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THE AUSTRALIAN Bee Bulletin.

A MONTHLY JOURNAL, DEVOTED TO BEE-KEEPING.

Published by E. TIPPER, West Maitland

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JUNE 30, 1910.

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"The Australian Bee Bulletin."

A Monthly Journal devoted to Beekeeping.

Circulated throughout the Commonwealth of Australia,—New Zealand & Cape of Good Hope.

Published by : E. TIPPER, West Maitland, N.S.W. Aus.

Editor : W. ABRAM, Bescroft.

MAITLAND, N.S.W.—JUNE 30, 1910.

EDITORIAL.

With this issue I conclude a twelve months' apprenticeship as Editor of the "A.B.B." Editing is not my profession, but I have tried to present to readers matters of importance and beneficial. I have received encouraging letters, and also numerous new subscribers. I wished and had hoped that beekeepers would have been more liberal with contributions for publication; readers surely do not expect me to do it all. The writing is left to you. I receive considerable correspondence, but marked, not for publication. Why not write for publication also? I have spent much of my time for the sole benefit of the industry, and having been asked by the proprietor, Mr. Tipper, to continue the work, as hitherto, I desire to see a response to my repeated invitation for contributions. It shall be my aim to do better in future. If I do wrong, will the readers help to right the wrong? We are all in the same boat, therefore may aid one another. Any little assistance will help to improve the industry and the "A.B.B."

It was unfortunate that the Railway Department did not decide as to the running of the cheap excursion trains until too late for information to be given in last issue. As soon as dates were available, voting papers and invitations were sent out to all members

to attend a convention at the Queen's Hall, Sydney, on the 29th June. A report of the proceedings will be given in next issue.

Some writers give a catch paragraph, such as:—Bees gather honey at night; bees shift eggs from one cell to another, etc. And the readers seem to enjoy the fun and write for all they are worth. But what is gained by it? Take a candle and look.

It is regrettable that there is still trouble in various districts by loss of bees. But if beekeepers are attentive to their own interests at the meeting on the 29th, some action may be decided on. If they think, however, that they leave all the work to others, others may think the same, and thus there are heaps of complaints, but no remedy, no improvement, no advancement. Is it always to remain thus?

Some beekeepers peg away at feeding bees on syrup; but in another paragraph advise the use of honey for every household, because honey is superior to any other sweet, whereas sugar brings on sickness. How much stronger bees must be to human beings!

NOSEMA APIS.

German scientists agree that dysentery and nosema are two different things. In sunny Australia dysentery is not so prevalent as it is in cold and moister countries. Besides it is only felt dur-

ing the later part of winter. When the weather gets warm and the bees fly daily the trouble disappears. Not so with nosema. It continues into the summer, though, on account of numerous bees hatching daily, the actual loss is not so apparent as in early spring. Therefore, the total loss of the affected hive is greatest in spring time just before the young bees begin to hatch in large numbers. No effective remedy is known to cure the disease. I have thus raked my head what is best to be done in the circumstances; and I have come to the conclusion that if every beekeeper will have a **very careful** look-out to detect the first signs of the disease, to **destroy the affected colonies by fire**. This may seem a very radical remedy, but if we take into consideration the enormous loss in bees through this disease in past years, I think beekeepers will agree with me that my advice is the best and cheapest in the long run. If they are not destroyed, not only will they infest the apiary, but others in the range of their flight, and thus it has happened that the disease is spreading.

The first diseased hives may be pretty strong at the time, and it seems a pity to destroy them; but past experience has shown that ere long they are very weak and almost useless for a honey yield, unless assisted and strengthened. If all beekeepers will act on the advice, I believe that in a couple of years the disease can be stamped out. I have received numerous letters asking me for information, and I am grieved that I cannot give any other remedy besides what I have already given on the subject. I have not had any experience of the malady for many years, and I do not want any more either. To effectively carry out the destruction of the first attacked hives there ought to be practical bee inspectors, as there are fruit inspectors, etc., to compel the negligent to do the right thing. The Government

ought to assist ours as well as other industries.

The food theory is now discarded as inefficient, and if no new factors be brought to light, further arguments on that score are of no avail.

It is possible that ere long some quite effective cure may be found, which not only cures the disease, but stamps it out altogether. What a blessing to beekeepers that would be!

It is remarkable that now German beekeepers are experiencing the trouble more and more, whereas until a few years ago they were free. Would the importation of the golden queens from America into Germany have anything to do with it?

W. ABRAM,

Beecroft.

VARIOUS USES OF HONEY.

An able article on the "Uses of Honey," by D. M. Macdonald, the well known Scotch writer, appears in the "Irish Bee Journal." One paragraph reads:

Used instead of salt, it preserves meat. I should like that some readers would test this and inform us of results. I am not certain how it should be applied, or how much should be used, but I have read somewhere that the results are good. It can also be tried as a substitute for curing butter. It does its duty well, and keeps the butter fresh and sweet for a long time, if it is cleanly handled and carefully sealed up until it is required for use.

That is tantalizingly vague. In this country the cheaper grades of honey are used (are they not?) in the preparation of sugar-cured hams—hardly, however, as a substitute for salt, but in connection with it. Does Mr. Macdonald mean that honey is also used to keep meat in its fresh state, without

being salted? The same question might be asked about the use of honey in butter. In this locality honey has been used to some extent mixed with butter, all the way from an ounce of honey to a pound of butter up to equal parts of honey and butter. It is not difficult to mix the two by warming them a little. Most people would probably accept butter with an ounce of honey to the pound as an unusually good article of butter, while many would think the half-and-half article a very convenient "spread." Another paragraph reads:

To sweeten tea and coffee, honey is better than sugar, and many who cannot use the latter might well use honey in its place, as it has no ill effect on the digestive organs. Many honey cookies, biscuits, jumbles, cakes and drops can be made delightful in taste, and several books supply various recipes for their making.

Very good, so far as it goes; but why, oh why does Mr. Macdonald omit to mention the very important fact that **honey makes a very great** difference in the keeping qualities of any article of cookery when used in place of sugar? Use sugar in making a batch of cookies, and they are at their best when fresh baked. When a week old they will hardly do to place before company, and if kept much beyond that time they are likely to find their way into the chicken-feed. On the other hand, a honey cooky is just as good when 3 weeks old as it is the day after it is baked, perhaps better; and just how many weeks or months it would keep good has never been discovered here—there is too good a market for honey-cookies. One important advantage of this—to say nothing of the fact that most people count a honey-cooky more toothsome than a sugar-cooky—is that a large batch of honey-cookies can be made at a time, while it is not wise to make at one time more sugar-cookies

than will be used up in a very few days.

Mr. Macdonald has much to answer for that he made no mention of this important matter. It is to be hoped that he will make proper apologies to the beekeeping sisters of Scotland and Ireland.—"American Bee Journal."

SEALED STORES FOR SPRING.

(F. P. Adams.)

There is some difference of opinion as to the quantity of honey a colony of bees should have in the spring in order to build up successfully.

The late E. W. Alexander stated that he would prefer to have the brood chamber nearly empty when the first fresh honey came in, while many good beekeepers think that it is a sign of prosperity if there are several combs of sealed stores in the hives when brood rearing commences.

There is no doubt that this capped honey helps out in feeding the brood, but its presence in the hives at this time is a serious detriment to the growth of the colony. I have frequently seen a good queen greatly hampered in her egg-laying by the presence of capped honey at the tops of the frames and in the frames at the outside of the hive, and it is quite possible to have the frames in the hives so filled with honey in the spring that there is no chance of a colony getting in good shape for the harvest.

This condition is often brought about by a late fall flow or by heavy feeding to a colony on its full set of brood combs.

