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# CANADIAN BEE JOURNAL

PUBLISHED MONTHLY.

NEW SERIES  
VOL. VI, No. 11.

BRANTFORD, ONT., MAY, 1898.

WHOLE No.  
399

If your subscription  
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There appears to be a very general desire among Canadian bee-keepers, that the CANADIAN BEE JOURNAL should be continued. A very satis-

The Canadian Bee factory indication is the articles which have been sent in.

We have one or two new contributors, and it is needless to say we welcome them. There are hundreds of bee-keepers who could give something of value. It need not be something entirely new. Scarcely anything can be said upon practical bee-keeping which will not be of value to some one and the article need not be lengthy. Give something practical and an article which will be of use to some one else when needed. It is our intention in the future to have more illustrations in THE CANADIAN BEE JOURNAL and our readers will, of course, be most interested in having those who contribute to THE CANADIAN BEE JOURNAL and those who are its friends and supporters. This policy too, accords with our own wishes and inclinations.

Some of the contributors are actually doubting the advisability of encouraging a well filled section. Well filled Sections. They argue that one not well attached to the wood, is more easily removed for table use. When we aim at securing a well filled section, there are still plenty of sections left not perfectly attached to the wood. The advantage to be derived from well filled sections, is as follows: Safety in shipment, pleasing to the eye (and in comb honey this goes a very long way) and uniform weight. These are all very desirable points. Indirectly to aim at securing such sections stimulates us to secure the conditions likely to give us the best returns from our bees. It creates an interest and stimulates us to observation, concentration of purpose and action. By all means let us aim at well filled sections. While upon this subject of well filled sections, I should like to refer to a remark in the Review by J. E. Crane. Mr. Crane says, he does not agree with the editor of the Canadian Bee Journal that there should be a bee space above the sections. Remember I did not say, well filled sections could not be secured without the space above. What I did say was, that those who wanted well filled sections could not afford to be without it. Naturally I argue that those aiming at having such sections will want the most favorable conditions, and I still claim the best and most perfectly filled sections will be secured with a bee space above. More than that, I

have every confidence in Mr. Crane, and if he will agree to the following, we will make a test of this matter. He selects before the honey flow 100 colonies of bees, or 50, to be run for comb honey, his selection without bee space above, mine with. At the close of the season each take two hundred sections and have a photograph taken of the best side. If this does not decide to the satisfaction of both parties which crop contains the best filled 500 sections, Mr. Crane is to come over here himself, or satisfy himself in some way as to the best lot. The cost of photographs and other expenses in connection with determining the best lot of sections, to be paid by the unsuccessful competitor.

\* \* \*

Some of our bee-keeping friends have been illustrating two sets of sections. One set consists of plain **Improved Bee Ways.** sections with the side pieces necessary in either the section or the separator or fence, to enable the bees to get into the section. These pieces in the illustration are attached to the fence. The other set of sections are the ordinary one piece sections and the corners closed by a portion of the bottom and top bar. It would not require much calculating and study, to give the credit to the readier means of communication. In the meantime, some one will be induced to use the plain section. With the plain section, the top and bottom bar must be wider than it is desirable to have, keeping in view free access for the bees, or the side bars must be too narrow. All may not agree with me in this matter, but my conclusions are based upon careful observation, years of experience in taking choice comb honey, and time will show that no one will make a mistake in nailing the above colors to the mast.

\* \* \*

The editor of the American Bee Journal writes, "That bright noter and picker of The Canadian Bee **A Correction.** Journal, D. W. Heise, suggests that instead of the Canadian societies continuing bee

journals as premiums to members, they should furnish a supply of our honey-leaflets—"Honey as food." Why not? They would help to make an outlet for the honey of the members—the very object desired. Editor York has probably unintentionally misrepresented Mr. Heise, he only suggested one society. This society has always taken the Canadian Bee Journal, although tenders have frequently been put in by United States Journals, the American among the number.

\* \* \*

The Tall section is nothing new, and yet it is receiving a good deal of attention at the present time. Some

**The Tall and the Square Sections.** say it looks nicer in the sections, others that it does not look as well when the wood has been cut away. Probably both are true, if so, is it worth while trotting an odd sized section on the market and changing the present condition of affairs. If the tall section is an improvement on the square and we adopt the tall section, what profit will it be?

\* \* \*

In the present number will be found a valuable article by Mr. G. A. Deadman.

I think there is a great **Handling Comb Honey.** deal in it of value to bee-keepers, and Mr. Deadman's remarks are along the right line. We should be pleased to hear from others upon this important subject. It is just a question if the address of the producer should be on the honey. Many merchants refuse to give publicity to the producers.

**Winnipeg Exposition Prize List--Bees and Honey.**

Product of Manitoba or North-West Territories. Fee—25 cents for each entry.

SEC.	1st.	2nd.
877 Colony of Bees, of pure strain.....	\$5	\$3
878 Honey in Comb, ten pounds, product of 1897.....	7	2
879 Honey, extracted, ten pounds, product of 1897.....	3	2
880 Honey, Vinegar, not less than gallon	3	2
881 Bees' Wax, five pounds.....	2	1

### The Plain Section Again.

Understand me, friend Holterman, I take no exceptions at all to your holding a different view from mine. We cannot all see things alike; but I do not want our firm classed as a swindle when I feel sure you did not mean to imply that.

It seems to me you have not read carefully all I have said on the plain section and fence. If I have anywhere said that a section without bee-ways would IN ITSELF give fatter (that is, better filled out) combs, I should like to have the statement pointed out. I have all along tried to make it emphatic that the continuous passageway afforded by the fence—that is, THROUGH the separators and AROUND THE ENDS of the cleats had to do with the whole matter, if anything. Goodness gracious, no! the mere putting on of a detachable bee-way, other conditions being the same, could make no difference whatever. In the Aspinwall separator a similar condition was secured, but in a different way. Now, do not misunderstand me this time. If we use a solid separator, and cleat it, making the cleats  $\frac{1}{2}$  inch wide, as thick as the old bee-ways in sections, we should have the same kind of comb filling, with this one exception that the bee-ways in the one-piece sections are narrower than in the four piece; and insofar as the latter are wider, there will be less of a tendency for corner holes; that is to say a four-piece bee-way section, with plain separators, solid clear across the face of them, would be filled out exactly the same as the plain section opposite the solid cleated separator. The only difference between the two conditions is that in one case the bee-ways would be on the sections and in the other on the separators.

And again: I think you have not read carefully what I have said regarding tall sections. If I anywhere claimed that a box taller than broad is better filled out than one square, other conditions being the same, I should like to be shown the statement. You will not forget that the United States is very broad; that we are not manufacturing goods for Ontario, Ohio, California or any other section of the country. York state calls for tall sections; Ontario has a little fad all its own—sections just  $4\frac{1}{2}$  square, but only 7 to the foot. To say that these were a "humbug" or all "nonsense" just because they are a

fad in Ontario, and because we in Ohio use  $4\frac{1}{2} \times 1\frac{1}{2}$ , would, to say the least, be hardly fair to you Canucks. It seems to me that in all these matters, even if we cannot all see alike, we should have charitable feelings for the opinions and practices of those who differ with us.

I am glad that what I have said above, cannot be construed as coming from mercenary motives. There is a "big wall" over which the A. I. Root Co. cannot very well climb.

