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December 28, 1900

West Maitland, N.S.W.: E. Tipper, December 28, 1900

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* THE AUSTRALIAN * Bee Bulletin.

A MONTHLY JOURNAL, DEVOTED TO BEE-KEEPING.

EDITED AND PUBLISHED BY E. TIPPER.

VOL. 9. No. 9. DECEMBER 28, 1900. PER COPY, 6D.

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R. H. JERVIS,

WREKIN APIARY,
MOSS VALE, N.S.W.

The Australian Bee Bulletin

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MAITLAND, N.S.W.—DECEMBER 28, 1900.

The following is a list of advertisers in our present issue:—

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Allen & Co, 242 Sussex street, Sydney
Anglo-American Publishing Co, Waterloo Chambers, 458 George street,
Sydney
The Farmers' Co-operative Company,
Ltd., Sussex street, Sydney.

HIE best thanks of the beekeepers of the whole of Australia are due to those West Australian beekeepers who a few months since opposed Government assistance. Let us just contemplate what would most likely have happened had such opposition to Government aid not taken place. Possibly one or two lecturers would have been appointed. They would have gone through the length

and breadth of the country painting the industry in all the brightest colours, as was done in N.S.W. some years back. The chances are they would be quietly subsidised by some supply dealers, to work up a trade for them in hives, bees, or foundation. It would not matter what kind of country apiaries could be started in, so long as the lecturer had lectured, or supplies could be sold. Western Australia has only a small population, which would consume but a very small part of what was raised, and then the surplus, perhaps hundreds of tons, of all kinds and qualities, under intercolonial free-trade, would be dumped into Victoria and New South Wales to be sold at what it would fetch. Let our beekeeping readers imagine what would follow.

The butter foreign industry can be regulated by only good being raised and sent away, and thus the good name maintained. But with honey, under such conditions as above, very much more inferior than good would be raised. The butter man, too, can improve his breed of cattle, getting Ayrshires and Jerseys instead of inferior stock, and thus improve the quality of his butter. Beekeepers can improve their bees, but it makes no difference to the quality of honey raised. They cannot substitute box or ironbark for tree or bottle brush. Greedy speculators would still send bad honey away, and goodness knows the price in England is not too good for the best now. The whole industry of Australia—with the assistance of a few bad seasons—would soon sicken and die out. As Cynic said, the remedy is to let Government leave the industry entirely alone. Let greedy individuals, whose interests are detrimental to ours, be watched and shunned, and the industry left to itself. The men in inferior country would gradually give up or shift to

better country. The practical man in good country would gradually get a better price, and be encouraged to enlarge and increase his apiaries. The industry, like a sore with the proud flesh cauterised, would gradually revive and get healthy, and there would be a future for beekeeping in Australia. How is it to be?

"The Drone" in *The Australasian* writes:—In my opinion there is an immense market for our honey in England if we can sell it at 4½d. per lb. in, say, 12lb. lots, and 5d. per lb. in 2lb. bottles or glass jars, and, say, 6d. in 1lb. glass jars. To accomplish this end we shall have to act upon our own initiative, and avoid the federated grocers. I have spoken to Mr. Sinclair upon the subject, and he has kindly undertaken to assist me in every possible way. London appears to me to be ripe for the establishment of a central depot, where all Australian produce can be purchased retail. If the rooms at present employed in exhibiting Australian products were changed into a store where any Australian produce could be purchased or ordered at a price to suit both buyer and seller, it would, when known, have more buyers than sellers. London is strangely behind the times in many things, and so intensely conservative in practice that it is no use attempting to obtain profitable prices through the butchers and grocers until the public demand for the Australian article forces them to stock it. Look the matter squarely in the face, and this is reasonable. Grocers are not philanthropists, and when they can buy a pound of honey for 2 6-8d. in bulk, bottle it and label it at a cost of say 1 2-8d., or a gross of 4d., and then sell at 12d., why should they desire a change? It is they who say the flavour is disliked. The general public say, "Where can I buy 12lb. of honey for 5/-?" and laugh at the price as an absurdly low one. We want a live man at this end who knows how to grade honey, so that the consumer can rely upon getting the same flavoured honey as he is accustomed to, and to sell it wholesale

and retail from some central point. I venture to say that beekeeping would become a profitable enterprise for hundreds of people, given good central offices in Melbourne and Sydney, and a distributing office here with such a man controlling it.

We give our readers our own opinions, also the opinions of others. We ask them to read well and judge fairly.

Bee Farmers' Association.

The following correspondence re the above has come to hand:—

A. E. S., Parkes.—Committee circular received. Your action in connection with the proposed Bee Diseases Act should meet with the approval of all beekeepers. Considering the nature of the work, and the circumstances connected with it, you did the best that could be done at such short notice. I suggested a meeting in Sydney at Show time, but cannot see any objection to January, if that time would meet the convenience of a greater number of beekeepers.

W. N., Eugowra.—Being one who derives my living from beekeeping, accept my thanks for the energetic manner in which you entered a protest against passing a Contagious Bee Diseases Act, as it was placed before Parliament. I am very busy just now, but you can rely on me doing my best in assisting to work up a true Bee Farmers' Association. As to date of meeting, when the working season with the bees is over, in the winter, I think, would be the best time. Bees are in fair order. I have extracted no honey yet.

J. P., Stanborough—I received circular of N. S. Wales Bee Farmers' Association and was pleased to see that the attempt to pass the Bee Diseases Act is about to die a natural death, as I believe the proposed Act would not be of any benefit to our industry. I think it would be better for you to arrange for the time and place of meeting of our Association. I will do my best to induce beekeepers in this district to join the Association. My bees are

doing well at present; they are working on yellow box and red gum, with black butt, stringy bark and peppermint to blossom in January, February and March. I have a good chance to get a fair quantity of honey.

J. B. P., Stanborough.—I have just received Bee Farmers' Committee circular. You want to know if I will be able to attend the first meeting of Bee Farmers' Association if held during the Federal festivities. I would very much like to attend, but cannot on account of splendid honey flow from yellow box and red gum. I am working night and day to keep pace with the bees. Red stringy bark is just opening out, and woolly butt and peppermint loaded with buds, which will open out this next three months. I will forward my subscription soon after the fee of subscription is decided upon, and will do my best to induce my neighbouring beekeepers to join our association.

J. N., Eugowra.—I beg to acknowledge receiving Bee Farmers' Association circular. I regret very much that I cannot attend any meeting in Sydney in connection with it during the summer. I am quite willing to pay my share of the expenses in working it up and holding the meeting. Though absent, if there is anything I can do in assisting to make it a success I will do my best. If the meeting was only to consist of five bee farmers it would be better than many of the bee conventions in the past.

FORESTRY.

In a recent circular to the N. S. W. Bee Farmers' Committee we made the following observations:—

“ Possibly you may have observed that the state of our forests, and the need of their better preservation has been called attention to in the Legislative Council, by Mr. Alexander Kethel, M.L.C.; also that a Timber Getters' Conference has been held in Sydney, under the presidency of Mr. R. A. Price, M.L.A., a deputation from the latter waiting on the Hon. J. L. Fegan, Minister for Mines and Agricul-

ture, urging on the importance of the same matter. What there is in these movements that may be helpful to beekeepers should be carefully watched by them, and I should be very thankful with any suggestious or otherwise that, in the name of an Association, could be put before the powers that be.”