Any ordinary colony will winter well on six Langstroth combs, well filled with honey or sugar syrup, and by contracting down to this number and filling them up well, the honey or syrup is in the best shape possible to be used by the bees.

When brood rearing is well advanced in the spring the empty spaces can be filled out with empty combs and the

queen given a better chance to go ahead with her egg-laying.

I would much prefer empty combs on the outside of the brood nest in the spring with a good feeder on the hive, to several solid slabs of honey in the brood nest.

Bees will not use up sealed stores for brood-rearing to any extent, and the presence of this surplus honey in the hives is no indication of prosperity. It is rather the reverse.

The finest combs of brood that I ever saw were in empty frames given to fill out. In them the queen could lay unhindered by honey and they were filled right out with brood all nearly of the same age. Such a condition is not possible in combs that are partly filled with honey when the queen commences to lay in them.—“Canadian Bee Journal.”

SHAKING ENERGY INTO BEES.

BY C. P. DADANT.

When something new is discovered, whether in the bee-business or in other lines, many enthusiasts are apt to over-estimate the improvement, while others discourage it beyond reason. The idea of shaking the bees out of their hive to give them more energy has been engrossed upon by the usual number of enthusiasts, and has been ridiculed by many others. I have been quoted as being in favour of this method; that is why I desire to discuss the pro and con.

It has been stated emphatically that a natural swarm works with more energy after being hived than its bees worked in their former abode, and this has been laid to some mysterious influence of the disturbance. The opposition, on the other hand, has explained that a new swarm, not having any brood to care for during the first few days in its existence, is in the best of conditions for amassing stores. To

this might be added the statement that all the bees in a swarm, by the fact of their emigration, have become active workers. Those who are in the habit of watching swarms emerge from the hive have noticed that only such bees as are too young and too weak to fly remain in the hive, that many of the just-hatched bees nevertheless crawl out, carried by a whirl, only to fall helpless in front of the alighting-board, returning with great difficulty. Many of the more mature young bees, were it not for this pell-mell exit, would have remained a week or more within the walls of their home. Swarming evidently hastens their maturity. It is a case of necessity. Many of them, of course, will remain at home in the new abode for a few days, if their labour is needed inside, to build combs or nurse the young. So the working force of a swarm is greater than that of the old colony ever was, but this increase of ability is at the expense of the old colony, and the more thorough the exit has been the weaker the old colony has become, though it is usually somewhat replenished from the bees that were out foraging at the hour of the swarm issue.

The activity of the new swarm is also enhanced by the much greater amount of room which they find to be filled, especially if all, or a good proportion, of the combs have been furnished to them. However, in this case, breeding is more rapid, and the expenditure and time required to take care of the brood reduces the apparent activity that much.

The shaking process applied to the bees of a colony in working order has a somewhat similar influence on the young bees. Many that would have remained quiet for a week or more are thus compelled unceremoniously to take a flight. That it causes the young

bees to start out earlier in life for the harvest field may very readily be proven if we Italianize a colony of common bees. The change of queens causing a change in the colour of the hatching bees within 21 or 22 days, it becomes quite easy to see whether we can hasten the flying out of the young bees by positive disturbances. This is a very good reason for an increase of energy in the colony, if the weather is favourable to their flight and the presence of the young bees is not positively needed indoors to find combs or keep the brood warm.

In the breeding season there is another result secured by the disturbing of the hive from time to time. This result, however, is conditional upon the quantity of honey which they must have in store. In an observation hive one will often notice that if any loaded bee passes by the queen, she will offer the queen honey. To lay thousands of eggs each day, the queen must eat a great deal—in fact, she must eat at all hours. When there is no crop, the offer of food to her by the bees is less frequent than when the crop is on. If we disturb the colony, the bees will fill themselves with honey from their stores. They do this whenever they are frightened from any cause. Naturally, before those stores are returned to the cells, many bees meet the queen and the offers of honey to her are more frequent than if the colony had remained quiet, especially if there is no honey in the fields. An increase of food for her means an increase of laying, and sooner or later an increase—an unusual increase—in the strength of the colony. The oftener this is repeated the more honey is consumed, but the greater the laying. This would, of course, do no good if the crop was already on; and if the crop was not to be over 4 weeks' duration, the increase

of laying would mean the production of workers too late for the harvest, since it takes nearly a month to make a field-worker from the fresh-laid egg.

The two above-named reasons are to me very plain expositions of the cause of an increase of efficiency in colonies that are disturbed during the breeding season preparatory to the honey crop. There would be no increase and no benefits if the colonies in the case were short of stores. This is very evident.

Now, is there an apparent increase of efficiency in colonies that have simply been transported to our new pastures? Some persons will say that there is no such increase. But I have often noticed it, and so have others, among whom I will name my brother-in-law, E. J. Baxter, of Nauvoo, Ill., who has had oft-repeated experiences in transporting large apiaries.

The disturbance will, of course, cause an increase of consumption of honey and an active feeding of the queen, but this will be of very short duration, and in return there is more or less loss of laying, for she cannot well busy herself at her duties while the colony is being shaken about. One will certainly offset the other. We must look elsewhere.

I believe the increase of efficiency from moved colonies is due to their having to learn a new location. In normal conditions each bee at his first flight turns and carefully examines the location before venturing in the fields. It does not learn the entire vicinity in one day, surely. Not long ago a French scientist ventured the assertion that bees could find their way home with their eyes bandaged, from any point of the compass. But he limits their range to two or three kilometers—less than two miles. I believe that they learn to find their way in the fields very much as we would find ours if we were provided with wings, by the configuration

of the locality. Bees that have been brought to a new spot have to learn their location all over, every one of them, young or old. As soon as they find that they are in a new field, it seems reasonable to believe that they are eager to become acquainted with the range. Hence more active flight, more positive returns, than in the case of the bees which have been reared within this field of action, and find no change from day to day.

Many different opinions have been advanced as to the range of a bee in all directions. It is evident, from the testimonials given in this country as well as in Europe, that there is quite a difference in the distances according to the direction, the winds, the hills, the blossoms. But an old bee in a new field (new to her) will very probably develop an enthusiasm that she would not have experienced in a long-beaten track.

It seems to me that the above exposition of probabilities and deductions is sufficient to indicate that disturbances and transportation of bees can have only a limited influence on the success of the colony, and that we must not put too much stress on the benefit to be derived from such abnormal operations. In many cases disturbance and transportation of bees will do more harm than good.—“American Bee Journal.”

Bee Journals, Bee Hives, Brood Frames and Bottom Boards.

BY MATHILDE CANDLER.

In the long winter evenings, when the day's work is done, how delightful it is to sit by a warm coal fire, and read a book that we have long coveted or wanted to read but could not indulge in because of the press of other duties. Only

a bookworm can understand the pleasure that there is in reading; just as, I suppose only a smoker can understand the comfort that a man gets out of a pipe, or cigar. In both cases it is a passion which has become one of the joys of life.

But it is not only books that I enjoy these evenings, I also enjoy my bee journals and magazines. I keep all my bee papers and have an easy way to file them; and now I look them over and re-read some of the articles that were forgotten or only hurriedly glanced over, during the busy season; and I read, and dream, and build air castles, and make plans for the future.

I believe in bee papers. Each of the bee journals I am taking has had some article which, to me, has a dollar-and-cent value equal to the subscription price of that journal for the rest of my probable life time. It is not always the direct information obtained from them that counts, but the new ideas which they suggest, and the experiments which they induce us to make.