Yours, etc.,

THE A. I. ROOT CO.,

E. R. ROOT.

[The above is written in the form of a letter, and as it may throw some light on the other side of the new section and fence question, we take the liberty of publishing it. Friend Root appears to think my remarks were especially directed at him. Such is not the case. It dealt with the question at large. When I said that the plain section was "a decided humbug" I used the term in the sense of it being a piece of nonsense or folly, and I still think it a mistake. Time will tell. As to the narrower section, I believe it is not a fad but good common sense, and time will show that, and I believe is showing that it is a move in the right direction, as when at the North American Bee-Keepers' Convention, at Albany, some years ago, the commission men told you to take comb honey in narrower sections. I am not even going to allow you to call it "a little fad" without a protest. How would this read:—"Ontario has the good sense all its own to use sections  $4\frac{1}{2}$  square, but only 7 to the foot." But just let me tell you you are all wrong. We use and have used for many years, more  $1\frac{1}{2}$  sections than all the rest put together. There are great responsibilities resting on an extensive and influential bee supply company, and I always think one is to be careful about changes in the construction of goods. Let the path be reasonably firm before you tread it. The above is doubtless an honest difference of opinion, and I am only advising to the best of my judgment. —EDITOR.]


  
**Instructions for Handling Comb Honey.**

—G. A. DEADMAN.

Considerable has been written regarding the handling of comb honey by the producer and freight or Express agent, but I have never seen an article referring to comb honey, as to educating those who handle it over the counter. I would recommend a slip of paper with short and implicit directions printed thereon, and have one put in every crate of comb honey. When this crate reaches the merchant, both himself and his clerks are educated as to the proper way to handle it to avoid leaking. When I realize how very easy it is to break one or more cells of the delicate comb, and thereby cause the honey to leak I have wondered how frequently this must be done by one or another having to handle it, who perhaps has never seen such a delicacy before. I have come to the conclusion that while bee-keepers are as a rule a very intelligent lot, having in their ranks men who occupy a prominent place in other pursuits, yet they are behind the times as regards educating others as to the proper way of handling the product of their apiaries. Last fall I wrote out a copy for the printer but as most of my honey was shipped I have delayed getting them, and have since thought it might be advisable to have others give their views on this subject, and in this way arrive at something better than that which I suggest. They could then be printed by the thousands, and sold much cheaper than when printed in small quantities. Here is what I propose, size of same about 5 x 8 inches.

### COMB HONEY.

#### HOW TO HANDLE IT.

You must not drop it. Hold it only by the wood, and when removing it from the crate, or at any other times, do not break the delicate cappings covering the cells, otherwise the honey will run out.

#### WHERE TO KEEP IT.

In a warm dry room. No place too warm in which a person could live. Never put it in the cellar, as honey will draw dampness, and cause the cappings to break and the honey to leak.


(The address went below.)

I have considered the above all the more necessary after taking a trip to the far

West. There are many, yes, more than we have any idea of, who have never seen comb honey, much less know how to handle it. A little girl was taking tea with her mother at our home recently. I helped her to some comb honey. She hesitated a little, then politely asked that I would take off the paper, so thin and delicate was the capping covering the hidden sweet. When in Brandon and calling upon a merchant there, he remarked: "O, I have some left from last year, it is in the cellar." It was a surprise to him that honey should never be kept (except sealed air-tight) in the cellar. In another town a merchant remarked: "I cannot keep the honey from leaking. I put it in the cellar, but it will leak." These were not the only two, by any means, who did not know that the cellar is not the place to keep honey and one does not require to go out of his own town to find them either. When I think of it, how manufacturers of novelties have set us the example of the wisdom of making everything simple and plain as to handling their goods. For instance, we have in the shop a toy called the climbing monkey and another the flying bird. When the box is opened you not only find directions as to how it is worked, but you will also see a picture of it in operation. Now the inventor or manufacturer of this toy might from his own familiarity with it have thought that there is no need for instructions regarding it, as it is so very simple; but no, he wisely gives implicit directions regarding the use of it. I think we too often take too much for granted, and because we are familiar with something ourselves, we think others must be. How frequently we have heard some public speaker say: "You are all familiar with the story of—", and very likely not more than one in ten have ever heard it. It may be he does not really believe they have, because he then goes on and tells it. However do not let us think that we can make it too plain, or bring it too frequently before those who have the handling of our honey, the proper way to handle or the best place to keep it.

Brussels, Ont.

[An excellent article. What do our comb honey men say? We think the size of slip, say 3x4 in. sufficient.—ED.]


  
 I am sure all bee-keepers are glad to learn that your firm are still going to continue the bee supply business.

JAMES FERGUSON.

Lampton, April 8th, 1898.

## Canadian Thistles.

F. ALEXIS CHIMELARIO.

### THE WINTERING PROBLEMS.

In case your readers may think me a crank on the wintering problem, I will promise here and now, not to again refer to the subject for a century or thereabouts, if I am only permitted to state that I wintered a **strong** colony on four Langstroth combs of sealed honey. I emphasize the word strong because two normal colonies were united, queens and all, on or about the 5th Nov. last, and run into a prepared hive, containing the above number of combs, on either side of which was an ordinary  $\frac{1}{2}$  inch thick division board or dummy. On Feb'y 10th, when the other colonies were enjoying a midwinter flight, not a single bee made its exit from this hive. Thinking that I had possibly overdone the matter, I made a close scrutiny of the interior, and was pleased to find the inmates so snugly ensconced in their quarters, that I left them to their own sweet will, and found that on the 11th of March they had actually rubbed their peepers sufficiently to take a glimpse of the outside world, just to be in the fashion. Had this colony been confined to their winter quarters for one month only, instead of three-and-one-half months, they could scarcely have shown less signs of requiring a flight.

Two more combs have since been added, although there was still a good quantity of honey remaining. Of course "one swallow does not make a summer" but the above experiment only proves what has already been proven with hundreds of colonies previously. Who says that bees need empty comb to cluster on in winter?

### NO-BEE-WAY SECTIONS.

Say Mr. Editor and Mr. Pettit, dare I growl, in a friendly way, just a little bit at the manner in which you both have jumped on the new fad with your four feet. Two feet a piece I mean, and no insinuations as to the size of them either. Ye editor objects (see page 197) to any more odd sizes of sections. Well, so do I. More than that, I also object to changing styles of supers or fixtures, if it can possibly be avoided; but if there is any shape of section, or method of securing comb honey that will realize better results, I want to know that system.

That no-bee-way sections, with ordinary cleated separators, will produce better filled sections, or those having fewer pop-holes, unless FREER communication is afforded the bees throughout the supers, can hardly be expected, although the first two factors will succeed in having the comb built nearer the edge of the wood. The very fact that Mr. Pettit advocates a perforated divider, in order to secure better filled sections at the sides of the supers, goes to prove that he himself believes in such a system to some extent at least.

Mr. Pettit too (page 203) thinks the plain section a delusion and a snare in every count. If such is actually the case how foolish it is for bee-keepers to attempt a change, to say nothing of the many practical apiarists who have for years been producing good comb honey, and securing even better prices for such, than for that harvested in the old fashion. Well I won't argue the point any further, but simply state that having been born an April fool, I'll be foolish enough to experiment with what I have for some years past desired to try, hoping that I may not meet with disappointment. I am, however, free to confess that a separator which does not admit of free access from one section to another is not going to accomplish much better results in so far as diminishing the amount of pop holes is concerned, and I therefore think a cleated, perforated separator superior to one having horizontal openings, unless said openings are a bee space wide, a thing, by the way, I understand, the fence does not afford, for fear the bees might give the surface of the comb a ridgy appearance, as already referred to by Mr. Pettit on several different occasions.

### RENDERING WAX BY STEAM.

As promised the readers of THE CANADIAN BEE JOURNAL I will now give the results of my experiments with the Improved Steam Swiss Wax Extractor in conjunction with the Hatch Wax Press, as illustrated in the A B C of Bee Culture.