The only suggestion that has come up to time of writing has been from Mr. Penberthy. In our own reading we have also come on the following extract from the *Australasian*. We should be very glad if beekeepers, who are so very much interested in forest preservation, could give us ideas that might help the hands of those who are really fighting our battles.

When the Victorian Forest Commission sat in Stawell, Mr. R. A. Harvey, the district forester, in the course of his evidence drew attention to the quantity of redgum timber going to waste in the Victoria Valley, and in the vicinity of the Grampians, near Hall's Gap. He suggested that if these areas were properly thinned out and the old trees ringbarked, it would transform them from a wilderness into a valuable asset to the state. The commission were impressed by Mr. Harvey's evidence, and, as a result, he received instructions a short time ago to have a portion of the Grampians forest, near Hall's Gap, dealt with as he suggested. Men were put on, and about 250 acres have been thinned, and all the undergrowth and crooked trees have been removed. The crooked timber has been cut close to the ground, in order that the suckers may strike below the surface and develop into full grown trees, which they would not do if they struck above the ground. The object of ringbarking the old and useless trees is to produce seedlings, which, with the suckers, will in turn be thinned out, so that there will always be a crop of young timber growing up to replace that removed for sawmill and other purposes. The contrast between the timber that has been treated by Mr. Harvey and that left to grow in a state of nature is very marked, the former re-

sembling a carefully trained plantation.—*Australasian.*

To the Hon. Sec. N. S. W. Bee Farmers' Association.—RESERVATION OF TIMBER.—Good timber is at present reserved on most crown leases, but we want to go further, and reserve promising saplings fair distances apart, and reserve all timber on the crowns of hills for the sake of rainfall. In destroying the timber on the tops of hills, it lowers the height of those hills by the height of the timber, besides the cooling effect of trees. It is well known the effect hills have on rainfall. I do not desire trees nearer than three chains apart. It is the trees that stand out alone that have the greatest hum of bees—a scrub is valueless. You would not think of planting an orchard for the roots to overlap. I would not harp too much for the beekeepers. We cannot expect to stop ringbarking for the bees only; there is too much interest against us. By helping the timber getters we help ourselves. Ask for what is good for all and we will get it, which is the thin end of the wedge. The "National" has been trying to enter the thick end, and have split their maul. These are thoughts of months, and I mean every word of it. I forgot to state in my answer to the Committee circular that my statement was for a district with 30 inches annual rainfall. Sheep breeders here say ring-barked land will make half a sheep to the acre difference, 1/8 per year, which we cannot do with bees.—F. W. Penberthy.

Soaking in warm soap suds will clean smokers when they become foul.

Honey well displayed in a grocer's shop is half sold.

It is number of bees that gather honey, not number of hives.

Wipe up immediately in the extracting room any honey that may drop about. It will not then attract ants or bees about.

When done extracting for the day, better put the frames extracted from on strong hives. They clean them up, and it saves robbing.

A novel feeder is used by an American. Paper bags filled with syrup, and pricked with pin holes, placed on top of cluster.

Your smoker nozzle choked up, squirt a few drops of kerosene on and light it. In a few minutes you can scrape all the refuse off.

Some of the English Show prize lists contain the following item: "Best display of honey and honey products in suitable form for a tradesman's window."

Mr. H. L. Jones, of Goodna, has taken to rifle shooting as a hobby. He will try his hand at the Sydney butts during January. May he score well.

Mr. Tipper's address in Sydney from January 1st to 4th will be Haymarket Post Office, George Street West. Those who wish to attend Bee Farmers' Meeting will kindly address him there.

A lady beekeeper in America wears bloomers and dresses in brown, as she says she can climb a ladder against trees for swarms with the former, and the latter is an agreeable colour to the bees.

By all means paint the tops of your hives. Some say it is better not to paint the bodies, as there is always a natural ventilation through unpainted wood, and if the hives might not last so long, you gain by the better health of the bees. It is an unsettled question.

A poor and disappointing flow with us this year. Yellow box, though budding well, was kept back by late frosts, and a heavy hail storm tore one-third of the buds and blossoms off the trees. Will not get a ton and a half from this source, and the autumn promises nothing.

The "Worthy Suggestion" of Mr. Bradley in our last issue was prompted with the very best intention by that gentleman. It was however done without any knowledge on Mr Beuhne's part, who fully appreciates the good motives, but wishes us to state he does not require the assistance offered.

Every man, whether he be civil servant, farmer, or whatever, who owns bees, and does not want to see continued decrease in values, should join the Victorian Api-

arists or New South Wales Bee Farmers' Association. The value of £100 worth of bee fixings or experience is worth protecting.

Prices of honey in Sydney, 1d. to 2½d. per lb. Napier, N.Z., 4½d. wholesale, 6d. retail. Brisbane, 1½d. to 1½d. Adelaide, 2½d. Melbourne, 4d. to 4½d.

We wish our many readers and subscribers a Merry Xmas and a bright and prosperous New Year.

Quite a number of new subscribers' names received during the past month. Many thanks to those who have so interested themselves on our behalf.

A civil servant writes in a satirical manner. He has 30 hives, and wants to know what he is to do with his honey, etc., as he supposes that "Private" would consider it wrong for him to sell such. As he has a certain amount of money and time invested in the industry, surely he does not wish that value depreciated. "Private's" interests are the same as his, to make the industry worth following up, not to ruin it, as there are some people, for their own selfish interests, doing their best to do now.

The practical beekeepers in France all use the extractor, for it appears that extracted honey brings as high a price as comb honey. This is the result of the ancient custom of pressing the honey out of the comb before eating it. As a matter of course, they find the honey that has been extracted far superior to the old strained honey. In Mr. Maigre's apiaries I saw two small improvements that I think are very good. The one is a wire-netting shield around the fire-box of the smoker, which effectually prevents one burning his fingers, as this shield permits a free passage of air, and is always cool. They use a copy of the Bingham smoker nearly exclusively with this improvement. The other implement is a long brush for brushing bees off the combs. These brushes are thin and strong, with very long bristles, and are superior to anything we have. A thing which strikes us Americans as very odd, is the numerous different articles employed to make bee-hives, owing to the high price of lumber.

I saw hives made of straw, of wood and straw, of earth, of willow wood covered with mortar, of cement, and in a few cases, of reeds and rushes. Straw roofs are plentiful, but they use also tiles and wooden roofs.—Dadant.

E. J. Atchley used to think that section honey was the best and nicest thing, and for years did not produce any other, and advocated the production of comb honey in sections. Of course section honey is very nice, but the dollar is nicer. As chunk honey brings more money, there are no more sections for him now. He can, in the first place, produce at least one-third more chunk honey in frames, and when put in cans it can be shipped at less freight rate, it going as fourth class. Section honey in glass front shipping cases goes at first-class rate, and at owner's risk, while honey put up in two 60-pound cans to a case, if damaged en route, will be settled for by the railway companies. This is greatly in favour of comb honey put in cans, and Mr. Atchley has had enough section honey smashed to bring down the price as low as that for chunk honey. Some object to such a mess, but are sections ever set on the table? When the section is cut it is just that way, too. If cut out of the section it is chunk honey, too, but nothing like a chunk out of a can, with nice honey all over and around it, and indeed there is nothing more inviting when hungry, and nothing nicer at all. If everything is favorable to produce sections, it is all right, but two supers of chunk honey can be produced to one of sections.