We are controlled not so much by what we thing, as by what we have thought. We are governed not so much by our convictions as by the ghosts of our dead convictions. It is this that causes us to get into a rut. Could we shake off these ghosts of dead ideas that have no vitality, but which cling to us just the same, we should have the enthusiasm and earnestness of a boy who knows what he wants (and gets it too) coupled with the knowledge and experience of years, and our progress in beekeeping, as in every thing else, would be very much hastened.

We beekeepers cannot afford to get into a rut. I keep more than one bee paper to help me keep out of it—in order to find something new, some live idea. This keeps up the enthusiasm and gives a pleasure that is above dollars and cents; and, if I do not find it in one journal I may in another; for no bee

paper can possibly cover the whole field of endeavour in our pursuit.

I am especially interested in those articles that relate to the lessening of cost and manipulation of hives. Hive furniture is not simple enough; and too much time, energy and money are wasted in polish and smoothness, where accuracy is really the only thing needed. Then there are too many varieties. These are puzzling to a beginner, and sometimes even to a beekeeper of some experience.

Some time ago I sent for some Langstroth brood frames. They shipped me the short top-bar variety. I do not like these, as I do not want spacers in the frames, and without spacers they slip down in whenever I tip the hive. I tried lengthening the top-bar, by driving a staple in the end; but gradually the staple will work down into the wood.

Nor do I think it necessary that the top-bar should be so heavy. I have a few frames with top-bar only $\frac{7}{8}$ x $\frac{3}{8}$ and they seem to be every bit as good as those with a heavy top-bar. Yet I do think $\frac{3}{8}$ -inch a bit light and would prefer to be on the safe side and have them a little thicker.

The most of my frames are of the triangular top-bar sort. But the frame I like best has a top-bar $\frac{7}{8}$ -inch square, and is supported by nails. I have about 800 or 900 of these, and am always glad, upon opening a hive to manipulate frames, when I find one or more of these among them. Bees do not put so much burr and brace comb on these, hence they are easier to lift out. Besides, the nail-supports give so much more room for the fingers to take hold of the frame to draw it out.

There is one disadvantage in this frame. The end-bar is very easily split when driving in the supporting nail. Were it not for this, I think it would be the best and cheapest frame for me. I

can prevent this splitting by fastening in an iron clamp and then driving the nail; but this makes the putting together of frames slow work. Possibly, if I had a better arrangement for clamping, it might go better. I wonder if some good beekeeper brother knows of a better way of driving a nail through the end-bar without splitting the wood.

These frames are very movable, but I want them so, and can keep them from moving out of place by notches in the tin at the end of the hive; and it were best if there were spacers at the bottom, too, but I do not want spacers on my frames. However, I can attach to my bottom board a wire spacer tacked to a strip of wood as long as the width of the hive. I use a deep, inclined, bottom board two inches deep in front, below the frames, and $\frac{3}{8}$ -inch at the back. I like this deep, inclined bottom. I had them made years ago with the idea that they would be practically self-cleaning, and would do away with the cleaning up of bottoms and entrances clogged up with dead bees and filth. All my hives now have these boards. The moisture runs out of the hive, and ice and snow do not clog up the entrance. Being inclined, there is not room enough to build much comb under the frames, and it is not necessary to put in little racks as Dr. Miller does. And when it is desired to do a little feeding, I just shove under a few sections or a wooden butter dish filled with honey or syrup. Or the caged queen is shoved in there sometimes.

Such a deep entrance makes it easy to form a pretty good estimate of the strength of a colony without opening the hive, by simply looking under the frames, through the entrance. It provides good ventilation and tends to lessen swarming. The cost is low, 11 $\frac{1}{4}$ cents, nailed, at a box factory.

In the winter, of course, the entrance

is reduced, by a board which fits in, to $\frac{3}{8}$ -inch by the width of the hive. In case a few colonies have only one brood chamber it is still further contracted by throwing a shovelful of dirt into the entrance.—“Beekeepers’ Review.”

AMERICAN & COLONIAL PAPERS.

EXTRACTS AND COMMENTS.

By D. M. MACDONALD, Banff.

JUDGING HONEY.—Here are Mr. Hutchinson’s points for judging honey. Out of 100 he gives flavour 50, body 30, colour 20, when dealing with extracted. When judging comb-honey completeness of filling gets 20, flavour 15, straightness of comb 10, freedom from propolis or travel-stain 15, uniformity 10, neatness 10. It may be interesting to place alongside this the points likely to be given by good judges in this country:—Flavour 40, aroma 15, density 15, condition 15, colour 10, general appearance 5, equal 100. Sections:—Cleanliness and colour 30, completeness 20, cappings 20, clearness of honey 20, get-up 10, equal 100. These are Colonel Walker’s points. If we group flavour and aroma, then density and condition, and finally colour and appearance, we have a very close approximation on both sides as to what constitutes good extracted honey.

A BEE’S FORAGING-FLIGHT.—The editor of the “Review” says:—“The farthest I ever knew bees to gather honey was a trifle over two miles. Much may depend upon circumstances, but I believe that at least three-fourths of the honey in the market is gathered inside of a mile from the hives.” That is the other extreme of Mr. Doolittle’s five or six miles from choice.

LONG TONGUES AND ENERGY.—“Bees reached down the tube of red clover with a determination to get at the nectar. If a few hundredths of an inch sig-

nifies much cannot the bee with energy and determination depress the top of the tube enough to reach the sweet?” The writer pleads that it would be better to breed energy in the bees and leave their tongues alone.

HONEY-DEW.—This is reported as very prevalent over a wide area of the U.S., and it is advised that beekeepers should not try to sell this for honey, on account of the injury it would do to future sales, and because the beekeepers would make themselves liable to prosecution. I trust the first reason will be a sufficient deterrent in this country.

SWARM V. STOCK.—I am one of those who believe in the “superabounding energy of a swarm compared with the more sluggish working of even a strong stock.” the words are Langstroth’s. I quote from “Gleanings”:—“The greater energy of a natural swarm has been admitted by practically all authorities and writers. We have time and again noticed how a natural swarm will outstrip a colony of equal strength and of the same strain of bees.” The foregoing quotations might be weighed carefully in the balance by a critic who recently took exception to similar words of mine.

NEVER OVERSTOCKED.

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SEPARATORS IN SECTION HONEY.

BY G. M. DOOLITTLE.

"Mr. Doolittle, won't you give us an article in the American Bee Journal" relative to the use of separators in the production of comb honey for market? Shall we use them, or shall we not?"

Thus writes a correspondent who evidently is anxious, as all should be, to place their section honey on the markets of the United States in the most marketable shape.

In replying, I wish to say that the answer to this question depends quite a little upon what would be the answer received were the question "What are the markets of the United States?" put to our correspondent or the readers of the "American Bee Journal." To the one 'who would answer this question by saying, "I sell all of my section honey in the local or home market," my reply would be, that it mattered very little whether separators were used or not, for, in such a case, any person having a fair, average ability as an apiarist, could succeed without separators in producing section honey that would please, as in the home market, absolute regularity or straightness of combs is not necessary. While having the nice white capped sides of comb honey all straight and even as a board, is pleasing to the eye of prospective customers whether in the local market or otherwise, yet where honey is not cased, this pleasing-to-the-eye part would not be of sufficient value, in my opinion, to pay any one who had a quantity of supers and fixtures adapted to the production of section honey without separators, in casting them aside that they might adopt a system requiring the use of separators.

