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West Maitland, N.S.W.: E. Tipper, October 31, 1910

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A MONTHLY JOURNAL, DEVOTED TO BEE-KEEPING.

Published by E. TIPPER, West Maitland

Circulated in all the Australian Colonies, New Zealand, & Cape of Good Hope.

VOL. 19. No. 7.

OCTOBER 31, 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, Beecroft

MAITLAND, N.S.W.—OCT. 31, 1910.

EDITORIAL.

American beekeepers make a distinction between European and American foul brood. The former is said to affect the unsealed larvae, the latter affects the sealed brood when it develops into a nymph, and as European and American foul brood are too long words for general distinction, it is proposed to call them black and brown brood—or yellow; it does not matter which.

I have yet to learn that American foul brood differs from European, or vice versa. Of course, I have no experience of American beekeeping in practice, but I have considerable experience with foul brood, nevertheless. In Europe I have seen what Americans call American foul brood as also what they call European foul brood. One is a mild form and easier remedied, the other is more difficult to cure without the aid of the beekeeper.

Dr. Miller, in his "Stray Straws," p. 554, "Gleanings," says: "Early this year my colonies appeared clean of foul brood; later it appeared in some colonies. Dr. Phillips says the usual thing is for it to appear early, and then disappear. That looks as if my bees had got the disease again from surrounding apiaries. But I am afraid some of it was the home produce. It appeared in colonies that had been thrown upon foundation, as well as others."

To this the Editor remarks: "You omit to say, Dr. Miller, that the foul brood that is in your apiary is the European and not the American."

Now, my experience is quite different to Dr. Phillips'. I have always observed that early in the season foul brood is very slight; but as the season advances, so does the disease, and only in very badly affected hives is there a considerable amount of disease apparent in early spring, that is in hives that had the disease bad the year before.

The Alexander process, Dr. Miller mentions, p. 545, has been tried many, many years ago in Germany, and found wanting. The then inventor claimed 2000 thalers (£300), but the appointed commission to investigate did not approve of the matter, and so it failed. When American scientists can show us that there is one disease distinct to Europe, and another to America, well and good; but theory and practice must agree in any case. In the meantime I shall consider the disease in two stages, just as dwindling and paralysis vary in degree only. But all American beekeepers are not of the same opinion as a few are, and thus the matter is not all American.

I wonder if I have now aroused a hornets' nest. If so, please remember that opinions differ.

Power-driven extractors are now said to be in demand. That is good. But

many beekeepers would be glad if they had honey to extract without the aid of a six-frame extractor or other means. It is, however, pleasant to hear that big things are wanted. In our district cold nights and windy days did not improve matters, and as the little showers only sprinkled the surface, there is no need for a steam engine just yet to get the honey out that is not yet there.

The posting of queens is not altogether an easy matter if safe arrival is desired. In the early part of the season the weather often changes in a very short time, and the same applies for mid-summer, when it turns to very hot. Both conditions are unfavourable to queens sent by post. A middle course suits best.

Import of bees, honey and wax, into Germany, 1909, is given in the "Practischer Wegweiser," August 15th, 1910, as follows:—4,315 hives of bees, containing 161,600 lbs. of honey; 8,602,800 lbs. of honey; 3,649,600 lbs of wax.

There appears to be more honey available than is demand for it. Must have been held back, and now fairly glut the market.

BLONDE AND BRUNETTE

or

Light and Dark.

I wish to impress a few random, very, very random thoughts, not on the complexion colour of queen bee, although I doubt not that feminine vanity—the concomitant virtue of Eve's dear daughters will bear universal application and rear its saucy head even in the little bee-hive court of Royalty. No! Being a bachelor, I cannot summon boldness sufficient to criticise such a dangerously explosive subject. Courageous and manlike, I dare engage something so sweet-tempered that it will not, or, better still, cannot, retaliate. I will talk about honey—our honey.

And I will begin by saying something about hens; not that these feathered cluckers can successfully compete with bees, although you can't deny that they produce more beautiful combs—especially the lordly gallants.

Well, talking about hens,* I suppose you know the taste of poultry. So long as it is tender and juicy and melts in your mouth, you are satisfied. So am I. (*) And yet not so some people. Tender Juicy flesh is not sufficient for them—they must feast not alone their stomachs, but their eyes also. And so we find them demanding this skin colour and that shank colour. And although the shank is only crunched by Toby in the dog yard, and the baked skin used up by cook to help light next day's fire, they still insist on these finicky points.

I am not romancing, but state actual facts. [*]

Trip in imagination to A. I. Root's country—America. A prominent poultry man there in his endeavour to boom his particular variety. Buff Leghorns says, "They dress a beautiful shade of yellow so much desired in our markets." Another American booming, his Wyandottes—"Their yellow skin and legs make them favourites with the market people." Yellow skin and yellow legs then are desirable in the American market.

Let us take one of these yellow-skinned yellow-legged birds to England and hear their opinion of it as a table bird. A recognised authority immediately says, "Their yellow skin puts them out of class in the English markets." Why? Because the English favour a white-skinned bird with pink shanks.

Concerning eggs we find similar peculiarities. The New York market likes a white egg, and the Boston market not only likes but must have a brown egg. We all know that the interior of a white is as nutritious as that of a brown egg. Immaterial! What is favoured in one

place is disfavoured in another. It's a small thing to begin with, yet great in commercial results; and enforces this truth—that the economic value of things depends largely on popular prejudice. Whims must be studied. Even the birds have prejudices. The White Leghorn true to his Caucasian blood, says he draws the colour line and insists on his hens laying white eggs; he'll have none of the brown-man-shell in his harem.

So much for eggs.

Still pursuing gluttonous ways, let me give an experience:—In Paris I sat down to dine with a Monsieur friend. Procedure: several courses demolished. At last! on came the dish. Monsieur is wringing his hands under the table with ill-suppressed delight. I could almost hear the smack of his lips and tongue watering for this exquisite. He eyed it critically; he approved. "Dainty! Delicious!! Superb!!!" The waiter volunteered the impressively valued information that they were kept in a barrel for six weeks and salted regularly. "The flesh is so tender, so white," he said. It was devoured—no, I should not say that of a French gentleman—it was eaten with great gusto and electric speed—by him, not by me—for, dear reader, it was a dish of snails. To him it was Ambrosia, food for the gods—to me, not fit for dogs. Such is custom, such is palate! I learned they were in high favour among the Paris gourmets, eight hundred tons of snails being consumed in the winter of Paris alone. There seem to be fashions in gastronomy as well as millinery. Even the poor frog now croaks with dismay at his infrequent appearance in the menu, and pines for the jolly good times he might have had in the fattening process.