At the late Chicago Convention, Mr. Aikin said:—About four years ago there was a large loss of bees—they died—nobody knew why nor how, nor much about it; some said they "evaporated;" they applied that term because they disappeared so quickly. At our Colorado State convention one said it was the smelter smoke; another said it was the high winds; another said it was insects that preyed upon them; they all told their different views in regard to it; once in a while several had the same idea, yet no one could say positively what killed the bees. I said

it was not the smelter smoke, because I knew a similar circumstance to that—the parties who were in that particular territory said it was the wind, others said it was the high winds; I said it was not the high winds because we had lots of high wind at my place, and no smelter smoke; the same trouble has appeared since then in less intensity, and in a territory where the smelter smoke did not go. After thinking the matter over for several years, and discussing it over and over again in our State conventions, I have come to the conclusion that we don't know yet what is the trouble. The only experience I have had is this: In 1889, in an out-yard 7 miles from headquarters, the colonies were very strong. When I next visited that apiary, I think about 10 days afterward, I was surprised to find that those strong colonies did not show many bees. Where those bees had gone to I could not tell. They said it was the winds that did it; but when the same thing occurred a few years later in the vicinity of Denver, covering a territory of from 10 to 20 miles in diameter, the bees disappeared in the same general way. We don't know what happened to them. The same trouble was experienced a little bit last year, and a little bit the year before.

Royal Agricultural Show, Sydney, 1901.

Knowing that about this time the schedule of the above was being prepared, we took the liberty of writing the following to the Secretary, F. Webster, Esq. We are not able to say if any of the recommendations have been adopted:—

Nov. 29, 1900.

F. Webster, Esq.

Sec. Royal Agricultural Society.

Dear Sir,—Yours of 22nd inst to hand, and I beg respectfully to make the following suggestions re the Apicultural Section at the forthcoming Show:—

To begin, I take it that the aim of an Association like the Royal is to assist the *producer* more than those who live by the producer.

Through the action of interested persons and bad seasons the industry has become overdone, many giving it up in disgust.

In the Champion let there be a second prize. In Comb Honey the judges should cut a sec-

tion of each competing lot, to ascertain the kind of honey and amount of mid-rib.

In 745 (Liquid Extracted Honey) the winner should be required to produce 500lb. of the same quality.

In 748, 749 (beeswax) it would be well if confined to bee-farmers, not supply dealers.

750 and 751, Combs naturally built and Foundation are very unnecessary.

739, 740. These two items should be most decidedly left out, as exploded and ridiculous. We do not take University Professors from the nicest looking boys, or our generals from the best looking soldiers. The only proof of the value of a queen bee is the amount of honey her progeny raises in a season. It is from the best honey gatherers I raise my own queens. A number of queens I have received from queen raisers in different colonies during the past year, in each case the senders have told me, they are from a "good honey-raising strain," nothing said about colour. And I would particularly call your attention that in no country or colony in the world other than New South Wales are such competed for.

In place of those I have recommended to be left out, and having the producers' interests in view, I would recommend the following:—

A good prize for the best honey display suitable for a grocers' or storekeepers' counter, not to exceed two feet each way. The attention of Sydney and other storekeepers to be specially called to it. A first, second and third prize. Colonel Lasseter's cup could well come in here.

A good first, second and third prize for the best honey display suitable for a grocers' or storekeepers' window, not to exceed two feet each way.

The best six bottles honey vinegar.

I respectfully ask the consideration of yourself and committee of the above.

I remain, yours truly,

E. TIPPER.

DYSENTERY.

G. D. K.

I have a colony of bees suffering from what I consider to be dysentery. The bees are dying off instead of increasing as the others in the apiary. Their excreta consists of large blobs of a yellowish green, slimy, half liquid matter. The bees appear to be unable to control themselves sufficiently to take their excreta outside the hive, and it is to be seen on the combs and on their more healthy companions. Can you tell me from this description if it is dysentery? and can you give me a remedy?

We have not taken an ounce of honey from 30 colonies since beginning of June 1899. They came through the winter nice and strong with plenty of stores left, but since August we have lost several colonies; others coming on well now.

[Undoubtedly a case of dysentery, caused by bad food, either what they are now gathering, or else the food (pollen or honey) in the hive having become soured or in some way unwholesome. Perhaps too much damp. Your remedy is, to remove all honey or pollen in the hive, clean up as well as you can, and give in place sugar syrup well boiled.]

ARTIFICIAL WATER SUPPLY FOR BEES.

R. BEUHNE.

During a very dry season some years ago, I was compelled to supply water artificially, owing to the nearest waterholes drying up. Since then I have kept up the artificial supply, to keep the bees away from watering places for stock, where they would sometimes annoy animals, would get drowned in large numbers on windy days, and when the water fell low would be killed in hundreds by being trampled into the mud by stock. Till I supplied them with water I had no idea of the amount consumed daily during the summer. For several years I found it a very tiresome work to supply them, as no matter what receptacles I used they needed replenishing frequently, but were sometimes forgotten. The arrangement I have now in use, acts automatically and gives a drinking surface of 12 square feet. This is now working the second summer, and there has never been a hitch of any kind. It is located 150 feet from the apiary, and 200 feet from the supply tanks, and connected with them by galvanized water tubing. The two tanks hold 1000 gallons each and are on a higher level than the drinking troughs.

The drinking troughs two in number, are in the shade of a tree, and so situated that they get the sunshine only early in the morning and in the evening, but during winter and early in spring when the sun is lower in the sky, nearly all day. The troughs are on a stand 30 inches from the ground, and consist of two shallow boxes lined with galvanized (plain) iron, and measure 36 inches by 24 inches, 6 inches deep, thus holding about 3 cubic feet each, with a drinking surface of 6 square feet each, they are 18 inches apart and connected by a piece of hose fitted on to a short outlet pipe at the bottom of each. Thus the water keeps at the same level in both, and may be drawn off once in a while to clean the boxes. On the surface of the water is a floating raft, made by nailing pieces of $\frac{7}{8} \times \frac{1}{2}$ inch pine, half an inch apart on to three

crosspieces of $3 \times \frac{7}{8}$ inches. The raft covers the whole surface, leaving only $\frac{1}{8}$ inch for play. Between the $\frac{7}{8} \times \frac{1}{2}$ inch cleats are smaller ones $\frac{1}{4} \times \frac{1}{4}$ inch, thus leaving no opening for bees to drown or even dead bees to get into the water.

This arrangement gives a maximum of standing room, and bees may be seen in close rows on the narrow side of the $\frac{7}{8} \times \frac{1}{2}$ inch strips head downwards sipping the water just showing between the larger and smaller strips of wood. The raft is kept buoyant so that the underside just rests on the surface of the water by means of two small air tanks made of light zinc, fixed underneath the raft, one at each side, measuring in length the same as the width of the raft, about 9 inches wide, and $1\frac{1}{2}$ inches deep.

From the centre of one raft rises an iron rod working like a hinge on the raft; its position is upright, and it connects with a lever fitted on to the tap of a stone pipe in such a way that the tap is just closed when the trough is full of water, and as the level of the water lowers the rod pulling the lever opens the tap till the rising raft closes it again. In practice the water keeps almost at the same level all the time, as any water consumed is continuously replaced. During the greatest consumption last summer I found that the bees from about 20 colonies will cause a tiny stream of the thickness of a slate pencil (with just sufficient pressure from the tanks to run).