But, supposing the answer to the question, "What are the markets of

the United States?" proves to be "a village or distant city market," or one which requires the casing of our product. And this is the answer any apiarist who in any way believes that in time he may become a specialist in the beekeeping branch of agriculture, is sure to give sooner or later. With such an answer, a radical change from the non-separated plan is sure to come, for the reason that not one in ten of the section-honey producers of the United States have an average ability of high order enough to produce section honey that can be promiscuously cased, without there being more or less sections, the combs in which are so wavy or bulging that when placed in the case, some parts of their sealed surface will come in contact with their fellow sections, thus causing the honey to leak and run down into the bottom of the case, if not through the case. Thus, on the arrival of such honey to the village or city to which it was shipped, it is in almost any other than a marketable shape. After one or two such experiences, any beekeeper who has an "eye" to his calling, concludes that he has sufficient reasons for casting aside all of his supers that will not allow of separators being used, and going to the expense of providing himself with suitable material so that the comb honey in no section used shall be built otherwise than between separators.

So far I have been considering the matter from the standpoint of the one who has from 20 to 500 colonies with hives and fixtures therefor, on the plan of non-separated section honey. But allow me to say further, any one beginning in apiculture cannot make any mistake if he starts out with fixtures adapted to the production to comb honey with separators, as such honey

is equally as salable in the local or home market, as it is in any spot or place in the world, say nothing about the United States. The production of unseparated honey in marketable shape requires some things over which the apiarist has no absolute control.

Suppose the honey-flow is on and the bees have commenced to work in all parts of the super (as they must if we are to have reasonable decent combs in the sections for market), and at the end of these two days after starting cool to cold weather comes on, the bees draw in the cluster until it may not occupy more than half of the super, when, if such weather holds on for 3 or 4 days, as is often the case, those sections clustered upon will become "fat," while those outside will be "lean." The weather now turns warm and then hot, so that the cluster again takes in all the sections in the super, or at first, when we have of necessity the fat ones with their cells lengthened out into the lean ones along the edges, where the bees left off clustering during the cool spell till these fat ones are nearly, if not quite, twice as thick as to combs of honey as are the others. This will entirely exclude them from being cased in any way, except by taking their places in the case in the identical position they occupied in the super, which it is not possible for them to do unless the super and the shipping-case are of equal dimensions in every way.

Then, to have anything like satisfactory results with unseparated supers, all colonies supered must be strong enough to enter and fill any one super at once; otherwise we have the same state of affairs as in the before-mentioned case, for should there be only bees enough to start work vigorously in the centre of the super, each section, as we go farther and farther

toward the outside of the super, will have one fat side and one lean side, this becoming more and more prominent as the sides, each way, are drawn the nearer to.

Again, there must be almost a "downpour" of nectar to secure good results, and that continued till the whole of the super is finished. With a light or an intermittent flow, many of the sections will be capped down a part of the way, and, on a "spurt" of honey coming, the uncapped cells just below will be lengthened out, some projecting into their neighbour sections, this way and that, until the "faces" of the combs will have become so uneven that casing them will be entirely out of the question.

Then, if we wish to use "bait" sections to start the bees to work in the supers, just as early in the season as possible, the profitableness of which is conceded by nearly every practical apiarist in the world—if done without separators, these baits will have their cells lengthened out before capping is commenced, so that they will bulge nearly into the centre of those on either side.

If I am correct, this whole idea of producing section honey without separators originated with the idea that bees will store more honey in a super without separators than they will store in the same super with separators. But just how much more I have never heard any one attempt to say. I used to think just that way myself, but after 30 years of close watching, and trying the two plans side by side, I cannot tell how much more; but, my candid opinion is, that there might possibly be this difference; only 499 pounds being stored with the use of separators as against 500 pounds where separators were not used.—"American Bee Journal."

WAX-GATHERING IN MALAYA.

In "Chambers's Journal" for September there is a most interesting article on "Wax-gathering in Malaya," by D. W. O. Fagan, a short review of which may interest readers of the "B.B.J." sufficiently to cause them to pursue the article as a whole. The author describes how, in search of fresh experience, he and the "Penderang" (Rajah's heir) joined a wax-gathering expedition to the forest, and so to his subject:—

"The wild bees of Malaya are, I take it, a genus apart—larger, fiercer than those of the domesticated species known to Europe, and differently marked. They hive in the thick jungle of the interior in immense numbers, and with this peculiarity, that they invariably make their home in one species of tree alone.

"The 'Rajah-tree' of Sumatra, common to all the islands of Malaya, with trunk diameter of six to eight feet, towers amid tropic undergrowth to a height of a hundred and fifty feet or more. In appearance it resembles nothing so much as a huge umbrella wide open, poised upright on its handle. No knot or protuberance breaks the smooth, vertical column of the massive trunk till, seventy or eighty feet from the ground, the crown of branches radiates horizontally from the bole as spokes from the hub of a wheel, or, to carry out my first simile, the ribs of an open umbrella. In and above the branches is superimposed a dome-shaped mass of dense foliage, flattened and compressed the outside rim of the mushroom-like top, regular and orderly as though trimmed with giant shears, forming a circle of perhaps two hundred feet diameter.

"In the shade of this vast umbrella the bees live in colonies, shielded alike

from the fierce rays of the sun and the flail of the tropic rains that now and again sweep over the forests. Their hives, fashioned of wax, hang in thick clusters from the under surface of the great limbs, semi-circular in shape, with a circumference of three feet; these hives, of which there might be quite two two hundred in one tree, give one the idea of so many gigantic yellow pudding-basins sticking by their rims beneath the branches.

"From time immemorial a sort of semi-religious sanctity has been thrown around all rajah-trees. They are held sacred to the rulers and potentates of those provinces where they grow, who also claim full right of value of all wax produced by the bees. To cut or injure a 'rajah' is regarded as an offence meriting the shortest possible shift; and if, indeed, any unfortunate Malay of the common people were to cut one down or set it on fire accidentally (he would never do it on purpose), I have never been able to find out what sort of frightful thing would happen to him.

"Yearly, as the season approaches, armies of bee-trackers are sent out, whose duty it is to mark the young swarms and follow them to their homes, and as soon as it is observed that bees have commenced to frequent a 'rajah-tree' both it and the spot on which it stands are 'tabooed,' to prevent any molestation of the insects by a too near approach. As no tree is considered worth robbing unless it contains at least one hundred and fifty hives, the 'taboo' may hang round the tree and its environs for quite a long time.

"Where the bee-tree grows far back in the wilds, many miles beyond the settlement-line, the hive-robbing becomes a work of some magnitude, and the expedition may last three weeks. Fortunately in our case the scene of operations was

only about four miles, within the fringe of the forest, beyond the village outskirts.

"Like burglars setting out to crack a crib, we waited till the shades of night had well fallen ere starting. Like many another nefarious undertaking, hive-robbing is best done in the dark. Precipitation is to be avoided; and, anyhow, as my friend Hamil sensibly put it, there's no use starting in to rob bees till they are sound asleep.

"On arrival at the village we found the hunters, ten active and athletic Malays, waiting our presence and the coming of the 'Mullah'; for no company of pious Mohammedans could be got together for a night expedition, unless under the leadership of the 'Crang-Kramat,' literally 'Mystic Man,' as the village priest is called.

"Presently, headed by the Mullah, a fine-looking Arab, whose grave, ascetic face, we crossed the cleared land, where the moonlight fell in a silver flood, and plunged into the gloom of the forest, the Mullah lighting a torch, as with the guide he marched in through the undergrowth. The Panderang and I followed close in single file, and after us the hunters, bearing various impedimenta on their heads—coils of light, strong rope, baskets, bundles of torches, and bales of split bamboo pegs pointed and fire-hardened to an iron-like rigidity.

"Elephant-tracks and rhinoceros-runs pierced the jungle here and there, and where possible they were followed as offering easy going until they arrived at the vicinity of the 'raja-k-tree.' Here the tangle of undergrowth fell back, leaving a sort of natural clearing. In the centre of the open space the great trunk, massive and column-like, held aloft its huge mushroom top of leaves and branches. One could just make out

in the gloom overhead clustering bunches of hives depending in groups from the under surface of the giant limbs.