The same fancies and peculiarities exist among the patrons of honey.

Some like a mild honey, some a strong flavoured honey; some a honey flavoured according to the special vegetation from

which it is obtained; some like a watery honey, others a thick honey; some a candied honey; some like a dark coloured honey; some an amber, some a water-coloured honey; and each proclaims his favourite excellent. The taste is legion!

And in adverting to this subject, I wish to emphasise the fact that the general criterion for judging honey is largely prejudice—palate prejudice, or, if you like, a palate educated, accustomed to some particular honey. Take for instance the buckwheat of New York, a honey dark purplish, competing in colour with Clement's Tonic, and strong as Sandow in flavour. That is the honey prized by New Yorkers, and preferred to the best clover honey. Or take the linden (basswood) of Michigan, relished by its people as the champagne of honey, smelling to me the delightfully aromatic perfume of a rheumatic camphor liniment. Allowing somewhat for palatal differences, we may say custom regulates all these little likes and dislikes. Turning to our honeys, we find an unreasoning prejudice against the dark honeys, which amounts to a popular delusion. Happily this ignorance is vinicible, and a time will come when our multifarious honeys will receive the verdict they ask for, i.e., an award according to their table value.

Victimized by this common delusion, I had at one time an unconquerable aversion to everything dark in honey; an aversion that long endured, although in common with the majority, I was in the very illogical position of never having tasted a dark production. A little acquaintance with a variety of bee sweets altered my opinions, and convinced me that although there was good reason in some cases for the prejudice, the mere fact of a honey being dark is no criterion by which to judge it adversely.

According to my slight experience, our native flora, particularly the eucalypt, is most fickle and variable, changing its

nectaring surprisingly according to location and weather.

I'm not going to investigate the "why" of the subject at present; but the fact has been demonstrated to my entire satisfaction, that to take a concrete example, a ti-tree in one locality will yield a honey good in every way, and in another place very much off in taste and colour.

A number of samples of Victorian honey submitted to the London market a year ago disclosed the (to us) startling information that the sample of scrub honey was considered most suited to English tastes, and vastly superior to our best yellow box, and a blend of yellow box and red gum.

Speaking personally, I prefer a bee-gathered blend of the small-leaved coastal Ti-tree, early spring scrub, and native wild flowers. To me it's the most exquisite thing in honey-dom. Many, of course, will exclaim, "What a taste!" But before you do, let me ask, "Did you ever taste it?"

I'm not explaining now—some other time I might—why a Ti-tree produces good honey in one district and inferior in another; but I do plead for a fair judgment, and ask you all not to condemn absolutely a verdant species because it does not give you good honey. Stigmas have been wrongfully, because hastily, affixed to a honey tree, when the error was not in the tree as a tree but in some other cause, climate altitude, the vagaries of our seasons, and other causes as yet obscure.

I have seen, at our agricultural shows in the past, Bloodwood honey of nice light colour, mild and pleasant; and, to take an up-to-date instance, I saw at the 1910 show bloodwood honey so dark that I had to be told what it was. But, though dark, it was delicious; and I will be perfectly agreeable to accept three ton of it as a present any time. Now, had I judged Bloodwood honey on the colour

characteristic alone, my judgment would have been not only unfavourable but egregiously wrong.

Another honey producer is *Angophora*. I remember reading an article by a local honey authority, who stated that *Angophora* honey was most inferior and only fit to be used for the brood building of bee colonies. My experience with coastal *Angophora* is that, though very dark, it is palatable; but, I also add, it is coarser flavoured in some seasons and in some localities than in others; more especially with *Angophora* grown on the semi-bare coastal rocks where the vegetation is characteristically gnarled and stunted.

All these little points must be taken into consideration when assessing the value of a tree as a honey-producer.

A study of the native honey flora of Australia is a peculiarly fascinating one. Some of them, unlike the honey-producing trees of other countries, bloom, not regularly each season, nor in season; and manifest another anomaly in that, though blooming profusely, they sometimes secrete no surplus nectar. A singular fact also to be noted is that trees of the same species in different localities, and even in the same locality, bloom at altogether different periods of the year. The blooming is at sixes and sevens to such an extent that I once saw a fierce fight between two men as the result of an argument and too much bad whisky, the one declaring that Woollybutt (*E. Longifolia*) bloomed in September, the other contradicting and swearing it bloomed in June. It was very foolish of them to fight over it because both were right; one came from Picton where it blooms from September to December, the other came from Milton where he undoubtedly saw it blooming in June, and could have seen it bloom in July also. Of course both were imbued with the idea that the Eucalypt bloom in their kind simultaneously, and like peach trees

in an orchard, whereas they sometimes come out like Brown's cows, sometimes go home—quite casually, and when the mood takes them.

This matter—the superiority or inferiority of honeys, a friend and I decided to settle once and for all. We submitted the matter to what we considered the most impartial and competent authority, thus investing our experiment with the dignity of a supreme test.

We procured samples of honey—white clover, yellow-box, ti-tree, angophera, turpentine, and a little boy with a reliable appetite.

We instructed him to eat it slowly and lingeringly so as to get the proper taste on his palate; and we made him rinse his mouth between each lot.

He sucked them all down with much smacking of lips and other well-known manifestations of consuming delight, finishing up—cleaning thumb and fingers by rubbing them up and down the sides of his breaches. "Well?" we asked, confidently expecting an unbiassed verdict. No reply— "What do you like the best?" I asked coaxingly; and again we were breathless for the reply. It came with the emphatic decision of a High Court Judge:—"Chock-er-lets" he roared out at us. We were quite unprepared for the reply vouchsafed, but felt satisfied that here was one more proof that the palate is not always a criterion of excellence; use, very often arrogating the position of judicial palating.

I think the prejudice against dark honeys is really a legacy left by those who came from the Old Land, and who considered Clover and Honey convertible terms. They were spoilt by the best because the best there was the most available.

