the characteristic flavor imparted by a single kind of flower.

#### The Granulation of Honey

Almost all honeys granulate or "candy" after a certain time, and may become solid. This phenomenon varies greatly with different honeys. For example, alfalfa honey produced in Colorado will often granulate solid within a few weeks from the time it is extracted, while the white-sage honey of southern California will often remain liquid and entirely clear of crystal for two years and sometimes longer, if properly put up. The reason for this difference in the time of granulation will be discussed under the heading of "Types of Honey." Honey from the same species of plant varies somewhat in this respect in different localities.

Formerly the general public was suspicious of granulated honey, in the belief that it contained cane sugar, but, fortunately, it is now generally understood that pure honeys will granulate in time, and this crystallization is generally considered as a test of purity. The education of the purchasing public has so far progressed that now some bee-keepers prefer to sell their honey in a solid granulated condition, it being cut up into bricks and wrapped in oil paper.

In bottling honey, or in putting honey from any large receptacle into smaller ones, it is necessary to liquefy the entire quantity completely before the operation is begun. This may be done by immersing the receptacle in water which has been heated to 160 or 170° F., and letting it remain until the honey is all liquid and free from crystals. Honey should never be liquefied by direct application of heat, and it is extremely important that it should not reach a tem-

perature of more than 160° F. It is well known to almost all bee-keepers that honey heated to higher temperatures will become darker in color and lose flavor, and, consequently, they are generally very careful on this point. There is, however, a very much more important reason for avoiding high temperatures. When honey is heated to 180° F. or more, the higher alcohols which give honey its aroma are driven off, and, more than that, a decomposition of certain of the sugars takes place; this is what gives the darker color to the honey. Of all the various substances used for the adulteration of honey the one most nearly resembling pure honey is invert sugar, of which Herzfelt's artificial honey is one of the best illustrations. In the detection of adulteration, one of the tests for the addition of invert sugar is based on the presence of decomposition products due to heat. These decomposition products in invert sugar are probably identical with the decomposition products in overheated honey; at any rate, honey which has been heated to more than 180° F. for any considerable time gives the test for invert sugar and would, therefore, be declared to be adulterated if this test were applied by a chemist. A bee-keeper might argue that he was not infringing on the pure food law in overheating his honey, since he had added nothing in the way of an adulterant. If, however, he changes the chemical composition of his honey by injudicious treatment it is no longer pure honey, and he has no right to sell it under that name.

It is very much safer to liquefy honey at a temperature of about 140° F. and thus avoid any danger of decomposition. If this lower temperature is used it is, of course, necessary to keep the honey at this temperature for a considerable time, but the safety of such a proceeding makes the extra time well worth while.

Two or three of the most widely-circulated American text-books on bee-keeping

advocate the d portion of gran in the case of oughly ripened The granulated to liquefy, and i fine quality of in no way perm seen if the co studied. Honey and levulose in sucrose, a certa water. In granu tallizes feadily a does not granula liquid portion, co lose, sucrose, and draining or by portion is not hon ever fine the flav may be, it is not ally be sold as st Since honey sep at parts in gran ary that all the e liquefied and t any portion is re ang or bottling. in a 60-pound ca ed to 1-pound bott the entire 60 pound before any is p order that all ti honey according t unless this is don will contain a hig lose and will gra bers will contain ulose and will ne me. Unless this ghly, none of th absolutely pure hon et himself, the be careful on this poi refer to pour the h and heat it afterwar matter of conven ants in its favor, aration into con



F. It is well known that bee-keepers that keep their hives at temperatures which will cause the honey to lose flavor, are generally not successful. There is, therefore, more importance in the temperature of the honey than is generally supposed. At 180° F. or higher, the honey loses its flavor, and, more than that, it is of a certain quality which is what gives it its value. Of all the adulterants, the most nearly resembles sugar, and the detection of honey is one of the most difficult tests for the adulterant. Based on the products of the adulteration, the products are identical with those of honey, which has been heated to 180° F. for any considerable time. A test for invert sugar, which is used in the detection of honey, since the adulterant changes the honey by inverting the sugar, no longer purifies the honey, but is able to sell it as honey.

advocate the drawing off of the liquid portion of granulated honey, particularly in the case of honey which was not thoroughly ripened before it was extracted. The granulated portion is then allowed to liquefy, and is recommended as a very fine quality of honey. This practice is in no way permissible, as will be readily seen if the composition of honey is studied. Honey is made up of dextrose and levulose in about equal quantities, sucrose, a certain amount of ash, and water. In granulation, the dextrose crystallizes readily and the levulose probably does not granulate at all. If, then, the liquid portion, consisting largely of levulose, sucrose, and water, is removed by straining or by pressure, the remaining portion is not honey, but dextrose. However fine the flavor of such a compound may be, it is not honey and cannot truthfully be sold as such.