As already stated, I had my doubts as to the quantity of wax secured in rendering old combs in water by the gunney sack process, and my belief that steam would secure better results as to quantity and quality. Well after trying both, I must admit that it all depends on how a person goes about the tests, and how thoroughly they are carried out.

First Test—A quantity of old combs were crushed in cold water, and allowed to soak for two days, in order to allow the

cocoons and pollen they contained to become thoroughly water-soaked, and thus prevent the absorption of wax. After filling the steam extractor, which contained about two patent pails full of this pumice it was steamed until no apparent trace of wax was visible, when 11½ lbs of nice yellow wax was secured. The refuse was then put through the Hatch press, and the astonishing amount of 5½ lbs more, just as fine wax was produced.

**Second Test**—The combs were treated in the same manner, by crushing them in cold water and standing for two days as before, and then placed in a gunny sack, which was boiled in a copper boiler, until all the wax had apparently risen to the surface of the water. In order to lessen the risk of the wax boiling over, it was skinned off occasionally.

The product from this method was not nearly so clear in color as by the steam process, but by re-melting and straining through a fine wire cloth strainer, (ordinary cheese cloth will do) it was made so.

I must confess that less wax was retained in the sack than I had anticipated, so that, after all, my loss in past years by not using a press in conjunction with this process, appears not to have been as serious as I imagined; nevertheless from the boiled combs which yielded 9½ lbs of wax, a further amount of 1 lb 6 ozs. was realized by pressing the same.

On giving Mr. Hall the results of the two experiments, he was certain that had I followed out the plan recommended by Mr. J. E. Freith, of Princeton, to first melt the combs (say 12 or 16 at a time) in a shallow tin dish containing water, and then pouring the liquid into the extractor, and allow the same to remain until the wax had ceased to run, that I would have been better satisfied with the system.

For want of time, this method at the present writing (March 15th) had not been tried, but if it does not appear in C. B. J. for April 1st, it will be in the following issue, in the hope that I may yet find the most economical plan attempted.

#### A BEE-KEEPERS' EXCHANGE.

In last issue mention is made that honey by the car load has, according to the Pacific Bee Journal, been shipped from California to Germany, including some 1,500 pounds of bees wax; and that the California Beekeepers' Exchange had sold twenty car loads since October last. You ask if it would not be well for Canada to follow suit, and also form an exchange similar to the California institution, for the better disposing of the honey crop etc.

Personally I am in accord with such a scheme, and would just mention that at the time the California Exchange was being contemplated I was present at a meeting of the Los Angeles County Ass., held in March 1895; and was asked my views on the subject, but owing to not having thought over the matter, I could not then offer any suggestion, or render any assistance to the measure. From what I have since learned, however, of its success, and the information received from a copy of the constitution, kindly furnished me by a member of the Exchange referred to, it appears to me the subject might be profitably discussed at the next annual meeting of the Ontario Bee-Keepers' Association, to be held in Guelph in December.

#### Notes and Pickings.

—BY D. W. HEISEL.

The winter just passed (as we hope) has been a very mild-severe one for bees in this locality. This is rather a contradictory statement isn't it, but a fact nevertheless. There were only a very few days that the thermometer registered below zero, and not very many days did it stand even at the zero point. But only one day did we have between the 15th of November to the 8th of March that the temperature reached 50° in the shade, and not until the 16th of March did the bees have a real genuine good cleansing flight. That makes four months confinement for at least one-half of my stocks, none of them having had the benefit of a flight up to the 8th of December, on account of my absence as stated in a former note. Notwithstanding the long confinement, I am pleased to say, that so far as my observations have gone only two show signs of dysentery, and that only slight, and with the exception of those two all appear strong and healthy at this date March 21st, but who can tell what the following two months may bring forth.

This being the first winter that I tried forest leaves for packing, and having sawdust and chaff cushions as well, I had an opportunity of testing their qualities as top packing. I give the preference to leaves thrown in a super to a depth of twelve inches gently packed down with the hands, minus the weighting. Second, comes coarse sawdust held in canvas sacks,

and third, chaff in sacks. If the chaff were thrown in a super loosely, minus the sack, I might like it better. and right there is the only objection I have to leaves, so used, that is to say, the inconvenience of removing them, and replacing, in case an examination of the colony is desirable previous to the time when top packing may be safely left off. Top packing with me has always been allowed to remain until the bees were ready for the supers, and at times I am sure it was of specific value.

C. P. Dadant objects very strongly to, in any manner, disturb bees in cold winter weather. So do I; and never do it if it can possibly be avoided. He also objects to winter feeding. So do I; and yet I have had success with not a few colonies during the first few years of my bee-keeping in feeding right in the midst of cold winter weather, though I would not advise it. I did it because I did not know enough to make ample provision before cold weather set in. My memory just now reflects on a little occurrence that happened me about five winters ago right along this line. I had introduced my first carniolan queen the fall previous to a colony that had been queenless for considerable time and was consequently weak, and somewhat short in winter stores, and being late in the fall they went into winter quarters in that condition, on the summer stand. Fully expecting them to run short of stores before spring, I watched them very closely. One fine day in February, when the bees were having a good flight, I opened that hive and found the bees healthy and vigorous, but well nigh destitute of stores. But not being able to attend to the matter of feeding that day, I fully intended doing so the next and save that queen if possible, but Providence seemed to be against me, the mercury fell before the next morning to zero, however, I concluded, if they must die, I would rather have them do so with a full stomach rather than with an empty one. I prepared the syrup and opened the hive intending to place the food right over the cluster, but by bungling management I actually spilled between a pint and a quart of syrup right over the bees. Mad at myself (and everything else) I closed the hive, sat a vessel in front to catch the drip. I slunked off to the house feeling like a walloped dog, prepared to repent in sack-cloth and ashes for my carelessness. I fully expected that to be the end of my prized queen, but to my surprise, the first warm day those bees came out as clean and bright as before, and by more careful feeding thereafter they came through all right, built up quick

and gave a good swarm as well as a good yield of honey. In this case, as well as others that have come under my notice, neither the disturbing or the feeding appeared to injure them in the least, yet after all it would be well to consider those as exceptional cases.

A writer in one of the Journals just recently made the statement "that the bees that have the greatest number of winter flights in cold hard winters, are the ones that come out best in the spring." I wonder if that is the whole truth and nothing but the truth, everything taken into consideration. If it was within my power to control winter flights, I would order just four flights between December 1st and March 1st, would rather take chances of the bees being in better condition at the latter date in this latitude with only four flights, than if they had ten or twenty, all things considered. You may ask why? The advantages claimed for cellar wintering over outside, I think decide the point without further argument, namely: The consumption of less stores, and the less exhaustion of vitality. If bees wintered outside are permitted to have unrestricted flight with neither a shade board or thermometer to gauge the matter, many thousands will be lost, on account of rushing out for a flight when the sun's rays are warm just at the entrance, but the surrounding atmosphere is too cold for the endurance of the isolated bee, consequently they fall to the ground never to rise. And even a number which may succeed in making the return trip to the hive, have so exhausted their vitality that they very soon succumb. The consumption of honey is also greater, and if bees can endure four or five months confinement in the cellar, surely they can do so for one month (as I would order it) without very much inconvenience. It may be quite different in the latitude where the writer referred to resides, whose name and place I cannot now recall.

E. E. Hasty is also after that mush stirrer of the A. B. J's., saying he shows such careful reading and discriminating selection, that he (Hasty) is getting jealous, and is fearful lest the first thing he knows, he will be accused of egotism for even putting his head up that high. Now look here Bro. Hasty, I too am mad at that boiler, and just you never mind the egotism of putting your head up, but if you could so manage it as to poke your fist square and solid under that facial boil of the boiler.—Say, wouldn't I chuckle, and further if you and I could by forming



a combine against him, exterminate-annihilate reduce him to a shadow then you see we would have fair sailing.