Each of the troughs is sufficient for about 100 colonies. The one supplied by the tap may be kept fresh, and the one supplied from it by gravitation can be made slightly brackish by occasional very small pinches of salt.

REMOVING BEES.

W.S.W., Teesdale, Vic.—We promised some time ago to write a short account for the A.B.B. describing the manner in which we shifted our bees from Fennyroyal Creek to Teesdale, a distance of thirty-five miles. Practical beekeepers will hardly waste their time in reading it, but as we do not remember having read anything on the subject in the A.B.B. we have no doubt that it will be of some interest to amateurs. Well, to begin with, we used a light waggonette or buggy waggon, on which we could carry twelve hives, six on the floor, and the remainder placed on top of these. We were careful to choose fine weather during winter, as it is a great mistake to move bees during warm weather. Each hive was fixed up as follows: On the day before commencing our journey we wedged up the frames of each hive so as to prevent their shifting about and squashing bees and breaking combs. We then tacked two pieces of light deal wood over the frames, leaving a space of about four inches in the centre, which we covered with perforated zinc, and drew the hive forward on the bottom board flush up, so as to have the en-

trance as wide as possible; then the last thing in the evening, when all the bees were in, we tacked perforated zinc over the entrance, thus giving plenty of ventilation, which is most essential, as even on a cold day it is surprising how heated they become, owing to their excitement when shaken up during the journey. It is also advisable to tack a strip of wood on the bottom board at the back of hive to prevent the hive from shifting backwards, also tie a piece of rope over the hive and hitch up tightly. The next move is to place them in the trap, and we think it does not matter much which way the frames face, as ours were placed with the frames facing lengthwise with the trap and they rode perfectly well, although we read that crossways is better. Now these hives were shut up from one evening until the next, and were driven over 35 miles of road, a good part of which is rough enough for anything, yet the bees were none the worse for it.

It is a good practice to carry your smoker with fuel in case of accident, as you can easily imagine the consequence if bees were to escape and attack the horses.



VICTORIAN NOTES.

R. BEUHNE.

During the month a few more facts have come to my knowledge concerning the losses of bees. I have come across another man who remembers his father's bees disappearing and leaving the boxes full of honey, and like the two previously reported fixes the time as about 22 years ago.

I stated in my last Notes that I had extracted all the honey I could from the brood combs of the surviving colonies and gave sugar syrup in place of it. Those colonies which I deprived of all or nearly all their winter stores have made satisfactory progress. From some colonies I could take little or nothing on account of the brood. These have with a few exceptions lost their queens all less than 12 months old. In two of them I replaced the loss with queens obtained from outside and after laying for a month they also died. Into several others I hived afterswards with virgin queens coming from a distance of 70 miles, and these young queens have succumbed after laying for a month or so. Up to now there has been almost no new honey and old honey was consumed where there was any left. So much for those which had winter stores left. Now as for the swarms purchased and on arrival hived on empty combs and having queens of all ages from a few days up to 3 or 4

years old, there is up to now, the death of only one queen to record out of our 100, and I cannot help thinking that the winter stores were the cause of the loss of bees, and later on of the queens caused by being fed with food from old stores.

There are, however, two exceptions; two of the colonies which were left with all stores have worked up well, one (the one I mentioned on page 160) being exceptionally strong. What I should like to know is, why did they fare better than all the others? Was it that they did not gather the kind of stores that ruined the others, or are they proof against the effect of unsuitable food.

To prevent misunderstanding I may state that the suspected honey is apparently of good quality and flavour, and brought top price at the produce sales. It was all sealed, the bulk was liquid, but some was candied in the combs, and so hard that nothing but soaking in water for six hours would shift it.

H. B., Wilmington, S.A., according to last *A. B. B.* has had a similar experience, and it would be interesting to know whether there is any similarity of flora and climate, and the different localities affected, here, in S.A. and N.S.W.

THAT WORTHY SUGGESTION.

My notes during the last few months have been mostly of the nature of accounts of disasters, although I myself have never for a moment looked upon my articles in that light till I saw the above heading in last *A. B. B.* I have published my experiences with the object of getting at the bottom of the mystery, by obtaining facts and opinions from others with the view of solving the problem for the benefit of all. In doing so I took the risk of being accused of trying to bogyey people off bee-keeping, but it now appears that I have unwittingly caused the impression which originated Mr. Bradley's kind suggestion. I wish to express to Mr. B. my thanks for his kind intention, and to him and many other my appreciation of their sympathy and offers of assistance, but I will take the "will for the deed" and I am at present engaged picking a bone with the Editor.

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AN OBSERVATION HIVE.

For an entire season I had a honey-section hive in my study window, and the whole time it was the most fascinating thing in the room. It was made from an ordinary pound section by driving brads into the corners, letting them stick out half an inch at the bottom for it to stand on, and $\frac{1}{4}$ inch from the sides and top to insure a bee-space all around. The glass case that fitted over it was made simply by cutting glass the proper size, glueing the corners together with narrow strips of cotton cloth, and carefully searing hot beeswax into the corners on the inside to prevent the moisture of the bees from softening the glue. To stock it I put in a handful of bees with an old queen which I wished to supersede. She laid the little hive full of eggs, and then decamped. The bees immediately set to work making queen-cells; and, happening to be cutting out a lot, I put in two large queen-cells—one of them, with malice aforethought, protected with screen wire.

The queen from the unprotected cell emerged first, and then I had the whole story of "piping" and "quahking" where every movement could be easily observed. At noon of the second day after piping began, the hive cast a swarm, which clustered about the size of a spool of thread, in the snowball bush in front of the window. I hived it back, removing the offending quahker, and the young queen stayed, and laid, and kept up the hive until cold weather. I saw her take her nuptial flight. She was gone about ten minutes, and returned with the organs of the drone. Within fifteen minutes after the bees had removed these she flew again, and in five minutes returned with a second trophy of success. Almost any day I could see a little bee emerge and make its first toilet—a most fascinating performance, and at all times I could observe the bringing in and disposal of honey and pollen. I painted bees with different colors, and watched them work from daylight to dark—that is, I watched them from daylight to dark;

but no single bee that I watched ever worked more than three and half hours a day. Then there were all the different divisions of labour—the field-bees, the nurse bees, the wax-producers the police, the barbers, the drones, and the queen.

The next season I had in my window the little hive again, and a hive made to take of my regular frames. The glass case for this was made in the same way, except the front glass was left out; i.e., the sides, top, and back were glass, fastened together with glue and narrow strips of cloth. This fitted into grooves cut in the bottom-board and in front into the front board, an upright post very securely fastened to the bottom-board. The entrance hole was made in the bottom of the front board. Sharpened wire nails with the heads cut off, and filed to a sharp edge driven into the bottom and front boards held the single frame securely in position independently of any support from the glass. Both these hives were covered with thick cotton quilts made with soft black woollen cloth. This hive is naturally more satisfactory in many ways than the little one, since we can observe things on a much larger scale. We need never wait ten minutes to see a young bee gnawing her way out. We may observe a great many more workers about their different vocations, and the queen can very generally be found laying. Of course, the best thing of all is a full stand, and a booming large one, in an attractive and safe glass hive. With this we may actually see and study practically the whole theory and practice of apiculture, from noting the flowers which bees visit, with the hive-products derived from each to sampling the honey of all the different grades, and making at least the chewing test for pure beewax.