Why should we not cultivate a local taste? Why should we still fashion our palates on the English Clover or Heather honey because our Dads or Grand-Dads

knew no other. Let us attune ourselves to Nature's ways, and take the goods the Austral Gods provide. We, of necessity, are compelled to take Australian honey. Why not let us educate our patriotic palates to local types. I once heard a Bee say: "If I can't get Clover nectar I take Lucerne; if I can't get that I take orchard bloom; if I can't get that I go to Eucalyptus and pick and choose even there. In fact, I take the best available; and, like my Boss, ayways make the best of a bad job.

I do not wish you to understand me to champion all brands of our honeys. I do not wish to vitiate your palates simply to use up our inferior honeys. I do not wish to quite reduce you to the palatal condition of the man who rushed into a fruit shop, planked down twopence and said, "Give us a turnip please, I'm a terror for fruit."

What I want to insist on is that you should rid yourselves of the legacy of imported prejudice against Dark Colour in Honey.

As the man said, "My brother married a Blonde and I married a Brunette, and we're both happy."

So, after all, it seems merely a matter of taste.

O. A. WHITE.

(You are right; it is a matter of taste. With compliments.—Ed.)

* Why not talk about bees instead.—Ed.

(*) Very Modest.—Ed.

[*] Very Good.—Ed.

Producing a Crop of Comb Honey with Four Visits During the Harvest, and no Swarming.

Mrs. S. Wilbur Frey.

When I read a book or an article, I always like to know something of its author, so I will mention a few things of myself especially as they refer to my beekeeping life. Twenty five years ago,

at the time of my marriage, my husband had 15 or 20 colonies of black bees in box hives. He hated to be bothered with them, and hated the stings still more. There was plenty of work on the farm, so the care of the bees fell upon me. The bees increased until I found it necessary to hire a girl to help with the housework, and stay with the children, while I worked in the bee yard. The bees continued to multiply until some years, we had so many that we killed the increase in the fall. We finally concluded that this did not pay; so we began the establishing of out-apiaries. These apiaries were located near the low lands of the Rice Lake region, where there are plenty of swamps and streams, yet near a good farming country with its orchards. Others seeing our success, started in the business, until, at one time, we could count 900 colonies within five miles of our present apiaries. It was like a berry patch where there are more pickers than berries. This condition lasted a few years, then came hard winters and late springs that few apiaries were prepared to endure, and piles of old hives now mark the locations of most of these apiaries. Of course, we had our share of reverses (it is not a very dependable warrior who has never been in battle); but I can truthfully say that our heaviest losses and hardships have been the real stepping stones to our greatest successes. At present we have three apiaries. As already mentioned, we keep a hired girl or woman six or eight months out of the year, but a large share of my time is claimed by my home and family; as there are many things that only a mother can do. With this as an introduction, I will take up the actual work of the season, as it begins in the spring.

Important to have an Army of Workers when the Harvest is on.

I have found that, in order to secure a good crop of honey, the beekeeper must

thoroughly understand his location—must know the honey-producing plants and their periods of bloom. He must hold his colonies together (not allow swarming) and have his hives filled to overflowing with bees when the harvest is on. I use every means possible to have eggs laid that will produce workers for the harvest. Eggs laid June 1st will produce workers that are ready for labour July 1st; but it is very apparent that eggs laid after June 1st will not produce workers in time for the early, white, honey harvest.

Manipulations that prevent or delay swarming.

We will suppose that it is June 1st, and the bees are beginning to work on raspberries or clover. Each colony has from six to twelve combs of brood, and the young bees are hatching rapidly. Within a week or ten days, the swarming impulse will begin to make itself manifest, unless something is done to thwart it. We all know that natural swarming means continual vigilance, with the loss of an occasional swarm; besides, swarming usually takes place just as a nice start has been made in the sections. Swarming may now be discouraged by equalizing the brood. That is, by taking from a strong colony three combs of its youngest sealed brood, giving it to weaker colonies, and filling its place with empty combs. The removal of this brood, and the giving of empty combs in which the queen can lay, often turns the scales in favour of not swarming. Another plan is that of putting on an upper story of combs, and raising up into this upper story a few combs of brood, filling their places with empty combs. This gives an abundance of room, both for brood and honey, and usually checks all attempts at early swarming.

Right here may be a proper place to say that I use throughout the season, a code of signs and abbreviations for marking on each hive the condition of

the colony. I can walk through the yard and tell at a glance, by these signs, the condition of each colony at the last examination. For writing on the hives I like the red and blue lumber pencils. They are soft, and write easily, and the marks will show all of one season, but will be faded and gone, out of the way, before the beginning of the next season's work.

The first Visit to put on Supers.

I can tell by the flying of the bees at the home yard that the harvest is on, and that is the time to put on supers. Reference to my records show that the Cavendar is the strongest in bees and brood, and will be the first to need supers. If there are 75 colonies, it is likely that 60 of them will need supers. We will load up the supers, and take care not to forget our dinner, jumbo smoker, and leather satchel that always contains the pencils, veils and hive tools. Upon arriving at the yard, I will put supers on the medium, single-story colonies first. If I find plenty of bees and brood in a colony, I call it ready for a super. If I have doubts, I remove one comb and set it away in a box where it can be covered up. If the bees eventually cluster thickly in the open space left by the removal of the comb, I give them a super. After dinner I begin the work of putting supers on colonies that have previously been given upper stories of comb. I remove an upper story, set it by the side of the hive, put on the super and cover it up; then go to the next, and so on, until all are done. When the supers are all on, I return to the upper story that was first set off, and begin the work of caring for the bees, combs and brood in the upper stories that have been set off. Sometimes nearly all of the working bees will have returned to the parent hive. According to circumstances, I either shake off the bees in front of their old hive, or else leave

them on their combs, but, in either case, these combs of brood are used to build up the weakest colonies. A normal colony usually begins preparations at least 10 days in advance of swarming, and, if find no cell cups started, I know that there will be no swarming before the next visit.

The Second Visit, in which Queens are Removed.