"At the tree-foot a halt was called, and the Mullah, lifting hands to heaven, invoked the protection of God for his men and a blessing on the undertaking. The group of hunters and ourselves stood silent, with bowed heads, as the priest, chanting the universal prayer of Mohammedans, marched seven times round the tree-trunk. One could almost fancy one's self present at a midnight service in some vast mosque of Nature's fashioning, so wierdly impressive was the scene. The red light of the single torch borne aloft by the Mullah as he moved cast momentary flashes of crimson colour now on tree-bole, now on dusty forms of waiting hunters.

"With the cessation of prayer work was commenced in earnest. The reason of the hundreds of pegs became apparent. Two feet from the base of the trunk a pair of pegs, standing abreast and a foot apart, driven well into the soft bark, formed the first rung of a ladder. Two more were quickly added at a height of eighteen inches. The man using a wooden mallet mounted his ladder as it grew, standing on the pegs and clinging by one hand as he drove a second pair above his head. The men relieved each other in turns, and the peg-driving went on quickly till from base to crown the smooth trunk was marked perpendicularly by an easily-negotiable ladder of pegs.

"From a waiting group of men, who had hitherto only watched the proceedings, the first of the hive-gatherers sprang forward, mounted the ladder, and shinning out for a great lateral branch, hauled up with a rope he had carried with him a large basket, which he slung to the limb beneath the first hive selected.

"The next step was to light a torch, which in burning gave off a thick cloud of white smoke. The bees had not yet waked from their slumbers; but when the man, holding his torch close to the orifice of the hive, rapped smartly on the waxen wall with a scimitar-shaped wooden knife, we could hear the angry buzz-z-z of the insects from where we stood a hundred feet below as they emerged in an out-rushing swarm. A rain of dead bees, meeting the fiery death of the torch, fell on our upturned faces. The great majority of those that escaped, stupefied by the narcotic fumes of the damma-soaked torch, were practically harmless. The man's body, too, had been carefully rubbed with a pungent essence, distilled from the leaves of the wild pepper-tree, peculiarly repellent to all the bee-tribe, and only about a dozen bees succeeded in getting home on him.

"Working the point of his knife between the rim of the hive and the wood, the hunter dropped the hive into the suspended basket, and it was quickly lowered to the group below. Far overhead was the noise of a myriad enraged insects, shrill and fierce.

"Fifty hives were taken on the first night, the men working in relays, and as with the dawn the million bees from out of the hives, fully awakened, would be ready and eager for business; and as signs of the coming day were apparent, it was decided to leave the remainder to be brought in on a future occasion.

"The men below had not been idle. As each hive reached the ground the honey was quickly pressed from the wax, which was at once packed in bales for transport on the bearers' heads. No attempt was made to save the honey, nor did I see any eaten, though, even while hard at work, the men, scooping them into their mouths in handfuls, gorged

great quantities of young bees, of which they are inordinately fond.

"Malays are splendid climbers, and considering the hazardous nature of the work, accidents in the actual hive-gathering are remarkably few, though from a careless use of the torch or an insufficient anointment of the oil cases sometimes occur of a man, paralysed by many stings, meeting his death by a fall from a tree.

"The weight of wax in an average hive is eight or ten pounds, and from a good tree as much as a thousand pounds of wax is frequently obtained.

"In our case, the fifty hives secured on the first night yielded considerably over four hundred pounds, which, on our return to the village in the morning, was taken to the palace, weighed and valued, the Rajah finally distributing among his faithful subjects a sum equal to about one-quarter the value of the whole.

"The bee-hunting industry of Malaya gives annual employment to some thousands, and although little heard of outside those countries where it flourishes, and its market quotations find no place in the money-columns of the newspapers, it is, notwithstanding, a business of no mean importance in the Far East, and it is to the profits arising from the industry that the native rajahs and other potentates look for large part of their revenues. The wax, being of superfine quality, commands a ready sale in the China markets at a price equal to a shilling or eighteenpence per pound."

In drawing attention to this article on "wax-gathering in Malaya," it occurs to me to put the query as to what race of bees these are. Wallace, in his "Malay Archipelago," mentions only one kind—*Apis dorsata*—and in a rather short notice of these infers that the colonies only build one comb measuring three to four feet. Mr. Frank Benton

spent several years in the East investigating the capabilities of the various races of bees, and he reported on the "Giant" East Indian bee (*Apis dorsata*). He says: "All the varieties of these bees build huge combs of very pure wax, often five to six feet in length and three to four feet in width, which they attach to over-hanging ledges of rocks or to large limbs of lofty trees in the primitive forests or jungles. When attached to limbs of trees they are built singly." Query: Can we infer from this that this race of bees build several combs when their nest is under ledges of rocks?—R. WHYTE, in "B.B.J."

WHAT I DON'T KNOW.

(By F. Dandas Todd.)

The Editor invites me to write a short article telling some things I know about beekeeping. He reminds me of a story told of the late Prof. Rutherford, of the Edinburgh Medical School, a man possessed of a fiercely carcastic tongue. A poor medical student was up before him for an oral examination, but was unable to answer a single question. At last the professor inquired, "Have you a visiting card with you?" Here was a question the student could answer, so he brightened up as he replied in the affirmative, at the same time handing out a little slip of white cardboard, 1 x 3 inches in size, bearing his name on one side. The professor glanced at the name, then turning the card face down on the table, pushed it towards the student, remarking, "Kindly oblige me by writing on the back of this card all you know about physiology."

When it comes down to the practical management and control of bees, I often feel I could tell all I really know on the back of a visiting card. I believe a lot, mind you, but just as soon as it gets down to the brass tacks of exact know-

ledge—well, as some of the Scotch readers would say, "I hae my doots."

Here is the trouble. Instinct is an almost infallible guide, but reason is a low down trickster. For millions of generations a weeding-out process has been going on with all forms of life, and only those that did the right thing at a critical moment managed to live and have posterity. Those who did the wrong thing or were foolish, ceased to exist, being converted into solid nourishment for some other organism that happened to need a square meal about that time. All the wise things our ancestors ever did are reflected in our instincts, their foolish ones nearly all died with them. What a comfort this thought must be to most of us.

Bees and men have both instinct and reason. O yes, I know men say only men have reason. I will go so far as to admit that man is a rational animal who rarely ever reasons, and no worse than that would I say about bees. When men and bees trust to their instincts, I, for one, feel they are pretty nearly doing the right thing, but when they begin to use their reason, then they are making voyages into new regions with all the risks that may befall the explorer.

Here is the way it is. You turn a lot of cattle loose in a large field and by instinct they will develop a routine that is invariable. You turn a lot of men or bees loose and goodness knows what will happen. Instinct preserves the one, reason gives to the other two the chance for a lot of new excitement, and they get it.

Just think of the complication when two rational but unreasoning organisms of different types meet together in the shape of owner and slave. The boss cannot whip the slaves into lien, because they will at once launch their bolts and die, and there is no profit in dead bees. So he tries to circumvent the little demons, and to do this he must study their

habits. With calendar and clock, with thermometer and foot rule, with pint pitcher and pound weight, he keeps tab on them, and behold just as the investigations appear complete, the bees do something entirely different and both the hive and the records suddenly cease.

Wise men make mistakes, only fools repeat them. Instinctive animals rarely make mistakes, rational animals make them all the time. There is the trouble with bees—and men. You never know. Here is the secret of Dr. Miller's wisdom and cheerful disposition. He is just old enough to say encouragingly, "I don't know," and secretly we admire him. I am really trying to get up enough courage to confess as much ignorance as he does. Some day I may succeed.