As already stated, I have used a number of different observation hives—in all, three different styles. I will stop to describe the one which I found best, and on just this point suggestions from any one who has been working along this line will be most gratefully received.

The hive is made of glass sides, ends, and top, which is removable, set in a frame of inch pine. The strips that go across for the top of the ends and the bottom end strip in front are one inch by two inches at the top, to allow for rabbeting down for the frame supports $1\frac{1}{2}$ in., the bottom for a $\frac{3}{8}$ entrance. All around the inside, the frames are rabbeted in $\frac{1}{4}$ inch by the thickness of the glass. This gives us a plain glass box all smooth on the inside. This is screwed to a bottom-board, into which beeswax has been thoroughly ironed in on both sides. The bottom-board is made of inch pine, and extends a foot in front of the hive, and through this extension it is screwed to the window-sill. This space between hive and window is covered in by a screen wire tunnel about 10 inches wide and $1\frac{1}{2}$ deep, and forms the most fascinating place to watch the out-going and in-coming streams of busy life, the different-colored pollens, the loads of propolis and nectar, the carrying out of the dead, the most interesting "policing" of the entrance, the actions of sneaks and robbers, the reception of a strange bee, or one that has been perfumed in various ways. This space should be provided with sliding doors, one of perforated tin to close the hive and one of tin to close the opening through the board that fits under the window-sash. This is to make it possible to confine a bee for a moment while it is being marked. For marking I have tried a number of devices, but have settled down on ordinary water-colors as the best and simplest way, and I use a fine brush that can be passed through the wire screen. It would be a desideratum, both for purposes of observation and ease in marking, if we could have a fine black wire screen with meshes as large as possible, but just small enough to prevent a bee from getting through, i.e., larger-meshed than the common fly screen.

In marking bees I get a good dab of any desired color, on the back, between the wings; another on the back of the abdomen, and, most important of all, a good mark on the very tip of the abdomen.

Until I discovered the importance of this latter mark I used to lose my marked bees for hours at a time, even in a single-frame hive. I finally caught one crawling into a cell, and watched her remain there lying quietly on her back for nearly five hours—resting or asleep?

The supers are made with glass sides, glass set in narrow wood frames and wooden ends, and the glass frame for the top of the hive exactly fits over a super. The whole hive is covered with thick soft quilting, made in rectangular pieces to fit both ends and one side, the other side being covered with a long quilt which laps over the top, and is long enough to cover three supers in position. The advantage of this mode of covering is that it can always be removed without a jar or creak, leaving the bees so completely undisturbed that I have not seen any tendency on their part to propolize the inside of the glass. It is very easily manipulated, and keeps the bees warm. For winter, in a room that is not heated, I have simply to throw over a few newspapers, and large sheets of wrapping-paper, and tie down closely with a cord.—PROF. C. F. HODGE, in *Gleanings*.

THE FOOD OF THE LARVAL BEES.

PRQF. A. J. COOK.

The great difference between animals and plants consists in the fact that animals must digest their food, while the plant takes a food that needs no digestion. By digestion we mean the changing of food so it can be absorbed or taken through an organic membrane. We call this osmosis. A good definition, then, of digestion, is that it renders the food osmotic. It is often defined as the process of solution, or dissolving the food. This is not correct. Some substances are not osmotic, like the albumen of an egg or blood, although these are liquids. These substances, then, must be digested or they can not be absorbed. There are

other liquids of like nature. Some liquids like cane-sugar, while readily soluble, need digestion. Thus without doubt cane-sugar must be digested before it is absorbed into the blood. The bee does this with the cane-sugar of nectar, and thus changes it into the reducing-sugar of honey. When we eat honey the bee has done our digestion for us, but when we eat cane-sugar we must do it for ourselves.

The lowest branch of animals, the protozoa, have but a single cell, and are thus in structure like the yolk of an egg. These, of course, have no digestive canal, but they have a wonderful power of taking their food into themselves and digesting it, and thus are as truly animals as are we ourselves. The little microscopic amoeba is one of these protozoa. Nearly all other animals possess an alimentary or digestive tube. I say nearly all, for some animals, like the tape-worm, have, in the economy of their lives, found places where their food is already digested, and thus need no digestive canal, so they have none. Doubtless they once had one, but through disuse it was snatched away. If we wish to keep our organs vigorous and intact we must use them.

The coral animals have a digestive canal, but only have a mouth opening. The animals above the coral branch, if they have an alimentary canal at all, have a complete one; that is, a tube with an opening at each end. Most animals with a complete alimentary canal have the tube differentiated into mouth, oesophagus, stomachs, small and large intestines. The bee is no exception to this statement. Thus in the bee we have a mouth oesophagus, two stomachs, small and large intestines. The mouth of the bee, like our own, receives the salivary liquids, which, in their case, unlike ours, are the main digestive liquids. The oesophagus of the bee is small, and conducts from mouth to stomach. The honey-stomach is just above the true stomach, and this is doubtless the seat of all honey-digestion. That is, the cane sugar of nectar is changed to the reducing-sugar of honey,

which is a mixture of dextrose and laevulose in this honey-stomach. This honey-stomach, then, is not comparable to the crops in chickens. The crop is simply a store-house for food, while this honey-stomach is really a true-stomach, in that digestion is done in it.

Succeeding the honey-stomach is the long, bent, true-stomach of the bee. This is considerably larger than the honey-stomach, and in this the digestion of the albuminoids or of the bee-bread or pollen takes place. There are many short tubes attached to both ends to the true-stomach. These were once thought to act as does the liver of higher animals. But they are now known to be organs of excretion, and so answers to our kidneys. Indeed, the structural difference is not great, for our kidneys consist of a great number of small tubules. In the bee these tubules, instead of being mass together, as in the kidneys, are separate. We know that these are kidneys in function, as urea has been found in them. These are often called malpighian tubules, which word is strangely misspelt in the last edition of the "A B C of Bee Culture." The small and large intestines are probably little more than conduits for the waste of fecal matter. Doubtless digested material not absorbed in the stomach may be taken into the blood from the intestines.

There are very large glands in the head and thorax of all worker bees. The upper head-glands of the thorax empty in the common tube just at the base of the ligula or tongue of the bee. There is little doubt that this secretion furnishes ferment which digests the cane-sugar of nectar. Its position and the large extent of the glands make this almost certain. The further fact that we know of no other source for this digestive liquid adds to the argument. It is marvellous how much the bee does at one time. It gathers honey, gathers pollen, and is at the same time hard at work digesting the honey in the honey-stomach. And added to this is its hard labor in flying from flower to flower, and in carrying its load of

pollen to the hive. Bees have been found to make a mile in five minutes, although loaded with nectar.

The lower head-glands empty on the side of the mouth. They look like a string of onions, and are very ample. Cheshire is assuredly mistaken in stating that these glands furnish the food for the larvae. I have tried experiments which I shall speak of later, which entirely disprove this statement. Their real function is, without doubt, to digest the pollen or bee-bread, changing this into chyle, which process takes place in the true-stomach.