Since honey separates into its component parts in granulation, it is very necessary that all the honey in the receptacle be liquefied and thoroughly mixed before any portion is removed from it for canning or bottling. If, for example, honey in a 60-pound can and is to be transferred to 1-pound bottles, it is necessary that the entire 60 pounds be liquefied and mixed before any is poured out into bottles, in order that all the bottles may contain honey according to the legal standard. Unless this is done, some of the bottles will contain a high percentage of dextrose and will granulate rapidly, while others will contain a preponderance of levulose and will not granulate for a long time. Unless this mixing is done thoroughly, none of the bottles will contain absolutely pure honey. In order to protect himself, the bee-keeper must be very careful on this point. Some bee-keepers prefer to pour the honey cold into bottles and heat it afterwards before sealing. As a matter of convenience this has many advantages in its favor, but in view of the separation into component parts which

may take place it is a bad practice. The honey should first be heated and liquefied completely, especially if honeys from several species of flowers are to be blended.

As previously stated, there has existed, and possibly still exists, a popular idea that granulation indicates adulteration by the addition of cane sugar. This is, of course, untrue, since pure honeys do granulate solid. Many bee-keepers in combating this idea have stated that this very granulation is a test of the purity of the honey. This statement, so frequently made, is equally untrue, since invert sugar, one of the adulterants sometimes used, will also crystallize solid as rapidly as do most honeys.

Age seems to affect honey greatly. Repeated granulation and liquefaction, as the temperature varies year after year, in some way affects the chemical composition of the honey, changing the product so that it may not have the composition that it had at first. Some honey thirty-five years old, submitted to this Department, was found to contain too much sucrose. A sample of the same honey had previously been analyzed by two official chemists and declared to be adulterated; but the history of the sample precluded this possibility. The honey had apparently changed greatly with age in appearance as well as in composition.

Some bee-keepers make a practice of adding a very small amount of glycerin to the honey to prevent granulation. This should not be done, for it is adulterating the honey. Some have argued that, since glycerin costs so much more than honey, they are not adulterating in that they are not adding something cheaper to the honey to increase their profit. According to pure-food laws, however, nothing can be added to honey unless the addition is specifically stated, and the addition of even a small amount of glycerin is, in the eyes of the law, as great an offence as the addition of glucose.

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## Heating Honey for the Destruction of the Bacteria of Disease

The only condition under which honey should be heated to a higher temperature than 160° F. is in the case of honey which has been extracted from a colony containing foul brood. In order to kill the bacteria of either of the brood diseases, it is desirable to dilute the honey by adding an equal amount of water and then raise the temperature to the boiling point and keep it there, allowing the mixture to boil vigorously for at least thirty minutes; in order that no risk may be run it is better to make this one hour. Honey which is so treated is changed chemically and is no longer pure honey, but it makes a good syrup for feeding to bees and is the best way of using honey from an infected source. Too much care cannot be exercised in bringing this to the proper temperature, and it must be remembered that the resulting product is not honey but a syrup, the chemical composition of which is quite unlike that of pure honey.

### Packing of Extracted Honey

If honey tends to granulate rapidly, it will save much trouble in liquefying to put it into the receptacle in which it is to be sold as soon after extraction as possible. There will then be no difficulty from the various ingredients becoming separated. To preserve the delicate aroma as it is desirable that honey be sealed as soon as possible.

When honey is put up in less than 5 packages it is generally bottled. A bottle makes a much more attractive package than a tin can and shows off the contents. There is no doubt of the fact that honey sells largely on its appearance, and the much care cannot be exercised in packing and labelling so as to make the package attractive to the purchaser. In cases where a bee-keeper sells directly to the local trade he may educate his customers to judge his honeys by their flavor,

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which event it is immaterial what kind of package is used, and honey may even be run out from a large can into a vessel furnished by the customer when the honey is delivered. It is too often the case, however, that bee-keepers put up their honey in such poor, unsightly packages that they can get only a low price for their goods.

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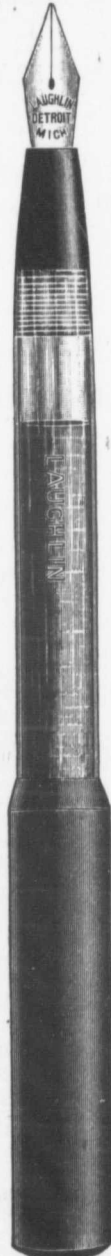


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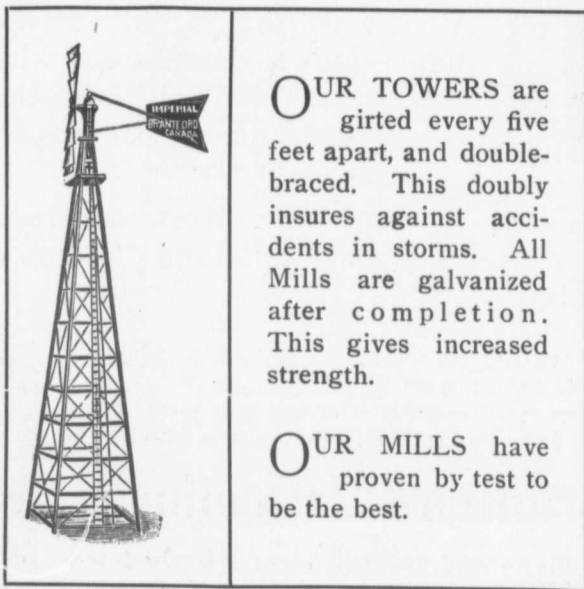
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