Bethesda, Ont.

The above notes were received too late for the April number.

### Wintering.

—A. BOOMER.

As you are desirous of having reports from Bee-Keepers for THE CANADIAN BEE JOURNAL, I send you mine.

Not having the best of success in outdoor wintering in many of the winters gone by, and not having a suitable cellar of my own, I chartered the half of a good neighbor's cellar, and having about 100 colonies, I concluded to try the half of them there, and the other half in winter cases outside, and now March 18th, I am pleased to say that all outside and all inside have wintered equally well.

On the 16th inst., I took some twenty out of the cellar, and found them in a most satisfactory condition, save one which had exhausted its stores but was still very populous and with brood in four frames. I was prepared for such an emergency as this, having a good stock of well sealed combs, and taking out two empty combs replaced them with full ones. I examined most of those taken from the cellar, and found them brooding quite freely. Most of these I have packed in winter cases, so that in case of a cold spell (which is most sure to come) they will be as comfortable as they were in the cellar. A few, I have fixed up with top packing only, and closed the entrance to about one bee space. I carried them out in the middle of the day and set them down in the yard, some distance apart, without any regard to where they set last fall, and carefully watched results, and I feel satisfied that very little, if any, mixing up took place, and they all retain their usual strength. I use the Richardson hive, and when putting them into the cellar I inverted the bottom board, which left a space of nearly two inches in front and under the combs, and just stacked them up without quilts or cushions until they reached the joists overhead. There is very little if any mould on any of the combs, and I had only to turn the bottom board again, and no cleaning up to be done, bottom clean and nice to begin the spring with.

A year ago I wintered all outside, and the winter being mild I had very good success, save in the loss of queens, but on the 25th of March last year, only a few of my colonies had brood, but now they all seem to be brooding freely, which surely augurs well for a good season, and so far I do not seem to have lost any queens.

I shall leave some in the cellar for a time yet, as they are resting very quietly and no dysentery, and will report later as to whether those taken out now, or later, succeed the best. Some years ago the spring was so very backward that I dare not take them out of the cellar until the 28th of April, and they did well that year. Very much depends upon the season.

Last year I commenced with some 43 colonies, and increased to 102, and sold two swarms, and got 4,000 lbs of honey. I think now that I have about as many as a man nearly 70 years of age can handle. I shall endeavor to control swarming to the utmost of my ingenuity. I do no clipping of queens wings. I like to see them swarm naturally, and as there are plenty of trees all around, very few attempt to abscond.

I might say that I left my heaviest hives outside, as I thought they would do with less stores inside than outside, and when carrying them out I considered that many of them had shrunk in weight but very little, the one that had apparently consumed all its stores was a very populous colony, and perhaps was light when put in, and being populous had got down to their last meal.

LINWOOD, Ont.

### Wax Extracting.

—BRITISH BEE JOURNAL.

I have read with considerable amusement the wail of your correspondent "F. E. I. S." concerning the above subject. I am afraid he is a bit of a "blister," as we say in Scotland. The following is the plan I adopt, and have no trouble at all. I carefully break up and wash in cold water all the comb for rendering. I rub well between my hands and release as much pollen as possible. Put into a close sieve, and hold below a running tap to run out the pollen which has been released in the washing. Now put the wax in a large preserving pan with convenient quantity of water. Boil carefully for a few minutes until thoroughly

cooked. Spread a coarse cheese-cloth "dipped out of hot water" over a small clean hard-bath, and pour the molten contents of the pan into the cheese-cloth. Next tie the opposite corners and lift out with the right hand. The wax and water will instantly escape from the cloth, but in order to take all out of it give the cloth a few scientific jerks. Raise the hand aloft and drop it quicker than the cloth can naturally fall. Bring the hand to a sudden stop, and the dumpling in the cloth is arrested the next instant, jerking out everything liquid. A few jerks leave the contents of the cloth as dry as a whistle. Now set the bath or basin aside to cool, and remove the wax when solid.

To make into cakes, put the wax (broken up) in to any convenient sized tinned goblet, and with a little water carefully melt all the wax and just bring to the boil; then pour into any vessel with perpendicular sides.

If desired in small cakes, take a few pound jelly-jars and put in a couple of inches of boiling water, then a small ladleful of molten wax, and allow to cool. They will be solid in the morning, and turn out easily.

I may add that I have no mess at all, and take as much pleasure in the operation as in hiving a swarm. I have a small cake left. Perhaps, Mr. Editor, you would give your opinion of it, if I sent it.—D. V. Dunaskin by Ayr, March 15.

[We will very gladly do so.—Ed.]

I read with great interest and no little amusement "F. E. I. S.'s" "Wail on Wax Rendering." I well remember my first attempts, but I did not have so much trouble in keeping my bags of comb under water as "F. E. I. S." tells us he experienced, for I took the precaution to place the weights inside the bag. If F. E. I. S. will kindly refer to pages 347, 388, and 507 of vol. 21, and No. 208, page 7, vol. 22 of the B. B. J., he will see some letters on the above subject by "Buzzing," "W. H.," and your humble servant; but in case he has not these numbers to hand, I will briefly describe my own mode of extracting wax. I first decide the object I have in view, whether rendering wax for exhibition or for ordinary sale. If for exhibition, I take care to use only the very newest combs, cappings, scrappings of sections, &c. These I place in an upright jar, and put jar in a fairly warm oven. When all the contents are melted, remove jar from oven and allow to get cold; invert jar, and contents will easily slip out. The honey which was in the cappings will

be found quite distinct from the wax, and whatever impurities were in the comb will be found at the top of the cake after jar is inverted. This waste part can be readily cut off. Re-melt the wax and strain through cheese-cloth or butter-muslin. The wax will now be found fit for showing. I adopted this plan in 1894 and 1895, showing at our county show (open class), and on each occasion was awarded first prize. In 1896 having won a "Gerster" Wax-Extractor the previous year, I determined to try it; did so. Result: wax a poor colour. It had a washed-out appearance, and only secured a third prize. Tried again in 1897; wax again a poor colour, and at our county show failed to obtain a place; but a friend of mine, Mr. Wilfrid Hardie, of Booms Grove, who extracted his wax in the manner recorded above, was awarded second prize in another show (open), whilst I again failed to score. I have come to the conclusion to use my "Gerster" no more when I want wax for show purposes, but to work on the same lines as in 1894 and in 1895. I find the Gerster answer admirably for extracting wax from very old combs, providing the water is kept to boiling point a sufficient time. I place extractor upon an oil stove, well fill the receptacle for holding the comb, &c., and keep the water boiling for about four hours. I should advise "F. E. I. S." neither to burn nor bury his pile of comb for if he does not relish the idea of extracting the wax I shall be pleased to do it for him, and buy the wax (when rendered) at a price per pound to our mutual benefit. If he, however, prefers to try his hand at it, I shall be interested to know how he succeeds. I may mention *en passant* that my bees were very busy on a damascene plum tree in my garden yesterday.—PERCY LEIGH, District Expert, Beemount, Stoke Prior, near Booms Grove, March 21.

#### York County Bee-Keepers' Association.

The spring meeting of the York Bee-Keepers' Association, will be held in the town hall, Stouffville, May 17th. First session at 10.30 a. m., the afternoon at 1.30 p. m. A large attendance and interesting meeting is expected. Come all who can.

L. MAPES, Sec'y.

Bees seem to have wintered rather better than usual. But one lost out of 68 in the home yard.