As we have said, the honey-stomach is the reservoir in which the honey is conveyed to the hive, and also the digestive cavity where the cane-sugar of nectar is changed to the reducing-sugar of honey. At the lower end of the honey-stomach is the little globular stomach-mouth, a curious little organ, which undoubtedly serves to obstruct the pollen-grains which are taken in with the nectar from this liquid as the bee is gathering or flying to the hive. If we quarter an apple and imagine the quarters slightly separated yet united at the peel by elastic rubber strips, we will have a close copy of this stomach-mouth. The inside of the quarters should be covered with long hairs which point downwards. These quarters, as the bee is flying, are constantly opening and shutting. The nectar passes in between them, carrying the pollen-grains. As they close they pass the honey back into the honey-stomach, but the hairs hold on to the pollen-grains, and so they are constantly passed through the true-stomach where as we have already seen, they are digested. The bee also takes the bee-bread from the cell into its mouth, mixes this with the secretion from the lower head-glands, already described, and then passes this into the true-stomach. Only the nurse-bees, or younger workers, possess these lower head-glands in full development. Thus the nurse-bees for the most part digest the protein food.

A loose tube extending from the lower part of the stomach-mouth reaches down

into the true-stomach. Thus unless the honey-stomach is drawn up this serves as a valve, preventing any regurgitation of the food from the true-stomach. But in case the bee wishes to regurgitate this chyle, as the digested pollen is called, it simply raises the honey-stomach, drawing this valve-like tube up. Thus it may or may not act as a valve at the pleasure of the bee.

The drones and queen have not the lower head-glands, and thus can not digest pollen. Thus the nurse-bees have to feed not only the larvae, but also the drones and queen. The drones and queen are possess of the other glands. Indeed, they need them as the honey is not fully digested or changed into reducing-sugar, and the drones and queen take honey for food, and so need to digest it in part. Even a part of this digestion, as we have already seen, is performed by the worker-bees, as they digest the nectar *en route* to the hive.

As before stated, Cheshire argues that the secretion from the lower head-glands forms the food of the larval bees. As stated above, I have proved as have others, that this is an error. The nurse-bees digest the pollen, and probably add more or less honey, and jelly or chyle is the food of the larval drones and queen. We know that charcoal is entirely non-osmotic, that is, can not be absorbed. Therefore if we feed charcoal to an animal it would never pass into the blood. I fed honey with finely pulverized charcoal mixed with it, to a colony of bees in confinement. The bees were not only feeding common brood, but also adding the royal jelly to queen-cells. I found the charcoal in the royal jelly, as also in the cells with the ordinary brood. This proves that this food is chyle, and so regurgitated from the true-stomach. If Cheshire were correct, this charcoal must have passed through the walls of the stomach and intestines into the blood, and again through the walls of the lower head-glands to be mixed with the secretion of these glands. We know that this could never take place. As the larvae

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food is chyle, this charcoal must of course pass with the chyle as it is regurgitated from the true-stomach.

Dr. de Planta has shown that the chyle fed to the queen-larvae is quite different from that fed to drones and worker-larvae. If this were as Cheshire holds, a secretion, we could not explain this difference. If, on the other hand, it is chyle, we can certainly see this by adding more or less honey, its nature can be readily changed, as it must be by the nurse-bees.

A few years ago I announced the fact in the bee-journals, that honey is digested nectar. There was a great cry from the bee-men, fearing that their product might be injured by such statement. They had no need to be thus frightened, for the truth never hurts any one. Indeed, the beemen should be glad to know and herald forth this fact. I feel sure that honey is a safer and better food than cane-sugar, and just for this reason, that the digestion is partly performed by the bees. There are few acts in all the culinary processes that are so neat and unobjectionable as is this wonderful transformation in the honey-stomachs of the "pets of the hive." If, as sometimes stated, cane-sugar is not so safe a food as honey—and I think there is much reason for this opinion—then it is because of this previous digestion of the honey by our little industrious friends.—*A. Bee Journal.*

NATURALLY-BUILT COMB VS. COMB FOUNDATION.

S. A. DEACON, in *A. B. Journal.*

I hereby repeat—Mr. Dadant's objection to the expression—that it is "ridiculous nonsense" for any maker of foundation to claim any advantage for that having such heavy side-walls as necessitates no addition from the bees in order to complete the comb; for the heavier the side-walls the more costly the foundation (buying wax at 50 cents only worth 25!), and the more labor for the bees to break down and "remodel," while, all the time, the wax they are secreting is being wasted!

Mr. Dadant, by-the-by, says, *in effect*, that it is as natural for the bees to secrete wax in a flow as it is for fed stock to lay out fat. This (though not stated in those exact terms, yet distinctly implied) is equivalent to an admission that while engaged in breaking down and remodeling the foundation, the bees *are* secreting (and *washing*) their own wax. Here Mr. Dadant is at once with Mr. Simmins, though he won't admit it in a many words. But he is at variance, I see, with Mr. E. T. Abbott, who says that "foundation saves the time of the bees in secreting wax." Is Mr. Abbott quite sure that while the bees are "remodeling" the foundation they are *not* at the same time secreting wax? He he, in accordance with Mr. Dadant's advice to myself, experimented before writing? Mr. Simmins *as* experimented; he is a notedly careful and observant experimenter; and he asserts, or at least with much reason assumes, that the bees during the flow are secreting wax all the time, and are prepaed to give it to us free gratis, for nothing. But no, we prefer furnishing them with foundation at 50 cents per pound and allowing them to drop there own wax on the floor-board, or outside, thus adding the market value of the honey consumed by the bees in making this lost wax (say 40 cents) to the cost of every pound of embost wax we so extravagantly purchase for them! There is more in this matter of naturally built comb *vs.* foundation than at first sight appears; Mr. Dadant says, or implies, that only by the use of foundation we can hope to secure straight combs. Now this means using full sheets, and for the practical honey-producer the times won't run to it. Personally, I find I get perfectly straight combs built from starters built, too, on wired frames, and it is very seldom that the bees do not include the wires right in the septum; and even though they should be now an then a trifle out, and not exactly "as level as a board," what does it matter? They are good enough for all practical purposes, and times are too hard to humor the eye

at the cost of the pocket. That straight combs are not so much the result of using full sheets as of using separators.

Mr. Dadant advances, as evidence of value, the "enormous sale" of foundation. Yes it may be *relatively* enormous, but I doubt if it is really so enormous as compared with the enormous number of apiaries in Canada and the United States. This number is being largely augmented every year, and the new hands, the novices, no doubt use a vast deal more than they really need to, even as they take care to supply themselves with every fad and useless article so enticingly brought to their notice via the supply dealers' illustrated catalogues; but I very much doubt if the old, settled, practical beekeepers use it to anything like the extent to which they formerly did, and that they sell considerably more wax than they buy.

In speaking of the enormous sale of foundation, Mr. Dadant assures us that "the American beekeepers do not foolishly throw their money away." A man need not necessarily be foolish, and yet be induced to invest immense sums which bring him in no proportionate return; and though not foolish in most things, some men like a long time to benefit by experience. The same class of men who buy to-day unnecessarily large quantities of foundation—because most of the bee-books gammon that "they cannot use it too freely" (right enough perhaps, for those who keep a dozen or so colonies for recreation)—have, in the past, spent millions of dollars on the once greatly extolled "Golden Beauties," patent double brood-chamber hives, and on endless appliances and contrivances now obsolete, without which, they were at one time under the impression, they could not profitably carry on their pursuit. The wheel is always a-going round; that which is a-top to-day is at the bottom to-morrow.