What do I know about bees? Let me see. Once I knew that bees fly freely at 48 degrees, and a little at 45 degrees, but I have seen them flying in Chicago in January with the thermometer at 38 degrees. I once knew drones were killed off before the beginning of winter, but I saw a few fly along with the bees at the same date. Furthermore I saw a poor solitary individual chased out into a cruel world on Oct. 29 this year in Victoria, B.C., and that too from a hive that had no drones in summer. I thought I knew that 25 pounds of stores would carry a colony over the winter in this part of the world, but 21 hives that had that amount of stores in September, 1908, were almost all empty, many of them dead, by Jan. 15, 1909. What was the cause of the trouble? I don't know, but I am guessing. Once I thought I knew when a colony of bees was dead, but now I don't. In February I put a dead colony, dead from starvation on top of another hive, and that colony is alive to-day in good shape, headed by its old queen. Once I knew—but my courage is oozing fast, this Dr. Miller gait is too much for me.

Here is something I do know, at least I knew it this year, but perhaps may not know it in a few months hence. After much experiment trying to feed starving colonies on summer stands in January, February and March, I learned that bees will not go down for syrup, no matter what its temperature, unless the thermometer stands at 50 degrees at least. There, that looks like a definite statement, but remember, like modern Scotch ministers, I am permitted mental reservations.

I DON'T KNOW (put these three words in caps, Mr. Editor) how to give pollen to bees, however much they may need it, unless they can fly outside. For six weeks after willows started to bloom the bees could not fly as the weather was too cold, yet they were starving for pollen. Recently working, through my bee books, and I have many, for the 'steenth time, I hit upon something that looks promising. "The book of Beekeeping," is a Chicago reprint from plates of what is apparently an edition originally published in England. At the end of a paragraph on spring feeding I find this sentence, "Flour candy can be given with advantage at this season of the year." The only interpretation to me is this; artificial pollen in the form of flour—wheat, rye, peas—can be given, provided it is mixed in with the syrup of which the candy is made. I discovered this sentence when it was too late to try, but it seems strange that no American writer has aught to say about the idea. On the other hand, generally speaking, on this continent when winter is past, bees can fly freely as the temperature is usually high enough. But in Britain and here on Vancouver Island there may be weeks in the spring when the thermometer hovers between 35 deg. and 45 deg., warm enough for willows to bloom, but not warm enough for bees to fly. In fact, it is a very happy example of that much

abused word "locality."

Recently in re-reading Mrs. Comstock's "How to Keep Bees," on page 142 I found this: "The unbolted rye-flour, or even oatmeal, or whole wheat flour may be used by the bees as a substitute with perfect success. The meal may be mixed with the candy if it is so desirable." So we see at least one American writer recommends the same practice, and that too in language about which there can be no doubt. Perhaps some reader who has tried giving flour in this way will be good enough to relate his experience. The idea may not look important to the beekeeper of Ontario, but if the plan is feasible I could have probably saved one-third of my apiary last spring had I observed these sentences. I was simply aching for some such scheme, but the items were not indexed, hence I missed them. Here you have the reason why I am always re-reading my books, just to catch a stray sentence that tears on some problem that bothers me. Just think how mean a beekeeper feels when he sees colonies strong in bees rapidly running down to extinction for want of pollen, while he is utterly unable to supply their want artificially.

Now I have told one thing about bees I think I know, and another thing that is worth knowing if true. If all the readers of this journal would tell the rest of us the one thing they learned about bees the past season, this paper would be the most interesting on earth. [Do not use flour.—ED. "A.B.B."—*"Canadian Bee Journal."*]

PROPOLIS IN SUPERS.

I have often wondered why two beekeepers in the same locality have such different-appearing lots of honey. One will be white, and sections almost unspotted, while the other will be yellow and all varnished over with propolis.

Keeping the hives and frames well scraped of propolis, and keeping this propolis out of the reach of the bees is one essential. Leaving the scrapings beside or in front of the hive is almost as bad as leaving them in the hive, for the bees will be found working on those little bits, carrying them back into the hives. The use of burlap over the sections is another cause of yellow finish in the sections, and any propolis-clogged burlap left in the apiary is worked on by the bees, and the propolis carried back to discolour the comb.—*"Gleanings."*

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HONEY.—

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—SYDNEY—

AN EXPERIENCE WITH FOUL BROOD**Disinfection of Hives not Necessary.**

By Leon C. Wheeler.

Editor Hurley: I have been reading with much interest the discussion in your Journal regarding the treatment of foul brood, and most especially those in regard to the disinfecting or charring or burning out of the hives, which have contained infected colonies. Now, as I have treated some forty or fifty colonies this summer for that disease, and have done quite a lot of experimenting along several different lines of treatment, perhaps my experience might be of some value.

I found on inspection of the Paris out-yard this spring (I had taken this yard to work on shares the winter before), that it was badly infected with foul brood; some thirty colonies showing the disease at that time and 12 or 15 developing it later on, as they enlarged their brood nest. My father-in-law, who was the owner of the bees, decided to attempt some experiments, and agreed to help with the work.

Our first experiment was made on five colonies strong in bees, but showing unmistakable evidence of the disease. As soon as the dandelion flow commenced (this is a very light flow here and rarely yields any surplus), these colonies were shaken on full sheet foundation, leaving bees enough to take care of the brood, which was placed over a bee-escape on top of the hive containing the bees and foundation; this, in hope that the young bees as they hatched out would gradually work down through the escape and swell the force below. In this we were doomed to disappointment, for in no instance did they get below, but simply plugged the escape with dead bees and brood, etc. We tried this same method later on in the summer, but the bees only did the same thing, clogging the entrance and not attempting to join the force below.

The bees below were given their freedom from the first, our idea being that the flow being so light, they would not be able to gather enough to store any in the cells for some time, or until their honey sacs were emptied of the infected honey. In this we were entirely successful as these colonies soon built up and made a good record in honey gathering, being entirely cured of the disease.

I might mention that as soon as there came a bad spell of weather temporarily closing the honey flow, these colonies were given from one to three sections each of clean honey we had on hand, to carry them through until they could gather from the fields again. We were careful in doing this not to disturb the bees in the upper hive any more than we could help for fear of their filling up on infected honey and carrying it below and reinfecting that colony.

Those bees on the escapes were a white elephant on our hands for we dare not shake them below for fear of transmitting the disease, and if we shook them elsewhere we feared they would either fly back to their old stand, or scatter among other hives. However, we finally shook them into a couple of hives, three in one and two in the other, doing the shaking in the evening after bees had stopped flying. We had no bad results from this so far as we could discover, nor any good, for these colonies failed to amount to anything, and, I believe, were both taken up in the fall.

A few colonies which contained only a few cells on a single frame which showed the disease, we did not treat at first, but simply removed the frame which contained the diseased cells, and watched results. This was done, not so much in the hopes of getting rid of the disease, as to simply hindering its spread as much as possible, until the beginning of the clover flow, when we expected to shake them. My father-in-law, I believe, en-

tertaind some hopes that some of them might be cured of the disease without further treatment, but he was disappointed for every one of these colonies developed the disease again in a short time nor could we discover any improvement in these colonies over those not so treated. Just before the main honey flow, or rather in the beginning of the flow and before it was on in full force, we treated the balance of the colonies affected at that time. These were shaken on foundation, some of them on inch starts, and some of them on full sheets. Part of them were given their freedom at once and others were left fastened in for two or three days.

As to the full sheets or starts, we found no difficulty, except that those on full sheets built up much the fastest.

But as to those which were allowed their freedom at once, and those which were fastened in a couple of days, there was a vast difference.