F. P. CLARE.

Russell Co.

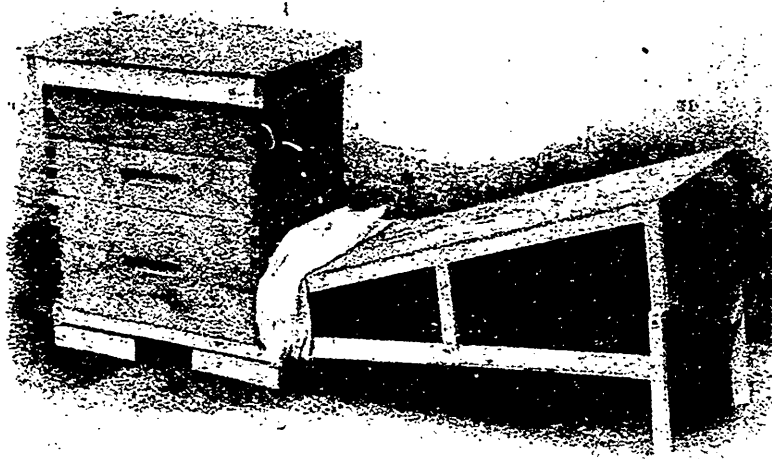
Taylors Swarm Catcher.

An appropriate subject for this month's JOURNAL is the Swarm Catcher. This is a great convenience in the apiary, small or large. It is placed at the entrance of the hive when the swarm just begins to issue. The swarm is caught in the self hiver and it can be kept there by closing every opening tightly. To be successful

the cellar or a cool dark place. The Gould, Shapley & Muir Co., Limited, advertise them at \$1.00 each; in lots of five \$4.00.

A Report.

I beg leave to renew old acquaintance by subscribing for the Canadian Bee Journal, herewith find \$1. I have always been more or less interested in bees. I have had only two years experience, but feel confident that it will work in very nicely as a side line in connection with fruit growing and general farming. I was afraid of this cold drop and have not put



the swarm catcher must be in place as quickly as possible after the swarm issues, the cloth, as seen in the illustration, must close the least opening between the catcher and hive. After the swarm has entered the "catcher" it can be removed, and if desired kept in the latter for hours.

The advantage is that swarms can be kept from uniting, and no one needs to climb and run after them. A child can catch the swarms in this way, when they could not have them in any other. A farmer need not come in from a back field but the bees can be left in these swarm catchers until noon or evening. If the bees are to be kept in the Swarm Catcher for some hours, it is better to put them in

my bees out yet, they appear to be wintering nicely. W. CRAIG.

Quebec, April 5th, 1898.

Bees have wintered well, lost two out of fifty-four. The two lost were queenless, they must have lost their queens late in the fall. The prospects are good for a honey crop here this season if nothing happens. The soft maple buds are beginning to open, but the weather is a little too cool for the bees just now. Clover is fine, never was better at this time in the spring, but it all depends on the weather for the next two or three weeks.

FRANCIS ORT.

Darling Road, Ont., March 23rd. 1898.

### CHAFF HIVES—Their Suitability.

I heartily indorse all you say in your reply to Mr. H. Michener, when you state your preference for a single walled hive with winter shell of  $\frac{3}{4}$  inch lumber, instead of the Root chaff hive. A good many down this way use the Root chaff hive, with lumber enough in them to make a chicken coop. I do considerable driving through the country and whenever I see a nice yard of bees, the temptation is usually too great to pass by without having a chat with the proprietor. Who ever heard of a bee-keeper with pride enough to keep his apiary looking nice that wasn't ready to talk bees? I have yet to find a progressive bee-keeper who was not free to admit, that a chaff hive having the lower story only double and admitting of the tiering up principle, had many advantage over the Root chaff hive. If you will look at the photo of my apiary I sent you some years ago, you will notice that nearly all of the hives were double wall (lower story double only). But I have a lot of single walls now and I very much prefer them for wintering when provided with an outside shell of  $\frac{3}{4}$  inch lumber without top or bottom and admitting of 3 inches packing on four sides, none on bottom and about seven or eight inches on top. A chaff hive has but one advantage that I know of over such an arrangement, and that is less trouble in preparing for winter. But when a single walled hive is covered with a winter shell and properly packed, it is in very much better shape than the most of the chaff hives are and who minds the extra time spent, when one knows his bees are better prepared to withstand the winter. A single walled hive with a packing case costs considerable less than any chaff hive I have yet seen, and after using both in the same yard for about 8 years, I am free to say that I would pay more for the single walled hive with shell, than the double walled ready for winter. My packing cases (I prefer and use an individual case for each hive) are without top or bottom, but at the bottom board a strip as wide as the space between hive and case stops the chaff from going to the ground. I prefer three inches of packing between hive and case. I have always used clover chaff for packing. Oat chaff may be better. If so will some one kindly say so, as I have used

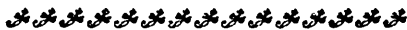
but little of it and cannot speak from experience. I have had good success with clover. A great deal of alsike clover seed is raised near my apiary, the chaff is handy. I expect I shall need about 100 new packing cases this fall and have made one and am wintering a colony in it to test it. To corner posts 1 $\frac{1}{2}$ x2 inches and 2 feet long I nailed lath the proper length to give 3 inches packing between hive and shell, leaving a few lath off the front where the bridge  $\frac{1}{2}$  inch high makes an entrance to the outside of case. Each one of the four sections of the case are made separate so that they can be laid flat and stored when not in use. When placed around the hive they are fastened together with hooks, or perhaps a Vandusen clamp would be better. The ends of the posts are placed on the ground and loose straw is placed on the ground as far as the stand (about five inches) or until the bottom board of the hive is reached, I then poured the chaff in and on top. I have a roof about six inches wide mitred together at the corners in such a way that it gives a slant outwards to the 6 inch roof. This roof extends one inch over the outside of the case and leaves a hole in the top, the same size as the inside of the hive. I use the ordinary hive cover on this roof and it makes a very good arrangement for a roof at little expense. The laths are placed in a horizontal position and no attempt was made to make a close fit, the rough edges coming flat together same as they came from the saw. I was afraid that rain would beat in and wet the packing, but on the night of March 21st we had a heavy rain-storm and the next day in the afternoon I drove down to the apiary four miles out of town, took the roof off the shell, ran my hand down between the hive and the lath and there was scarcely any damp feeling to the chaff. There may have been a slight dampness, but I was not satisfied that there was any, even on the side the storm came from. If there had been any it must have dried out very quickly. The bees seem to be wintering perfectly in this hive. If this case is a good one and it seems to be, there will be no excuse for anyone wintering bees without protection (as many do in this part of Canada) as a 15c. bunch of laths makes two cases and the cost of the rest of the lumber is trifling. If any of the readers of the C. B. J. has tried cases made in the manner I have described, I should be glad if they would give their experience in the C. B. J.

J. F. DUNN.

Ridgeway, Welland Co., Ont.

# Eighteenth Annual Meeting

## OF THE ONTARIO BEE-KEEPERS' ASSOCIATION.



Continued.

we got rid of the last traces of honey found in the comb. Then I took this very same die and stumped out two inches square and weighed it, and the result I will read in detail. The results are tabulated and they show the weight in grammes. I could not show it in ounces; it is necessary for me to take the metrical system of weighing to show the differences.