I keep close watch of what the bees are doing at home, and, in from eight to fifteen days, depending upon the weather and the honey flow, I make my second visit. The sections in the first supers will probably be well-drawn and partly filled with nectar. I put on the supers immediately upon my arrival at the yard, as the clustering of the bees in the new supers draws the bees up out of the brood nests, and makes the work of examination for swarm-preparations much easier. After the supers are all on, I begin, where I began putting on supers, and examine the brood nests for indications of preparations for swarming. If I find only cell cups, but no eggs in them, I close the hive and pass on. If I find any cups containing eggs, or hatched larvae, even if ever so small, I remove the queen. If she is an extra good one I save her in a nucleus; otherwise, I kill her. If I find the swarming impulse to be quite general, I remove the queens from two-thirds of the colonies; or more than that if there are that number preparing to swarm. If I find nearly the whole apiary preparing to swarm, as I have on several occasions, I save in nuclei as many of my best old queens as will be needed to furnish combs of larvae at my next visit. With a boy to help me I can uncover a hive, remove the supers, find the queen, replace the supers, and cover the hive, at the rate of one hive every seven minutes. I seldom fail to finding the queen the first time over the combs. Often, when there is not much work to

be done, I can go over the yard in three hours, putting on, or changing supers, looking for queens, or the conditions of each colony. It matters not how far advanced an apiary is in its preparations for swarming, I can so treat every colony that there will be no more swarming for at least eight days more.

In eight days, or, in nine days, at the utmost, from the time that I removed the queens, I must return and destroy all queen cells; as it is possible to have a young queen hatched out on the 10th day after the removal of the old queen. It will not answer to destroy the cells before the eighth day, as there may yet be an unsealed larva over which the bees will construct a queen cell. The queen from such an old larva would be worthless, but it can lead the bees to the woods just as well as a good queen. At this visit I first examine some of the colonies that have not made any previous attempts at swarming, and still retain queens. When I find such a colony that is still without queen cells, I remove two combs of young larvae, replacing them with empty combs, starters, or sheets of foundation. I work on this class of colonies until I have a hive full of combs of young larvae, when I commence on the queenless colonies, destroying every queen cell, and giving each colony a comb of young larvae, from the lot that I have just taken from the other hives. If by any possibility a young queen is found hatched, no larvae are given, as it would lead to swarming. When my stock of combs of larvae is exhausted, I return to the colonies that still have their queens, and continue the work of examination until my stock is again replenished. I thus continue to examine, alternately, the two classes of colonies until I am through the yard. As I go along with this work I also note and mark the colonies that need supers.

The giving of this comb of larvae satis-

fies the bees. They have babies to feed, and they will continue the work of honey gathering, as they know that it will be impossible to swarm within 12 or 15 days. Their queen cells are all gone, and they go to work energetically to build another lot; and, by the time that this lot of queens is ready to hatch, the swarming fever has been cured.

The next visit will be about the ninth day after destroying the first batch of queen cells, and giving the combs of young larvae. This will be about 18 day after the removal of the queens. Nearly all of the brood has hatched; the hives are overflowing with young bees; the working forces have been kept together; the brood nests are nearly full of white honey; and the bees' greatest desire now is for new mothers. This can now be gratified by simply destroying all the cells except one (the largest and finest) in each hive. I always place the comb of larvae in the same position in each hive, hence, lose no time in finding it. Two minutes per hive is time enough to use in destroying the cells, and it will not be necessary to again examine these colonies. As the young queens begin to lay, the bees will remove the honey from the brood nests into the sections. Another advantage of the plan is that we save the honey that would have been used in rearing a lot of bees that would have become simply consumers of still more honey during the hot part of the season when there is little to gather.

Why it is necessary to build two Batches of Cells.

I have been asked why it would not answer to allow one queen to hatch from the first batch of cells. The greatest objection is that the colonies have not yet been cured of the swarming impulse. Any cell that is overlooked will lead to swarming. If a virgin queen returns to the wrong hive, there is swarming.

Once the swarming-note is heard in an apiary in which young queens are taking their flights, there is danger of a panic of swarming. By the time that the second lot of queens is ready to hatch, the swarming fever is over and past.

Improving or Italianizing Stock.

This method also offers an excellent opportunity to Italianize or improve our stock. At the fourth trip, simply destroy all cells and introduce Italian queens by some of the usual methods. Just a word of caution: It is not safe to introduce laying queens until the swarming fever has abated—unless you like the fun of chasing swarms. If I have ordered queens, and they don't arrive by the time that it is necessary to destroy the cells, I keep the colonies in a normal condition by giving each a comb of larvae as often as once in nine days, until the queens arrive. When introducing the queens I remove all unsealed brood; otherwise, the bees might prefer to kill the queen, and rear one of their own. I consider thrifty, young queens of vast importance. If we have these, and our bees have been properly housed and provisioned, our colonies will be stocked with young bees to carry them over the trying months of March and April.

Four trips are all that I find it necessary to make during the honey harvest. On the first trip I equalize the brood and put the bees in condition to stay at home and enter the supers; and put supers on all that are in condition to receive them. On the second trip I remove queens where there is danger of swarming; and give supers where needed. On the third trip I give supers where needed, and destroy queen cells; giving each queenless colony a comb of young larvae. On the fourth trip I simply destroy all cells except one in each colony. Four days' work, and the crop is secured!

The Profits of this System.

The largest crop of honey that I ever secured was 150 pounds, per colony, spring count. The smallest was 40 pounds per colony. If we have a good location, and should secure 50 pounds of honey per colony, even in a poor year, then 100 colonies would furnish 5,000 pounds of honey. Three fourths of this ought to sell at the highest market price. It ought to bring at least 13 cts. per pound, right through, for all of the grades. This would be \$650. From this must be deducted the cost of sections, foundation and shipping cases, about \$80, leaving \$570 for the labour. My net profits, for the past three years, have not been far from \$1,000 per year. — "Beekeepers' Review."

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—SYDNEY—

The Relation of the Etiology (Cause) of of Bee Diseases to the Treatment.

BY G. F. WHITE, Ph. D.,
Expert in Bacteriology.

(Continued from last issue.)

Preventive Treatment.