Every case treated at this time, with the various methods were successful, with the exception of one, in so far as the destruction of the disease was concerned. this one was confined to the hive, but the next day were discovered passing out and in of a crevice in the hive. They were stopped in that night and left a couple of days and given their freedom, at the same time giving them a comb of supposedly clean honey. As soon as the brood began to hatch we discovered the disease again, and have since thought that frame of honey was what carried the infection. ,

We shook them again and the first brood again showed the disease. so we finally sulphured them.

As I said before, every other case was a success, as far as curing the disease was concerned, but as to getting good strong working colonies, not so.

Those given their freedom from the beginning built up rapidly and within the

week most of them were in the supers, and some of them were among my best colonies for the season.

Those confined in the hive gave altogether different results, however. After two days' confinement, those were examined and most of them found in a starving condition. Some of them were released immediately and the rest of them left until the next or third day from shaking. Three or four of these were lost entirely and the rest were so weak we never realised anything from them this season, although most of them built up in condition for the winter.

Whenever we found the hive fairly clean, we put the foundation back in the same hive without disinfection, and had no trouble from any of them.

The colony mentioned which became re-infected was in a clean hive, as the old one was too badly daubed to use again.

Hives dirty from colonies having dysentery, etc., or daubed with honey were not used but were scraped clean over a fire and put through a strong solution of carbolic acid water and laid away for a year or two.

The brood from these colonies was sorted and those frames containing a large percentage of live brood were placed in hive bodies and tiered up on a new stand two deep, one of these stacks taking the good brood of from three to five colonies.

These stacks of brood made roaring colonies, when shaken at the end of three weeks, and the way they stored honey, the balance of the season was a caution.

Some of those colonies which showed no signs of the disease in the spring developed it later on. In almost every instance the first appearance being in a frame, which had just come into use for brood rearing, which seemed to indicate that infection had been in the hive all the time, but had been covered up in that

frame of honey until that frame came in to use again.

These colonies were treated as we did those earlier in the season, and, again we found that those bees which were fastened in the hive were rapidly falling off the combs at the end of a couple of days, and those remaining on the combs were weak and trembling.

Some of these were confined by means of a block of wood and others with wire screen, but this seemed to make no difference in results. At the end of the second day in most cases we found about half the bees dead on the bottom board.

Those allowed their freedom were again found to be doing fine and although they reared brood about eight weeks after this no symptoms of the disease reappeared.

Our experience this summer would seem to indicate: First, that it is an unnecessary waste of time to disinfect or to char. hive bodies from diseased colonies, unless they are daubed with honey or are otherwise daubed or filthy. We did not deem it wise to use a hive in that condition. Second, that it is worse than useless to confine them to their hive for a single day or to give them a second shaking on the third or any other day. We do believe, however, that the shaking should be done before the flow is on in full force, however, although none of our colonies so treated later in the season developed the disease again. Third, that no gain is made by removing any part of the brood of a diseased colony without the removal of the whole. Fourth, that so far as our experience goes, at least, the plan of putting the brood above an escape is a complete failure, as far as their going below is concerned. Fifth, that the plan of stacking brood, as described, is a howling success.

I am aware that some of the ideas advanced here are rank heresy in the eyes of some of our best beekeepers, and that

in the submitting of this article I shall bring down upon my devoted head the wrath and displeasure of these said beekeepers, nevertheless, the fact remains, and, although in some cases it might not turn out so well as it did with us, and, perhaps, the other treatment might get better results than we attained, yet, I believe that what one gains in honey will more than offset any loss occasioned by the occasional colony on which the treatment does not prove a success, even though that colony had to be sulphured in the end.—“Canadian Bee Journal.”

* * * * *

WILLIAM R. HOWARD, M. D.

**Endorsed the McEvoy Method for Cure
of Foul Brood.**

For the benefit of our British readers we give below the conclusions of Wm. R. Howard, M. D., after an exhaustive investigation into the nature and treatment of foul brood. With this the controversy ends, so far as we are concerned. Our only object—which we think we have attained—was to establish the fact that it was due to a Canadian beekeeper that this simple and effective remedy was discovered.

The following is taken from Dr. Howard's book, published by George W. York & Co., Chicago, Ill., 1894.

After giving the results of his experiments, Dr. Howard concludes as follows:

“In conclusion, let me say that the publications of Mr. Wm. McEvoy, Foul Brood inspector of Ontario, instigated this research. In correspondence with Mrs. Jennie Atchley, of Beeville, Texas, on the subject, I agreed to investigate it as thoroughly as possible, hoping to throw some new light on this vexed question. In the light of all that has been written, by Cheshire, McLain, and others on the one hand, and McEvoy on the

other, it was evident that if McEvoy was right the others were wrong, and vice versa. My impression was that McEvoy was wrong, and after reading Cheshire, McLain and others, I reached the conclusion that, from a scientific standpoint, they too, were in error in many of their observations and deductions. In the treatment it seemed plausible that if the latter were right, in that the spores floated in the atmosphere, there could be no cure by any method. If McEvoy were right, even there were two points to investigate—are the spores thrown off into the surrounding air? and if, so, how long do they retain their vitality under such circumstances? An answer to these two questions would certainly throw new light upon the subject. That thousands of practical beekeepers believed that both honey and pollen in infected colonies contained the infectious germ, I knew, **but of this I was not now certain**; so far obtaining suitable material to commence work, I determined to carry on my investigations independently, and let the results prove whatever they would, acting solely without interest in anyone's pet theories. I have finished my work, and, in a manner satisfactory to myself, so far as I have gone; but I earnestly regret, that for want of proper material, I am unable to verify the experiments of Cheshire, McLain, and others, in regard to the presence of the bacillus in the blood of the adult bee, in the undeveloped eggs in the ovaries of the queen, and in the spermatozoa of the drones. In my criticisms of each of these gentlemen I have intended to be impartial, regarding each one as honest, capable, and deserving much credit for original methods; and where we have disagreed it is purely on scientific grounds, without any feeling of personal prejudice whatever.

I regard the use of any and all drugs in the treatment of foul brood as a use-

less waste of time and material, wholly ineffectual, inviting ruin and total loss of bees. Any method which has not for its object the entire removal of all infectious material beyond the reach of both bees and brood will prove detrimental and destructive, and surely encourage the recurrence of the disease. The reader is referred to the criticisms in the following reviews for further discussion of the methods of treatment.

Treatment.

Mr. McEvoy, of Woodburn, Ontario, Foul Brood Inspector of the Province, has attracted much attention of late in the bee periodicals, by the publication of his methods of treatment of foul brood, and a few remarks on his methods and conclusions will be of extreme interest to all; and as it was his published methods that incited these investigations, he is as much entitled to criticism as other writers.

In the honey season he removes the foul combs **in the evening**, and puts in frames with comb foundation starters; at the end of four days the bees have drawn out the starters and stored most of the diseased honey taken with them from the old combs; on the fourth evening he removes these starters and gives full sheets of comb foundation, and by the time the full sheets of comb foundation are drawn out, all the diseased honey is consumed in comb-building. These starters and contents are either melted at a high temperature or burned, as they contain infected honey. The frames and combs containing the rotten brood which were at first removed are burned, thus totally destroying all infectious material to begin with. The hives are not boiled or disinfected, but used at once, the disease being treated, leaving the bees all the time in their own hive.

On November 23rd, 1893, I wrote to Mr. McEvoy, asking him the following important questions, which were ans-

wered in a letter dated November 30th, 1893.

1.—Have you ever known unsealed brood to die of foul brood?

Ans.—Yes, in all and every case where once fairly started more brood dies of foul brood at the ages of 6, 7, 8 and 9 days than at any other age.