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Bee Farmers' Committee.

You will receive circular from Secretary in course of ensuing week.

Questions

299.—Can uncooked fruit be kept in honey?
300.—Have you had any experience with preserving fruit in honey, and with what success?

J. BALLINGER.

301. Do lizards eat bees?
302. Can bees produce wax any time?
303. How long do bees live? A new beginner tells me to prove the length of bees' lives, he has painted some of his, and he goes and waits at the hive now and then to see if they are there, he tells me he has them painted for six weeks now and they are there yet.
304. I am slightly troubled with grubs in my bees. Some beekeepers may give me a remedy. The grub gets under the capping over the brood nest and eats way round and round until it destroys the comb and kills the young bees.

305. What is the reason a young swarm after half filling a box of brood, and then leaving it, nothing visible troubling them to my knowledge?

T. BOLTON.

306. Has it ever been noticed before that bees do not winter well on Grey Box stores?

307. Could such severe losses as Mr. Beuhne's result from poison, either natural, artificial, or of malice; or from bees having access to poisoned sheep washes for water?

308. W. S. H's experiences, page 186?

309. Are the present system of prizes for competition offered at Shows in N.S.W. inducive or otherwise to bettering of the local honey markets? Suggestions are wanted.

A. A. ROBERTS.

299. Had no experience but would think not.
300. No experience.

301. I do not know. I do not see them about the hives if they do.

302. It all depends on the condition of the hive. If the hive is strong they can be made to produce wax at any time by feeding but it would not pay.

303. I have made no experiments in that direction. A good deal would depend on circumstances. If a good honey flow was on and the weather favourable, I think there would be very few if any bees left in six weeks that were painted. On the other hand, say in winter when the bees only have an occasional fly, they may live six months.

304. If the enquirer has black bees, get Italians, and if he has Italians try another strain as I know some Italians are nearly as bad as blacks. I once had a queen I imported from

Italy and her bees were as bad as black bees to allow the moth worms to take charge of their hive.

305. Its hard to say. Perhaps they were starved out.

306. Have had no experience with grey box.

307. Quite possible. Bees can be poisoned as other insects.

308. Probably the queen was old or worn out, or she may have been injured, most likely the latter.

309. Our local show has certainly done a lot towards building up our local market, but unfortunately it has been broken down again by cut-throat prices by the beekeepers themselves. To-day we get the same price for 4lb tins of honey as we used to get for pickle bottles that hold about 1½lb. There are prizes offered at some shows that never should be offered. I would suggest that the New Bee-Farmers' Association or the National Association draw up a schedule and submit it to all Agricultural Associations, asking them to adopt it wholly or in part.

AUSTRALIAN YANKEE.

299-300. No experience.

301. Never saw them.

302. Yes; if they have sufficient food, not otherwise.

303. I think that the length of a bee's life depends on the amount of work it does.

304. Surely you must know that these "grub," are the larva of the bee-moth. Pick them out and use the trap that I described some years back in the pages of this journal.

305. Never had such a case, but would say that the hive must have been too hot.

306. My bees have wintered on Grey Box honey for the past eight years and always winter well.

307. That is my opinion. It is the most easy thing in the world for an enemy to do.

308. I have had similar cases and always thought that the queen was in some way deformed, so that she could not retain the spermatozoa. That is when the eggs all produced drones. Good fertile queens will often lay a number of eggs in a cell, when they are cramped for room.

309. I take very little notice of the Shows.

G. SKINNER.

292. Yes.

294. With excluder.

J. THOMPSON.

299.—No. Water in fruit will ferment it.

301.—Don't think so.

302.—Only when honey flow is on.

303.—In a honey flow six or eight weeks. Possibly, ordinarily six or eight months. Queens up to four or five years.

304.—Keep Italian bees, and look over the combs occasionally to pick out any grubs to be seen.

305.—Sometimes they will do so when short of stores.

306.—Never heard—perhaps it may be so. Would there be more pollen to get sour with such?

307.—May be natural poison from fermented pollen.

308.—If a young vigorous queen has not sufficient worker bees to attend her, she is apt to lay several eggs in a cell.

309.—You want good attractive exhibits of honey, as it is that you want the public to buy and consume.

QUESTIONS NEXT MONTH.

310.—Is there any reliable test for Honey Vinegar to show when it has reached the true point of perfect vinegar, other than the hydrometer?

BEGINNER'S COLUMN.

3.

For brushing bees off combs, we find nothing better than what is catalogued as bannister brushes.

We have quite discarded wire in our frames in our apiary. With a full frame of honey the wire stretches. Horizontal sticks are much better.

Don't put frames with brood sealed or unsealed in the extractor. If unsealed it is thrown out, and does not improve the honey. If sealed, then is the time legs and wings are developing, and the whirling round must injure them somewhat. No matter if honey is about such brood. Keep that as a natural reserve.

To CLIP THE QUEEN'S WING.—Seize her carefully by one wing with thumb and finger of left hand. Then cut other wing with sharp scissors, being careful not to cut legs or otherwise injure her.

The difference between Italian and black bees. The Italians are more energetic, and keep moth worms in check. With comb honey the blacks make the comb look whiter, as they leave a small space between the honey and the cappings. The Italians leave no such space, and the combs have a greasy or dirty look, though the honey or wax is none the worse.

When receiving a queen to supersede a black or old one; after killing queen you wish to supersede, place new queen in hive in such a position she will get the full scent of hive, and the hive bees can become easily acquainted with her without being able to injure her. Twenty four hours after turn up a corner of the wire cloth over the candy, so the bees will have to eat through the candy to liberate her. In another 24 hours the new queen will be mistress of the hive in 99 cases out of 100. There are other ways of introducing, but this is the most generally used and reliable.

QUICKBOURNE.

G. PACKHAM.

Dear Mr. Tipper—Months back I promised myself a chat with you by means of pen and paper, but somehow I never seemed to get time for anything in the way of writing, so time has flown past, and we are nearly at the end of the year—the end of the century too. How much longer my letter would have been delayed I do not know, perhaps to the end of the year, only for being brought to a sudden stop three weeks yesterday. Whilst endeavouring to rope a young cow, which animal had a happy knack of dodging me at her pleasure, I succeeded in driving a piece of wood off the roping pole, 2 inches long, into my hand. It parted about the centre, one half withdrawing, and the other half lodged along the bone of my forefinger. I at once applied to surgical aid, but the doctor after probing for half an hour or more, failed to locate the timber, believing that it had all withdrawn. Forty-eight hours after, I returned to him with a request that he find the missing piece of pole if he had to take the hand off to get it. Well Sir, I was stretched out on a kind of narrow table and put to sleep. I went off very easy, perhaps that was owing to the fact that I had not slept much for the previous 48 hours. I believe it was the soundest sleep that I ever had, but I would not like to say that I awoke thoroughly refreshed. However, the operation was successful, so far as finding the wood was concerned, it was not such a large piece after all, only about an inch long and about the size of a match, but it was enough to get up a good foundation of inflammation, which has brought the linseed meal pot and hot fomentations into use ever since. My word it is a fine thing to have a good nurse when a fellow gets knocked out like this. It is not a very easy matter to write with one hand, and steady the paper at the same time, with the other poulticed and spread out on a pillow, but I know you will excuse my unsteady hand on this occasion under the circumstances.