Our tables show the original weight of two inches square of foundation, and then they show the weight of the same area of empty comb at the close of the season and from those data I was able to calculate the percentage of wax that was added by the bees to these respective foundations. I found that in some foundations the bees added only 75 per cent. of wax, whereas, in others the per centage went up to as high as 175 per cent. I found that when we supplied a heavy foundation the per centage of wax added was the least and when we furnished the bees with the lightest foundation the bees added the largest per centage of wax. "Foundation in general use," that is the name of foundation supplied to us; we found that the per centage of wax added in that, in round numbers was 75 per cent; in the "patent process," 12 square feet per pound, the wax added was 175 per cent. If you wish the actual weights added I can give you them. I will give you two as an example: The Foundation in general use, two inches square, weighed 1.41; the wax that was added by the bees was 1.15; in the case of the 12 square feet the weight of the foundation furnished was 1.00; the weight of the wax added by the bees was 1.78. So that the first conclusion I was able to draw from that work was that the weight of the wax added by the bees was inversely proportional to the wax supplied in the foundation. I do not mean to say that I draw a rule and say that they all vary in the same proportions; that is not possible from these figures, but it is very evident from these three years experiments, because the two following years corroborate what I am saying now, that to the lightest

foundation the largest amount of wax has to be added. When we furnish a comb containing a larger quantity of beeswax then there is a less quantity of wax added to it by the bees. Now then, that points to this, that if our object in furnishing foundation comb to the bees is to allow them time and energy for the production of honey which otherwise would be given to the production of beeswax then, it is more economical to furnish heavy foundation than a very light one. That is one of the deductions we were able to draw from the first year's experiments.

Acting on the supposition that that was the main object in furnishing beeswax, I said that it pointed to the economy of supplying the bees with a foundation of not more than seven and a half to eight feet to the pound. That was what our results showed. That is to say, when you had a foundation which occupied an area of fifteen square feet to the pound then the bees had to supply a very much greater proportion of wax in building, than they did when you supplied a wax foundation of eight or nine feet to the pound. There were several other things which were noted and which are of some importance to you. For instance, when we started with a darkly colored foundation we found that that dark color remained and that there was a heavy and unsightly fishbone, as it is known, in the resulting comb, and I suppose that that materially affects, if not the quality, the sale of the honey. Another thing, we wanted to find out whether there was any difference between these foundations in the ease with which they could be drawn out by the bees, and supposing we were to take two waxes of different brands, but of the same weight, could the bees utilize more of one than they could of another? Several of these foundations that were submitted to us were milled at different temperatures and the object was to ascertain if the milling temperature had any effect upon what I might term the ductility, the ease with

which it might be drawn out by the bees. There were certain data to support the theory that there was a difference in the ductility of these foundations, but in going through the data more carefully (that apparent favor, that apparent balance in favor of certain foundations did not seem to hold. However, there are, as I say, certain data to show that there is something in the view that the milling temperature has an effect upon the relative ductility or ease with which it may be drawn out by the bees. I did not feel that we had sufficient data to lay down any emphatic statement with regard to that.

The question is this, if it is true, as I have said, that the wax furnished by the bees is inversely proportional to the wax furnished them in foundation comb, and if we carry that argument out to a logical conclusion might it not be urged that we should endeavor to furnish all the wax for the comb? Now, I do not think that possible, and to show you and bring before you my reasons why I think so I would like to recall to your mind what I said with regard to the production of wax, that it is not collected by the bees, it is a normal function of certain cells in the bees, and I doubt very much if we could so alter the constitution of the bees as to direct all their energies towards honey making, and to entirely give up and ignore this matter of wax production. I believe therefore that there is a limit wherein it will be economical for us to supply the amount of wax. So much for our first year's work; I was not at all dissatisfied with it, but certainly it leaves certain points in doubt. You can readily understand that this work was fraught with many difficulties, the differences, naturally, are small, the weights are all taken on a very exact system, and taken with great care, but nevertheless the errors of experiment must necessarily be there, and guard against them as you will it would be very rash for anyone on one or two years' experiments, unless the data were most marvellous, to draw final conclusions.

I should have mentioned that in the first year's experiments we opened the cells at the close of the season by shaving off the top of the cells. The following year I thought I could improve on that, because of the unevennesses; it naturally resulted that a little more of the cell wall came off in certain places than it did in others, and so in the following year when we repeated this experiment, instead of shaving off the caps we carefully picked each one with a penknife, and then we did not extract the honey

in an extractor but those sections were placed in water and the honey was dissolved out. They were placed in successive quantities of pure water until all the honey had disappeared, and then the honey comb was allowed to dry in the atmosphere and two inches square stamped out, as formerly. Comparing these results with the results we had obtained the year previously, we found that in nearly every case, the amount of wax added by the bees was somewhat more, and I accounted for this extra deposition of wax by the bees, by the fact that we had not removed any of the cell wall, that we had only removed the cap. I believe there are others who have considered these results, and who consider they may not be correct, that it may have been due to an extra production of wax by the bees that season, because I know it is held by many of you that the production of wax, and I think there is something in the theory, is in a measure relative to the production of honey. However, it seemed to me that at any rate our method was more accurate in the second year, and that it would in some measure account for that extra deposition of wax by the bees.

Then, another object in the second year was to ascertain the relative amount of wax added by the bees in the outer and inner sections, it being held by some that there was a greater wax deposition in the outer sections than there was in the inner sections. However, to dismiss that point at once, I might say that the data for that year did not allow me to draw any conclusion on that point, because, although there are many instances in which the wax added by the bees in the outer section was somewhat greater, there are almost as many instances in which there is a slight increase of wax deposited in the inner section, therefore I did not feel that we had sufficient proof to allow me to draw any conclusion on that matter. However, we did receive corroboration on this point of the previous year's progress, and that was that the percentage of wax produced by the bees was inversely proportional to the weight of the wax furnished in the foundation. Then, another point that was brought out during the second year's experiments was the deposition of wax when clover and buckwheat honey were stored respectively; and this is a curious thing, and one that I have not seen noticed anywhere, it probably has not received the attention of any scientific investigation hitherto; that is, that we found invariably that the comb which stored buckwheat honey was

heavier than that which stored clover honey. When we take the same brand of foundation and supply it to bees gathering clover honey and to bees gathering buckwheat honey we find invariably that there is a very much larger amount of added wax in the case of the buckwheat than in the case of the clover. I do not know what is the true explanation of that; I presume, however, that it has something to do with some physiological function in the production of wax. I do not think it is a mere accident, because our work of 1896 corroborates that again, and it impresses upon my mind the conclusion I came to sometime ago, as I said, I do not think it possible for you to furnish all the wax that is necessary for the bees. It is what I should call a natural concomitant, and it is a natural function along with the production of honey, and I think it is rather to be explained in some such way as that rather than to say that the buckwheat honey requires a stronger cell than clover honey. That of course is a point that is open for further work and for discussion and investigation. Of course, we again remarked upon the unsightly fishbones where an inferior wax was supplied. I drew out a table of averages, so as to show very concisely the different points, and I very much regret, owing to having to work right up until last night, that I was not able to prepare a large chart, so that I could have pointed to them while I am speaking. The same problem as to the relative ductility was considered, but we again met with considerable difficulty. There are again, I must admit, certain data which point to certain brands of foundation being more easily drawn out than other, but yet I have not results sufficient to draw any definite conclusion; that is to say, I should not like to put myself on record as saying that the milling temperature of the wax has any great effect upon the relative ductility or relative ease with the bees can utilise it. There are certain data, and I might mention those in connection with the choice wax by the Root mill. We invariably found that the choice wax by the Root mill which was milled at 89 degrees apparently was used to a greater extent than that milled at 120, and we found that in each year, and those are the data which go to support the view that there is something affecting the ductility in the milling temperature of the wax. The other brands of foundation were not sufficiently complete; that is to say, we only had a few instances in which the same wax was milled at different

temperatures, and it is only under such conditions as those that we could draw a strict comparison. However, from the results obtained from the choice wax of the Root mill we found invariably that there was a larger percentage of the wax furnished utilised which was milled at 89 than there was of that which had been milled at 120 Fahrenheit.