Too many believe that the treatment of bee diseases consists in the control or eradication of a disease after it is found in the apiary. This is only the minor part of treatment—the curative. The treatment which is of major importance is the preventive treatment. Prevention is much easier than cure. To prevent disease in the apiary is to keep it out. To keep it out is to keep out the exciting cause. In order to keep out the exciting cause, it is desirable to know its distribution or where it is found. In American foul brood the exciting cause, *Bacillus* larvae, is found in immense numbers in the bodies of diseased and dead larvae. These dead larvae, for the most part, are allowed by the bees to remain in the brood cell as a scale. The honey also has been demonstrated to contain the bacteria which produce this disease. The pollen may be contaminated with the spores of this disease-producing organism. The combs from an apiary affected with American foul brood are a fruitful source of infection. The inside of the hives which have contained colonies suffering with American foul brood may be contaminated with the germs which cause the disease. Honey extractors, honey tanks, and wax extractors, which have been used in infected apiaries, are also a fruitful source of infection. Therefore if you are to keep the disease-producing bacteria out of your apiary, and thereby keep out disease, you must not feed honey unless you are positive that it did not come from an infected apiary or that it has been thoroughly boiled. Neither must you use old combs unless

you are positive that they have not been in an infected apiary. Use no bee supplies from an infected apiary unless they are thoroughly disinfected.

These things being true of the infectious disease American foul brood, of which we know the cause, until the cause of any other infectious disease can be determined we can do no better than to suggest the use of the same principles in the treatment of such a disease as must be used in the successful treatment of American foul brood.

Curative Treatment.

In the curative treatment, considering the colony as a unit, use is made of two widely different principles—the removal of the disease-producing material, thereby removing the germs, and the use of drugs.

In separating the disease-producing germs from the colony, all the combs are removed. This removes the principal sources from which the brood is infected—foul-brood larvae and honey. It is always safer to allow the bees to go into a new hive or a hive which has been thoroughly disinfected. The greatest care should be exercised in protecting all infectious material which has been removed, that it may not be robbed by the bees.

The principle involved in the treatment by drugs is that of an antiseptic. The theory is that a small amount of some drug—like beta naphthol, salicylic acid, carbolic acid, eucalyptus, formic acid, etc.—is sufficient, when taken with the larval food, to inhibit the growth of the pathogenic bacteria.

Having thus in a general way considered the subject of the etiology of disease and the treatment in accordance with such knowledge, let us consider the different diseases separately.

American Foul Brood.

That *Bacillus* larvae is the cause of American foul brood has been demonstrated conclusively. It is a species of bacteria which when it is introduced into the healthy larvae multiplies rapidly and

causes the death of a large amount of the brood. When the larvae dies the body decomposes and the remains dry down to a tongue-like scale on the lower side wall of the cell. In this scale are millions of spores which are able to produce disease in other larvae should they be fed to them.

Just how the bacteria are carried from a dead larva to a healthy one we do not know. It is not uncommon, in examining the brood, to find only a portion of a larva in a cell, the bees having removed a part of it. When the body wall of a larva is broken in examining for foul brood, bees readily suck up the contents which flow out. This is true when the larva which is punctured is healthy, or when it is sick with disease, or after it has been dead a few days. The larvae at these stages of the disease contain a very large number of the disease-producing bacteria. These observations would indicate that in this way, in part at least, the infectious material might be carried to healthy larvae. Actual contact of the appendages of the bee with the foul-brood material, and the subsequent contact of the same appendages with the food of the larvae, may be a method by which the disease-producing bacteria are spread. We do know that in foul brood it is possible to obtain *Bacillus* larvae from the honey, and we do know that when bees are fed the spores of *Bacillus* larvae in honey American foul brood will appear in the apiary.

The spores of this bacillus are very resistant to heat and other disinfectants. They resist the boiling temperature of water for fifteen minutes. In 5 per cent. carbolic acid they were not killed in two months' time. This was demonstrated by obtaining growth in cultures after the spores had remained in this disinfectant for that length of time. Likewise it has been demonstrated that the spores of *Bacillus* larvae, when taken from the scales of American foul brood, resist the action of mercuric chloride (corrosive sublimate),

1:1,000 aqueous solution, for two months. Having such facts before us, we can better judge the methods for treatment.

In treating this disease we must bear in mind the preventive and curative measures. In the preventive treatment many of the conditions **you can control**; others may be difficult. You can at least be sure that you import no bees or used supplies which might have been in an infected apiary. Use no old combs and feed no honey of which you do not know the history. In this way the bacillus which causes the disease in a large measure can be kept out of the apiary. There are conditions which are difficult to control. Should a near-by apiary be diseased and some of the colonies become weak or die out, it might be difficult for you, in a dearth of nectar, to keep your bees from robbing the diseased apiary and in this way bringing these disease-producing germs to your healthy colonies.

Some preliminary experiments have been made, but the results do not indicate that drugs, in the treatment of this disease, have the value advocated by some English writers.

European Foul Brood.

European foul brood is another infectious bee disease. It attacks the brood at an earlier period in the growth of the larvae, as a rule, than American foul brood. The cause of this disease is not definitely known. From brood dead of this disease Cheshire and Cheyne isolated *Bacillus alvei*. From their work it was long supposed that *Bacillus alvei* was the cause of the disease, but later investigations make the value of their work doubtful.

A number of organisms have been found in the larvae dead from this disease and some of them have been described. One species has been encountered in our investigations of the disease which is of special interest. The individuals of this species are quite small, apparently non-spore-producing, and have so far failed

to grow when sown on our artificial media. Until we know more about this species it will be referred to as *Bacillus* "Y". Since the cause is not positively known, the amount of heat and chemical disinfectants to destroy the virus has not been demonstrated. If, later, *Bacillus* "Y" is demonstrated to be the cause, we shall expect that very much less heat will be sufficient to kill it than is necessary to kill *Bacillus* larvae, the cause of American foul brood. Likewise we shall expect that chemical disinfectants will be much more readily effective. Until we know more about etiology of European foul brood we can do no better than to suggest the application of the same principles which are found advisable in American foul brood.

So-called "Pickled Brood."

We refer to this disorder of the brood as the "so-called pickled brood" and not pickled brood, because the condition which William R. Howard, of Fort Worth, Tex., described is not what the beekeepers know as pickled brood. The exciting cause of this disease is not known. The larvae die at that age just preceding or just after capping. Some beekeepers have a theory that heredity plays a very important part as a predisposing cause. As far as is known the disease does not seem to be infectious.

This disease is treated by some beekeepers by requeening, on the assumption that heredity is the important factor in the production of the disease. If more were known concerning the etiology, the treatment might be materially changed.