2.—Have you ever known it to destroy the perfect bee, that is, does it shorten their lives to have the infection to deal with?

Ans.—**Never, no never.** I have united as many as five colonies rotten with foul brood, in order to get bees enough to make a fair swarm to start a cure; I have much of this work done every summer; when I find only a small lot of old bees left in very rotten colonies, I cure them, and when the colonies get in grand order, with nice, new white combs, the old bees last as well and work with as much energy and earnestness as any healthy colony that had never had the infection to deal with.

3.—In hives which have foul brood colonies, is there usually a bottom board nailed on?

Ans.—The hives in many whole apiaries have the bottom boards nailed on.

4.—If you had a hive that had the bottom board nailed on, and it was stained with foul brood, would you remove the board or have it cleansed before putting a healthy colony into it?

Ans.—If any of the foul broody combs were to get broken down so as to leave a lot of honey on the bottom boards, I would clean the bottom boards; but in no other case would I do anything to the empty hives or bottom boards.

These are the conclusions which Mr. McEvoy has arrived at after several years' experience, and the treatment of over 3,500 infected colonies in the Province of Ontario.

From my experience with bacillus alvei, its nature and growth, it would seem

clear that Mr. McEvoy's method, though simple and plain, would prove sufficient, for it has been noted that any method which removes the foul brood bacillus from the reach of bees and brood will cure the disease. His plan has for its aims, first, to remove all foul combs with their contents from the bees, and destroy them by fire; secondly, to cleanse from the bees all honey taken with them, which contains the infectious germs before any brood-rearing is commenced. The labor of these first four days taken away, generally removes most of the infected honey, when full sheets of comb foundation are given, and worked out, the infected honey is consumed in comb-building; brood-rearing is commenced in new, clean combs, and a healthy colony results. The work of handling the infected colonies is done **in the evening**, in order that no robbing may result, to carry the infection to other colonies.

In regard to disinfecting hives, it has been seen that most investigators claim that it is useless. My reasons for believing it useless are, first, because I have failed to induce bacillus alvei to throw off spores into the surrounding atmosphere; which, if it be true that they do not, then there are no spores lurking in the hive to infect a healthy colony or re-infect the one being treated; second, because the spores exposed to atmospheric air do not retain their vitality for a sufficient length of time to re-infect a colony treated by a method which delays brood-rearing more than four days after all infection has been effectually removed.

Thus it will be seen that though McEvoy's method of treatment, which at first was so unpopular, and seemed so far from being correct, has, much to my surprise (and, need I say, disappointment?) been shown to be the only rational method laid down among all the writers on this subject."—"Canadian Bee Journal."

FOUL BROOD LEGISLATION.

I see some of your regular correspondents are at loggerheads on this subject, and while I am only a beginner, and so far have had no experience of foul brood, there are one or two points that occur to me on the subject, which may perhaps have weight in any considerations or consultations thereon.

In the first place, it always seems to me very unscientific to destroy anything because we do not know what it is. There is not, so far as I have been able to judge, any proof that foul brood is only produced by contagion, and until this is an established fact it would appear to me to be useless to try to cure it by simply destroying isolated cases. In the case of rabies, which one of your correspondents cites as an example, there was every proof that the disease was spread from dog to dog, and therefore the severe measures adopted were quite justifiable, and, moreover, amply justified by results. But there is another instance, which seems to me to be even more analogous to that of foul brood, and one which doubtless many of your country correspondents have had practical experience of. I refer to swine fever. There is, perhaps, no evil of the kind against which more strenuous and aggravating measures have been taken, and, up to now, what has been the result? Swine fever is as prevalent as ever, and the industry of pig-rearing has been so heavily handicapped that only a few very daring spirits care to stick to it, with the result that we are daily receiving more and more foreign supplies of a practically indispensable article, which would give much employment to our agricultural population.

I am inclined to agree with Mr. Green (whose exaggerations are doubtless more humorous than otherwise) that it is not right to penalise an individual for some-

thing he cannot help, especially when the party in authority knows very little more about the matter than the victim. I much doubt whether any legislation of the kind would be effectual. There are always a certain number of people who take up new things, and, being of them, "drop them," as it were, and if a means could be devised of making beekeepers keep their charges clean it might possibly be beneficial; but I am disposed to think that the cost of doing even this in an efficient manner would from a financial point of view, come to more than the benefit derived.

Better would it be to continue research until the actual conditions which contribute to the development and spread of the disease are definitely ascertained, and then take such steps as may be indicated; but to get powers to interfere with the individual beekeeper to such an extent as is proposed would, I feel certain, tend very largely to discourage all but the most enthusiast.—H. G. MACE, in "B.B.J."

ADULTERATION OF HONEY IN GERMANY.

It is well known that for a long time honey has been adulterated in Germany to a very large extent, and many artificial products are sold under various names. Not only has glucose been used, but the more modern invert sugar, which consists of chemically-prepared levulose, has been substituted for honey, or mixed with it. This invert sugar passes under different names, such as "fruit sugar," "nectarin," &c. We read in the "Practischer Wegweiser" that at a meeting of beekeepers, M. Frohloff, who manufactures in Hamburg large quantities yearly of Dr. Follenius's invert sugar, now called "nectarin," brought up the question of honey adulteration. Among several questions he

asked: "If a member of an association knew that another member was selling adulterated or foreign honey labelled as German honey, should he not inform the committee or bring the matter before the meeting of the Society?" To which the reply was a unanimous "Yes." Another question was: "Should a bee-keeper insert advertisements of artificial honey, thus inducing beekeepers to purchase adulterated products?" To this there came an equally unanimous "No."

M. Frohloff thereupon accused a number of well-known beekeepers who were selling foreign honey and advertising it as their own. He also mentioned several cases of adulterated honey being sold in large quantities. In one of these a large establishment at Visselhovede was accused of selling honey at 56 to 57 marks per 100 lb., and that last year this firm had sent no less than thirty-eight double wagons of this product to Cologne. Samples were submitted by M. Frohloff to analysis, and it was found to consist of 50 per cent. of buttermilk, 40 per cent. of sugar, and 10 per cent. of honey.

He also gave the analysis of a number of other samples from different parts of Germany, which showed more or less adulteration. The result of this accusation was that the director of the Visselhovede establishment publicly denied charge of adulteration, and in reply M. Frohloff not only repeated it, but challenged the latter to take action against him. Action was in due course taken. M. Frohloff being prosecuted for libel.

The whole of the proceedings are fully reported in the "Practischer Wegweiser," and it was satisfactorily proved that the report arose out of a conversation in which it was stated that some villagers had made up a mixture with the ingredients named in the above analysis and called it honey, but that the honey of the Visselhovede firm was pure and had nothing whatever to do with buttermilk.

The judge was very severe in his summing-up of the case, and inflicted a fine on M. Frohloff of 800 marks or imprisonment for eighty days. He also characterised the statement as most reckless, and calculated to make one almost believe that it was done for the purpose of increasing the sale of M. Frohloff's own products. In another case the same defendant was fined 25 marks or five days' imprisonment. Several other cases were adjourned.

A curious result of this trial is that the Visselhovede firm advertised for samples of honey on the market to be sent to them for analysis, stating that so much honey was now adulterated with invert sugar that honest honey-sellers were at a disadvantage. The offer was to test the samples in their own laboratory free of charge. A great many samples were sent in, the larger number of them being found adulterated. Indeed, from those purchased in towns only a single sample was found to be pure. It is quite time, therefore, that steps were taken to protect the public against such fraud, and it is satisfactory to know that chemists have now discovered how to detect chemically-prepared invert sugar when used as an adulterant of honey. — "British Bee Journal."

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