Just to sum up what we found out by the second year's experiments. First of all a very noticeable increase in the addition of wax furnished by the bees in the case of storing buckwheat honey; then, I found our results of the previous year corroborated as to the large percentage of wax added by the bees when only a very light foundation, such as 12 or 15 feet to the pound, was supplied in comparison with the quantity of wax added when a heavier foundation was furnished to the bees. That brings us to 1896. The same line of investigation, with certain alterations, was continued in our third year. Some correspondence that I have had with members of the Association led me to think that there were other reasons in supplying foundations than those that I have stated. As I said, from correspondence with certain members of this Association I was led to conclude that there were other grounds besides those of economy in furnishing wax for the cells, and so wrote to Mr. Holtermann, the editor of the Canadian Bee Journal to give me his views as to what he thought were the objects in furnishing foundation comb and if you will allow me I will quote from his letter. He says: "As to the object of using comb foundation, brood foundation is used to save the bees time and material, to get all worker cells, and to secure straight comb. The foundation in sections is first of all to aid in enticing bees into the supers, to save them material by the giving of wax, to save time, as they can begin storing more quickly in the supers; also to get an evenly-filled section, and to have it attached to the sides and bottom of section. Bees are much less likely to do this well when they build the comb themselves. Again, it is desirable to have the cells of a uniform size; by giving them the foundation, this is secured."

Admitting all that, there are other objects besides this economy in furnishing wax, and objects which are valuable and important from a commercial standpoint: these I have not fully realized before. I take it that if I have gathered aright the meaning of this, that one of the principal

objects is to have an evenly filled section, and to have a perfect alignment of cells and not an irregular comb. Of course, as stated by my correspondent here, it is to furnish the material and in that way save time and energy which the bees could utilize in the production and storing of honey. But you see this makes the question a very much broader one, and with regard to those points, it is not one upon which chemistry can throw any light. The only solution to the problem, as far as chemistry is concerned, must be in regard to the economy of furnishing material and in ascertaining if there are any differences in the ductility of the different waxes. I want to state this matter fully and plainly to show you where I am, and also that I may, just at the close of these brief remarks, have a discussion which will do me good in prosecuting this study in the future, because I wish to be upon the right line. In my estimation, if my work is to be of any value to you, it is necessary I should be put in possession of all facts and theories in regard to the matter so that our work may be initiated upon correct lines.

The details of the third year's work are tabulated and in the main they corroborate those of the two previous years. We found again that those foundations which were, as I may term them, extremely light, required a larger amount of wax to be added to them by the bees; and we found those foundations which were heavier required the least amount to be added. There are one or two points in connection with that; one, I wished to ascertain if when a heavy foundation was supplied to the bees they continued to build it heavy, or if they utilized that extra amount of wax that they were furnished with to build up the cells. It seems, from my work, that after a certain height in the cell is reached that they do not touch the bottom wax at all, that they do continue building that cell wall moderately heavy, if a heavy foundation comb has been furnished them; but I make this deduction: after a certain height in a cell wall is reached they no longer (and it stands to reason) can utilize the wax that is furnished to them. That is very well brought out by using one of these inferior and darkly colored foundation combs, and you can very readily trace in the empty comb which has been carefully cleared, where new wax has been added, and you can see the height of the cell wall to which the original foundation has been drawn from that fact, that there would be no object in supplying a very large amount of wax be-

cause it could not be utilized by the bees and it would only render a hard thick fish-bone in the finished comb, so that there is a limit. You must understand that although these results point to the advantage and economy and the profit of supplying a moderately heavy foundation comb, yet you must not push that argument too far; there are limits where it is no longer economical to supply an extra amount of wax because it cannot possibly be utilized by the bees and only remains there and destroys the salability of the finished product.

In the third year of the investigation we carefully removed each cap separately and then placed the full honey comb in successive quantities of water, until we had completely dissolved out all the honey and then we allowed it to dry. Then I thought probably I should arrive at some useful data with regard to the relative ductility of the wax, and if we could shave off all the superstructure and leave what remained of the foundation and if I weighed that as compared with the same area of foundations which was supplied to the bees, I thought I should have some data which would allow me to draw a conclusion as to the relative ductility of different foundations. I did think, but I confess I met with great difficulties, because the foundation was not all on one plan and consequently it was impossible to so cut the foundation as to leave nothing but the foundation and none of the cell walls; if I was to shave off all the cell walls in one part I should cut through the foundation in another. The matter was done, however, with the greatest care and all possible accuracy and the results have been obtained and are tabulated, so that now we have not only the weight in grammes of the foundation supplied, but we have the amount in grammes of the foundation which has been removed by the bees from these various brands. There is a very interesting table of per centages in that respect. We found that some waxes were utilized to the extent of fifty per cent; that is to say, one-half the wax supplied them in the foundation was utilized in cell wall structure; we found in other foundation that only seven per cent. of the wax furnished them in the foundation was utilized in building cell walls.

Mr. Holtermann—Were those specimens drawn out during the same honey flow?

Prof. Shutt—Personally I cannot vouch for that, but I can tell you this, they were taken out of the same hive at the same time and put in at the same time.



The difference lies in the weight of the foundation submitted. For instance, in that process of 12 feet square and 15 feet square per pound, we found very small per centages of the wax utilized by the bee; they did not weaken the base of the cell; there was not the extra amount of wax for them to utilize in building cell walls. In the choice wax of the Root mill and in a number of others we found 49.54 per cent. of that foundation wax utilized in this way by the bees; the same is true of the choice wax by the Given Process; we find there as much as 45 per cent. of this wax was drawn. However, as a matter of fact, on an average we found somewhere between 30 and 38 per cent. was the percentage of wax that the bees utilized from the foundation; that is practically, in round numbers, that from all foundations of ordinary weights there was in the neighborhood of one-third drawn out and utilized in comb foundation, while in what I may term excessively heavy foundations there was more largely in the neighborhood of 50 per cent. When we supplied the bees with only a light foundation, such as the patent process, the per centage was less than ten per cent. that was so utilized. If the main object in furnishing the bees with wax is to provide them with material for comb building you can see the economy of supplying them with foundations of not less than 8, 9 or 10 square feet to the pound, I doubt very much when you exceed that if you are really furnishing the bees with anything they make use of. That is the deduction I make from these results.

There is a tendency on the part of the bees to build up a cell which is fairly uniform in weight; that is to say, storing the same kind of honey; and if the bee does not find it furnished to him in foundation then the bee supplies it; when you furnish it the bee uses it as far as it can; and I think I have shown how it is that they cannot use it after a certain stage; and that is one of the reasons why we could not furnish enough to build the whole cell. Again, we find this very large difference in connection with the storage of buckwheat honey. There is at least fifty per cent. more wax in the comb in which buckwheat honey is stored over that in cells containing clover honey.

Mr. Holtermann—Do you happen to know if the flow from buckwheat is greater than that from clover?

Prof. Shutt—I cannot answer that question. The more honey they make the more wax they must make. I think

probably we shall have more data in time to come to bear out that idea.