Paralysis.

Paralysis is a disease of the adult bee. The cause of this malady is not known. It does not seem to be infectious, although in some apiaries a large number of colonies may be affected at the same time. Some have advanced the theory that the character of the food is the exciting cause.

Since we know nothing positively about the cause, we can suggest very little in the way of treatment. The removal of the stores from the hive would tend to remedy the defect if the character of the food be an important factor in the etiology.

Summary and Conclusions.

We have now briefly considered the nature and the etiology of bee diseases and have suggested some of the principles upon which the methods of treatment must depend if such treatment is we have just said concerning the etiology and treatment of the different diseases, we observe the following facts:

There is but one disease, American foul brood, of which we know absolutely the exciting cause. The cause is a species of bacteria, but there are many things concerning the nature, the distribution, and the activity of which we do not know. The facts which have been determined enable us to suggest some of the principles upon which the treatment must be based. Just so rapidly as our knowledge of the etiology of this disease increases so rapidly will we be able to suggest principles for the improvement of the methods of treatment.

In European foul brood we only know positively that the disease is infectious, and we can do no better than to use the principles gained by the study of American foul brood. As our knowledge of the etiology of this disease increases, the methods of treatment will be altered.

In the so-called "pickled brood" we do not seem to have an infectious disease. Nothing is positively known of the etiology except that the larvae die at approximately the same age in all cases, which is about the time of capping. The treatment that is used by some is based upon the principle that heredity is an important factor, and therefore re-queening is resorted to.

In the disease of adult bees known as "paralysis," practically nothing is known

and practically no treatment is known to be effective.

It will be noted that in every case the treatment of bee diseases is based upon the knowledge of the etiology. There are many things of very great importance in the etiology which are yet to be determined, but there are many things which are known that, if applied by the beekeeper, will prove to be of great value to him financially. It is to be hoped, then, that the beekeeper will make himself as familiar as possible with the nature of the etiology of bee diseases, since it is clear that the better the cause is known the better will be the treatment. From this discussion one conclusion can be drawn—that in the knowledge of the etiology of bee diseases lies the hope of their control.

Cappings-Melters not suitable for Out-Apiaries.—The Proper Place for their use.

E. D. Townsend.

The cappings-melter for out-yard work has not been very much of a success with us. The two we have used did their work very well, but were of too small capacity. Even were their capacity of 2,000 or 3,000 pounds daily, so they would handle all the cappings that were required of them, there is still about them requiring too much work, for the results obtained. To illustrate: At two of our out-yards, water for use is drawn in 60-pound cans. This taking water to the out-yards with which to run the melter is not such a very serious matter, but it is something. Then there is the gasoline. one afternoon we burned all of the gasoline we had with us, so had to quit extracting earlier than usual. The most serious drawback, however, in using the melter at out-yards, is the getting started in the morning. It takes an hour or more to heat up the melter, and get ready to begin work, using cold water, as we

have to in this case. Then all burners on the gasoline stoves do not work as well as we would like them to. With the two melters we have used, two burners were necessary to keep them going, so as to accomplish anything. Besides this, there was a third burner with a teakettle of water heating to fill the melter tank as the water boiled away. There is much more slum-gum in cappings than is generally supposed; and the melter has to be cleaned of this, once or twice a day. To clean out the slum-gum from the melter, necessitates the stopping of work until the cappings are melted. This, however, is not so serious a matter, as we usually do this just after dinner, or after the day's work, when the cappings are likely to be all melted, thus causing no delay. Taking it all in all, there is a considerable more work connected with the cappings melter, than with the McIntyre box, and this at the busy season of the harvesting of the crop of extracted honey.

The advantages of the melter are, the finishing up of the work as we go along, and securing, in marketable shape, the eight per cent. of honey that is usually left in the cappings; and, as far as I can see, the 15 per cent., or more, of honey that goes through the melter with the cappings is the equal of that that has not gone through the melter, and is worth in the market, likely, 25 per cent. more than the eight per cent. that is left in the cappings after the McIntyre box has done its work.

We expect, however, with our larger McIntyre boxes, giving us more drainage surface, and by the use of a little more care in chopping the cappings fine, to bring this eight per cent. now left in the cappings, down to, say, five or six per cent. This will not be so serious, especially as we save this honey at wax-rendering time, after the season's hurry is over.

This brings me to the point where the cappings melter has come to stay, i. e., the removing in marketable shape, of the honey from the cappings; honey that was formerly thrown away. The management is something as follows: After all the honey has drained from the cappings in the McIntyre box, they are forked into cracker or sugar barrels and shipped home, where they are run through the cappings melter at leisure, thus separating the honey and the wax. In two years, \$45.00 worth of honey has been secured in this way; honey that had previously been dumped out with the water in rendering wax. During these two years about one-third of our honey was put through the melter as we extracted, had this amount been added to the above, this sum would have been swelled considerably. At the lowest estimate, we have been throwing away \$30.00 a year in honey, that we now save with the cappings melter.

In commencing upon the cappings melter, I said that, as far as I could see, the honey secured with the melter was equal to that secured where the McIntyre or other uncapping tank was used, without heat.

I question, however, whether it is quite as good, and on these grounds: In melting the cappings after they have been drained of all but about eight per cent. of the entire crop of honey harvested, we find that this eight per cent. of honey is quite inferior to the main crop, and, as I have previously said, brings only about 75 per cent. of the price secured for the main extracting, and goes for baking or manufacturing purposes.

If the honey that goes through the cappings melter in the ordinary way, as when the cappings fall from the uncapping knife, in extracting, is discoloured as is the honey taken from the cappings

after draining through the McIntyre box, it would seem as if the whole crop would be somewhat tainted, but, being distributed through the whole crop, it is not noticeable.

The cappings melter used for the last two years is shown at the right, in the frontispiece of the May Review. It is made of galvanized steel, is 22 inches long, 14 inches wide and 10 inches deep. Two and a half inches of the depth is used for the water tank at the bottom, so the tank proper is only 7½ inches deep. The square opening at the back end, is for filling the tank with water. At the front end, near the bottom, is a gate for the honey and wax to run out. Longitudinal of the melter, at the inside bottom will be noticed three A-shaped, or inverted troughs. These troughs are notched along their entire length, on both edges and are called channel irons, and are to preserve an opening for the melted wax and honey to run to the gate, no matter how many cappings are piled in the melter. Although this melter is worked with a two-burner gasoline stove, it is of too small capacity, and another one built on somewhat different plans is in course of construction.—“Review.”

Are Bees Killed when Fruit-Trees are Sprayed while in Bloom

We published, about a year ago, a letter from O. B. Metcalfe, of Metcalfe & Parks, Mesilla Park, N. M., showing how five of their yards had been almost entirely ruined because neighbouring fruit-growers sprayed their trees while in bloom; of how not only the bees died by the thousands, but the brood also. The other yards remote from this spraying did not suffer any injury. We have

had other proof from time to time of how this ignorant spraying at the wrong time ruins the beekeeper's prospects for honey if it does not entirely clean out all his bees. The following letter gives further evidence along this line:

"We are having bad luck with our bees. One of our neighbours sprayed his fruit-trees while in full bloom, and it ruined us. The bees are still dying. That was four days ago. We have had a big rain since, which seemed to help somewhat. Does Paris green usually kill the brood? The bees carried out larvae in all stages. Does it kill or injure the queen? I wonder if there could not be a law passed in Indiana in regard to spraying fruit-trees while they are in bloom.—J. W. SWAILS.

We have not thought it necessary heretofore to give any special prominence to the fact that bees are killed if trees are sprayed while in bloom; but as the fact was doubted by one or two of our very good beekeeping friends, we shall be glad to hear from others who have suffered. No damage, of course, occurs when the non-poisonous mixtures like lime and sulphur washes and the kerosene emulsions are used; but, as any intelligent fruit-man knows, these are insufficient to kill all the pests.

During the years past we have had a good many hundred reports where beekeepers have written in and asked why their brood was dying, supposing it had died from foul brood, but investigation showed that in many cases, at least, this brood was poisoned, and that as soon as the spraying season was over it ceased to die.

In answer to Mr. Swails we may state that there is no law against spraying fruit-trees while in bloom, in Indiana. There is no such law in force except in the State of New York, in Ontario, Can-

ada, and possibly Michigan. Conditions became so bad in York State that the beekeepers of that commonwealth put in a strong plea to their Legislature and secured the law.—"Gleanings."

Keeping Laying Queens on Hand.

It is possible to keep queens in cages, away from the bees, for two or three weeks. Cage them with a few workers and some candy for food, the same as when a queen is to be sent by mail, and they can be kept in some comfortable, quiet place much safer than when sent by mail; but such confinement certainly does the queen no good, although it is possible that it does her little harm. Queens may also be kept several weeks by simply caging them in cylindrical cages, and laying them on the tops of the frames of a populous colony of bees. I think a queenless colony might give them better care, but of this I am not sure. The best way, however, to keep queens is in nuclei. Of course, we then lose the use of the nuclei, but it is not necessary to have very large nuclei. I have used the ordinary $4\frac{1}{2} \times 4\frac{1}{2}$ sections for combs, having three in a nucleus, and eight nuclei in an ordinary super, by putting in partitions. It will be necessary to put a slip of queen excluding metal over each entrance, or the bees will swarm out. They may swarm out just the same with the entrance guard, but the guard will prevent the queen from following the bees.—"Review."

When you want Honey Labels send for

Samples to the "Bee Bulletin" Office.

Flight of Young Queens.

Nine days is the age given by Mr. Lyon, in his book, as the age at which young queens take their wedding flight. According to my experience, six or seven days is more nearly correct. I have frequently had queens begin laying at nine days.—Ed. "Review."

THE DIFFICULTY OF GETTING RID OF FOUL BROOD.

**Is it not probable that Mr. Stewart's Bees
did not have the Genuine American
Foul Brood.**

By George M. Steele.

Mr. Stewart tells his experience in reference to American foul brood. Now, I believe that his statements are incorrect concerning the care of this disease, for I am absolutely positive that he is mistaken in the disease he is treating, for it can not be the old genuine American foul brood. In and around Philadelphia we are having trouble with foul brood, and for five years I have been trying to clean it up.

I have shaken bees on strips of foundation, and in 35 days the disease appeared on the combs.

I have also shaken on full sheets of foundation only to have the disease appear again. Only yesterday I was going through the bees belonging to a friend, and I found three hives out of five that had been shaken this spring, during the heavy honey-flow, that were as much diseased as they were before being shaken.

Now, if any combs that have ever contained honey or brood in American foul broody hives are used again they will surely carry the disease. Dr. Phillips has distinctly told all beekeepers that he has subjected American foul brood to boiling water for a considerable time,

and to the strongest antiseptics known to materia medica, and the spores of American foul brood seem to thrive under all the disinfectants known to man. Therefore I feel assured that Mr. Stewart will have to retract his statements, as there are no bees in the world that can clean out ropy brood having the bad odour of American foul brood. I can furnish infected combs from a colony that has been queenless and broodless for twenty days, and a microscopic examination will show that the bees attempted to close the cells with propolis.

The publication of these articles, I feel sure, will be the ruination of a large number of small beekeepers throughout the diseased districts of the United States. I have a yard of something like sixty colonies in Chester County, forty miles from Philadelphia. I have control of all the bees within five miles of this yard—in fact, I have examined all the apiaries in Chester County, and I feel sure that the American foul brood has not arrived in this county. It seems more than likely that Mr. Stewart must have either black brood, Commonly called European foul brood, or pickled brood, or possibly even chilled or starved brood, which shows in any large apiary in early spring during the violent changes of weather that we usually have.

I think that the Alexander treatment is correct for the European foul brood; but I have found but one way of entirely getting rid of American foul brood, and at the same time save the bees and secure a crop.

If you are sure that you have American foul brood, make a bottom-board bee-tight by nailing a strip across the front. Nail with staples an empty hive-body the same size as the hive to be treated, to this prepared bottom-board. Bore a 7/8-inch hole in front of this hive-body very close to the bottom-board. Over this hole tack a long funnel-shaped piece of tin

with a small entrance just large enough to admit the passing of one bee, making sure that no bees can enter between hive and the funnel. At the beginning of the honey-flow go to the diseased colony; set it aside, and put a new hive-body, containing full sheets of foundation with a queen-excluder, between it and the bottom-board. Pick up each comb separately from the diseased hive, and look for the queen. When found, place her in the new hive on the old stand and put the cover on. Pick up each comb carefully; put in the hive with the funnel entrance, as mentioned above. Then remove all debris, such as the hive-body, bottom-board, etc., that the bees have been shaken from, and carry it to the honey-house as quickly as possible. It would be well to let all adhering bees on the old hive-body and bottom-board get out through the escape in the honey-house. Be very careful to shake no dirt or cappings in front of the new hive.