With regard to the milling temperature as exercising an influence with regard to the ease with which it can be drawn out, again we found that that wax milled at 89 Fahrenheit was more easy to draw out than that milled at 105. When we get the same results in three years I think there is something in it. There are instances which do not lend any corroboration to that view. It may be, in fact, I am inclined to think that there is more in the weight that you furnish the bees than the temperature at which it is milled. However, these data stand on record in that matter. The results of that third year, on being calculated, show that the per centage of wax added by the bees in seventy per cent. of the trials made, was between thirty and forty per cent. That is what I say roughly we may suppose from our ordinary foundation, about one third of the wax is utilized in comb cell building. In five instances there was less than thirty per cent. and those were a very light wax. Now, the average weight of the foundation after the removal of the cells is considered fairly constant. There is another important point. It cannot be constant; that is to say, taking foundations of different weights, after we remove the superstructure of the cell. When we take waxes very closely in weight, we shall find that the result is that the remains of the foundation in the centre is fairly constant, but it cannot be quite constant in cases of very heavy waxes and light waxes because, as I have shown, the bees can only utilize the wax to a certain stage in the building of the cell, and on the other hand, with very light wax, they do not wish to weaken the base of the cell. But, there is a tendency on the part of the bees to build up a cell of a constant weight. The greatest weight of that foundation, after the removal of the cells, was in the choice wax by the Given process; that is, as I have already said, the heavy foundation that we employed in our tests. The lightest one was not the one that we might have supposed, with its fifteen square feet to the pound, but the choice wax of the Root mill milled at 89 degrees is more ductile and more easily drawn out by the bees, than the wax milled at a higher temperature. I think that is an important point. This choice wax by the Root mill process was by no means the lightest employed in the trials. With regard to the others, I have not been

(To be continued.)

### The Effect Spraying Has on Bees.

—R. F. Holtermann.

The relationship between the bee-keeping and fruit-growing industry through the work of cross fertilization by the honey bee is at present so well recognized that it is not necessary to more than say that anything which injures the bee prevents her from doing this important work. To spray fruit trees when not in blossom does not interfere with the honey bee. To spray during fruit blossom, when the latter are secreting nectar for the purpose of attracting the insect and distributing pollen when rifling it of its nectar, is very injurious to the honey-bee.

The honey bee has a very highly developed nervous system, and for that reason, considering its size, falls an easy prey to quantities of poison which could have no effect upon other insects of a similar size. And the quantity of poison which would be fatal to the honey bee would have to be multiplied many times to have upon larger animals even the effect of a mild tonic, as prescribed by physicians.

The way in which the poison reaches the bee is as follows:—Attracted by the odor of the blossom she goes long distances from the hive; as she nears the flower she locates it, depending more upon her eye as the guide, and enters it, rifling it of its nectar. The nectar through the spraying mixture has a very small percentage of the poison. This mixture is taken up by the bee and enters the honey sac—not the true stomach. I do not know if the effect upon the honey bee varies according to the percentage of poison or depends upon the question as to whether the honey bee allows a portion of the nectar to enter the true stomach for its own support. It appears to me likely that in either case the bee may perish. The result, however, is this: In many cases, bees perish at the tree, in others, on their way to the hive, and still others, lose their lives after returning to the hive. This is not all. The honey bee undergoes all the stages of a true insect, namely, the egg, the larva, the pupa, and lastly the imago, or perfect insect. During the larva stage, it is fed pollen and honey by the mature insect; this food containing only a very minute percentage of the poison is much more fatal to the bee when in the larva or grub stage, and in this way many partially developed bees are destroyed.

The loss then is two-fold, or to use a

well-known term, the candle is burned at both ends. The old bees are destroyed, and so are the embryo bees, which should go to take the place of those who have served their day and generation, and die a natural death, and in addition, to build up the colony for the honey flow. In this way it will be seen that a colony may be totally destroyed through spraying during fruit bloom, or as a result, be in so weak a condition numerically that it can give the bee-keeper no surplus honey when the proper season arrives. By the surplus honey season, we mean the time when the bees gather more honey than they require for their own use, and when that which is taken to market is reduced; this season does not arrive until later, when clover blossoms open.

An effect of less importance to the bee-keeper, but one of greater importance to the fruit-grower, is that the bees have been decreased in numbers until unable to fully carry on the work of cross-fertilizing fruit blossoms by distributing pollen. This, and not the gathering of honey, is the primary object of the existence of the honey-bee.

[The above article was written by request of the Hon. John Dryden, Minister of Agriculture, and at his suggestion it has been sent to the Canadian Press for publication.]

In addition to the above, the following has been published in connection with a bulletin issued March, 1898 by the Ontario Department of Agriculture, giving instructions in spraying:

#### DO NOT SPRAY TREES WHEN IN FULL BLOOM.

1. It is not the right time to spray.
2. It may destroy insects that are then fertilizing the blossoms.
3. It is destructive to bees.
4. It is forbidden by law.

#### AN ACT FOR THE FURTHER PROTECTION OF BEES, PASSED 1892.

1. No person in spraying or sprinkling fruit trees, during the period within which 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 or more than \$5, 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.

[Leading agricultural papers in Canada have recently with singular unanimity pointed out that it was desirable and in the best interests of the country, that the Hon. John Dryden, be retained as Minister of Agriculture of Ontario. Mr. Dryden has in this act alone done much for bee-keepers, and we know that bee-keepers heartily endorse what has been said by other agricultural papers.—ED.]

### A Question.

CATHCART, March 10th, 1898.

Mr. Holtermann:

DEAR SIR,—Will you please explain in the Bee Journal, how and when is the best time in the spring to double up bees.

Yours truly,

CHAS. KELLY.

[In reply to your question would say, that I believe the best time in the spring of the year to double up bees would be just before the clover flow. Up to that time let them remain separate and build up as best they can. To unite colonies early, in my estimation leaves them not much better than if they had remained separate, and there is more or less danger of destroying the queen in uniting.—ED.]

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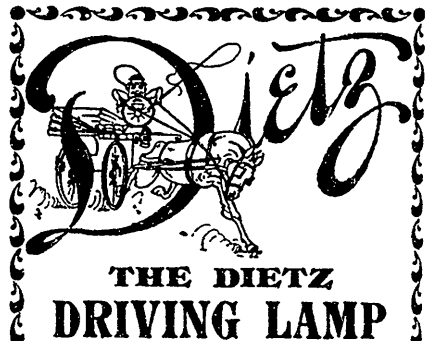
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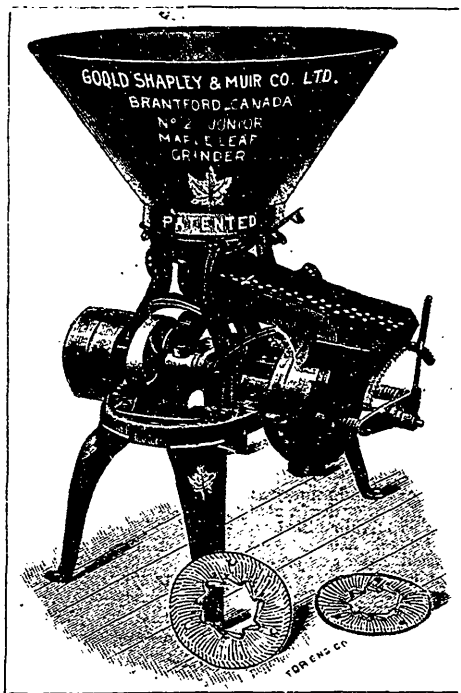
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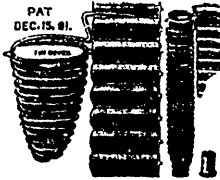
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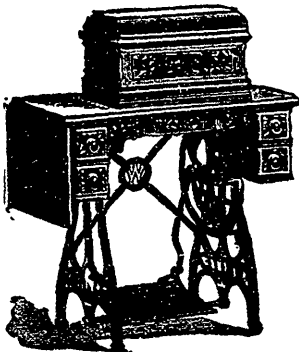
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