This hive previously prepared with the funnel entrance which contains full brood-combs should be put in such a position that all the bees leaving it will come very close to the entrance of the new hive containing the queen. Wait 35 days, then carry the diseased mass of combs, without looking into the hive, to the honey-house. If it is desirable to save the honey in the combs they may be extracted if great care is used to prevent robbing, and if none of the honey from any of these combs is spilled on the clothing so that field bees can get to it. After extracting the honey the combs may be rendered into wax.

The plan, as outlined above, is the only one that I know of that will cure American foul brood. I hope that no one will take offense at what I have written, but I feel sure that I know what I am talking about. If Mr. Stewart will send me a piece of his American foul-brood comb, and also a comb that he has extracted the honey

from, which previously had the disease, I shall be pleased to test it. I will place it in one of my clean colonies in Philadelphia, and watch developments.—“Gleanings.”

CORRESPONDENCE.

The following letter is sent to the Editor by Mr. H. A. Geue:—

Heath Vale,
Horsham.

Mr. W. Abram.

Dear Sir,—I am in receipt of the last issue of your valuable journal, and must thank you for your general mention of my reducing device. I am to-day in receipt of a letter from Mr. Penglase (his letter I enclose herewith), and I think it shows that my device is not behind the times. I may mention that Mr. Penglase got one of the first ones made, and that since then I have very greatly improved on the same. The reducer I supply now is much larger and moulded sliding gate, and generally up-to-date. Every intelligent will understand that after considerable experience I have been able to perfect the device.

I take the opportunity of challenging all other devices. I am prepared to put up mine in a fair public exhibition and let the results go through your journal. Here is a chance for a name, and put me second if that is my place.

Yours in haste,

Dear, Sir,—By to-day's mail I received the “Australian Bee Bulletin.” In it Mr. Abram asks to hear from those who have given your uncapper a trial, and I think I can speak or write as to its merits. Before purchasing your machine, I used to uncap into the old style of uncapper—one that had a perforated division about half-way down. After uncapping for a few hours there would be a mass of cappings, which clogged the perforations, and unless it was constantly cleaned, the

honey could not get through; and it became slow work. About 2 years ago I got one of your machines, but, unfortunately, the season after was a failure and there was no use for an uncapper. Last autumn the conditions changed, and a good flow from stringy bark commenced. Then I thought I would try the new machine, and I was surprised at the way it worked, and I will just here describe how we used it.

Here at the home yard I have a fine honey house, and we have a small stove, called a little dump. We first lit up about half an hour before starting, and by the time we were ready the water in the uncapper was boiling; and what a pleasure it was to reduce the cappings so quickly. It simply melted as quick as one could uncap, the honey being run off and put in the tank with that from the extractor—no discolouration and no straining, and the wax also run off in pure lumps, fit to send anywhere. But it is at the out apiaries where it is most useful. I used it constantly every fortnight during June and July, when there as a very good flow in this district. I had to use artificial heat to get the combs ready to extract, and I used the uncapper outside the extracting tent in the open, passing the combs through into a large can, artificially heated; and at night everything was cleaned up and carted away to the tanks.

For out-apiary work you can't beat it for it is so light that it can be put into the back of the buggy, and you are ready for the next out-apiary.

I would like you to let me know if you make a larger size, so that one can uncap on each side, for I am thinking of using power, and would like one large enough for two uncappers to work on.

If there is anything in this that you would like to send on to Mr. Abram, you can take extracts or send the whole if you wish, as I am sure there are some

apiarists who would like to hear about your machine, and I think most beekeepers in Victoria and New South Wales, also South Australia, know that I have been running a large apiary for a good many years, and am running three at present, with the hope of having another on a new site before Christmas.

Wishing you the success you deserve for your invention,

I am,

Yours sincerely,

E. T. PENGLASE.

P.S.—We use charcoal in the little stove, and place it beneath the centre of uncapper. The stove cost 16/—, and it fits underneath the seat of the buggy when going to out-apiaries.—E.T.P.

Attunga.

Dear Sir,—I note that you are anxious to have a long letter from me. Very well. To be brief in busy times (as my bees have started swarming), I will get to business at once, and must say that as regards a sensible suggestion, that of Mr. Lord's will take some beating when he mentioned making local forest rangers of beekeepers. In my opinion, the idea would work out even better than he expects. If a beekeeper had a special lease of a forest reserve, one of the conditions that he allowed no illegal timber-cutting under risk of forfeiture of his lease, of if the reserve needed sufficient attention to vouch for paying him a salary to guard it, then the beekeeper would be compelled to look after the reserve and not allow anybody, even his relations, to cut timber illegally. Under such a system, the timber would be more likely to be guarded by the ranger than if the land was his own private property, inasmuch as he could allow people to fell his own timber; but he could not, without serious risks, allow such on his special lease. In a word the value of the occupation of the reserve for beekeeping, and possibly some grazing, would be the bond opera-

ting towards the discharge of his duty as a forest ranger; and, as Mr. Lord points out, the timber would also have its special value to the beekeeper. Now, with regard to that bee-poisoning case at Aberdeen, I must say that, for pure murderous rascality, it takes the cake. I verily believe that if I caught anyone poisoning my bees in that fashion I would shoot him without compunction. I hope this case has been properly reported to the authorities, for what if Mr. Benson overlooked the matter of the honey being poisoned, and met his death or poisoned others. It all amounts in the long run as a case of poisoning food without any regard for who or how many met their death therefrom. And I suppose that penal servitude for life is the punishment for such a crime. People having such utter disregard for human life should not be at large. I may also state here that the law relating to laying poison should be extended to all places and persons, for, I believe, it is a fact that the law in this respect only covers the laying of poison by land owners and holders, and that only in placing it on their own holdings. A 'possum trapper can scatter poison where he likes and can be only proceeded against for trespass.

Yours faithfully,
JAMES BROGAN.

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