As for bee news there is not much to relate. The demand for honey is greater than ever I knew of before, but the supply is very short, in fact, this season up to a month since, has been the worst this ten years, and if I may judge by the number of inquiries from other districts it is the same elsewhere. I rather think the bees are getting in some honey just now, though I cannot get a look in, there is a nice smell which is so well known to all bee men, in the evening. Wishing you and all your A. B. B. subscriber the compliments of the season.

[Very sorry to hear of your accident, and glad you are getting better.—Ed.]

MENANGLE.

A. H. VENESS.

One thing I intended to write about before now, was about ants. I was terribly pestered with them until I decided to try a packet of C. U. F. Burke's ant destroyer, since then I have had no trouble whatever. I got one packet and I kept on giving it away to my friends and not one failed, I don't think 1/3 ever done better service. This year I have sent for several packets for friends besides one for myself. I should strongly advise anybody troubled with ants bee-keepers or otherwise, to get a packet, and I am sure they will say it is the best account they can turn 1/3 to. I may also say that I think the A.B.B. is still up to the mark. I don't think I have received one yet that I did not get something useful from. I have been taking it for several years and still find something fresh. The question column is interesting, only one thing I think is a mistake one man answers a question "yes," another man "no." I think that each should give his reason why he answers so positive. It is misleading to some no doubt, if a man takes the trouble to answer a question I think he might add a little more to the "yes" or "no" as the case may be. Not a very good season here this year for honey. I think a good thing would be for you to do, if you could manage the space to give a number of recipes for making things with honey (not all at once). I have seen mentioned prizes given for preserves made with honey. Don't you think this time of the year would be a good time to give a few recipes for preserving with honey. Don't think I want to run the A.B.B.. Oh no!

[All right, many thanks for suggestion.—Ed.]

Send to A.B.B. Office for samples of honey labels.

C. K., Armidale:—I find your bright little paper of great service and interest and would not be without it.

QUEEN REARING.

Twenty years has witnessed a wonderful change in methods of queen-rearing. Twenty years ago all cells were built by the bees, often in nuclei, and the most advanced queen raisers fussed with the lamp nursery. Now queen cups are dipped on sticks fashioned like a natural queen cell, and queen nurseries which hang in the hives are used—thus utilizing the natural heat of the bees,—no danger of getting too hot or too cold; no danger of moth worms; no fussing with workers hatched in the lamp nursery or with other trials. And the new methods give better queens than the old.

Modern queen rearing includes the following steps:

- 1—Dipping the cell cups.
- 2—Priming the cell cups with royal jelly obtained from queen cells.
- 3—Grafting the cell cups with larvae from the breeding queen.
- 4—Getting the cups started and built into finished cells.
- 5—Taking care of the cells till hatched into young queens.
- 6—Getting the virgin queens fertilized.
- 7—Introducing the fertile queens, or mailing them to customers.

To dip cell cups, prepare a stick, preferably of close grained hard wood, as hickory, in size to fit a natural queen cell which is five-sixteenths to three-eighths inches in diameter. It should taper at the point, beginning three-eighths inch from end, "taper rapidly one-eighth inch, and then gradually to the point," which should be slightly smaller than the bottom of a worker cell. This narrow bottom cell is preferable to the wide bottom. Cells dipped less than one-half inch will be accepted, but one should gradually deepen them as he becomes skilled in transferring the larvae into deeper cells. Make first and last dips full depth; second and third dips less, to give strong base to cell. Fasten to sticks or combs by dipping in melted wax, and they are ready for use.

Next thing is to supply with royal jelly and with larvae. Procure the jelly by

collecting some unsealed natural queen cells that are not yet sealed. These should not be too near ready to seal. It is better to use jelly that is fresh. Dip it out of the cell with a broad-pointed "toothpick" made from a small feather; insert the toothpick in centre of the dipped cup, and push off a fair sized drop with the small end of the feather stripped and cut off square. A fair drop of jelly does as well or better than a large quantity. Its purpose is two-fold—it feeds the larvae till the bees size up the situation and accept the cell cups, and it suggests to the bees that here is a sure-enough cell cup and no mistake.

Next, procure a comb containing young larvae from your choice queen. With quill made like a toothpick, except that the point should be one-eighth inch broad, square and curved, transfer a small larva—the smaller the better—into each cell cup, placing it on the drop of royal jelly. If your eyesight is not good, you can shave the cells down with a thin sharp knife. Slip the quill under the larvae (as it floats in the milky flood) without touching it, and, with the larva resting on the point of the quill, barely touch the drop of jelly in the bottom of the cell cup. A little practice makes it easy. The cell cups are now ready to be given to the bees.

To get these artificial cups built into good cells, beginners had better adopt the following plan at first. Later on they can learn by experimenting how to get good cells built over queen excluder in a full colony with a laying queen below.

Make a strong colony queenless the day before. About five hours before priming the cell cups with jelly and transferring the larvae into them, go to this strong queenless colony and take away all their brood, putting it over an excluder on some other colony to be fed and cared for. Then five hours later give the prepared cups, and, if no honey is coming in, feed sugar syrup liberally. Depriving of brood for five hours causes the nurse bees to have an abundant supply of food, disposes the bees to accept eagerly the

cups, and prevents cells from being started that are not wanted. The best result is secured by heavy feeding of the young larvae. As soon as the cells are sealed—in about 5 days—the brood may be returned.

In nine or ten days the cells may be put in a queen nursery or given to nuclei formed at least two days before, or made queenless two days previous—to remain till the young queens are hatched.

To make a queen nursery, get out two strips one inch wide, one-fourth of an inch thick, one as long as the top bar, and one as long as the bottom bar of your brood frame. Take a seven-sixteenths or half-inch bit, and bore holes to match in these two pieces about one inch apart. Then make a saw kerf $\frac{1}{8}$ inch depth just half way between the holes on what is to be the bottom of the top bar and what is to be the top of the bottom bar. Wide top bars, when not too thick, answer for these.

Next get out some pieces of wood veneer, ordinary wood separators, or tin, one inch wide and two inches long. Then get out two end pieces one inch square and two and one-quarter inches long. Nail the long pieces to these like a frame, slip the wood veneer or tin pieces into the saw kerfs, and tack wire cloth over both sides. The holes in the top bar are to receive the sealed queen cells, those in the bottom hold provisioned stoppers and serve as exits (or entrances.) The points of the cells should be smeared lightly with honey, put in the holes in the top bar, and protected either by wire cloth arched over their bases, or else by tacking a strip of veneer to strips one-fourth or one-eighth inch thick and three-fourths inch wide—thus making a sort of trough which may be fastened with wire on top of the top bar, excluding all bees from the base of the cells. For the lower holes make provisioned stoppers. Get a board about two inches wide with the grain, and with a bit one-eighth inch smaller than the one first used, bore holes with the grain about one and one-half inches deep. Use a straight grained piece so the holes can be split off and then whittled into size

and shape to fit the holes in the bottom bar.

Make "good" candy of powdered sugar and honey, not quite so stiff as for queen cages, fill the holes half full of the "good" candy, ramming it down hard, put in one large drop of honey, and finish filling the hole with candy. Stoppers thus provisioned will feed the young queens for eight or ten days, if need be.

The apiarist thus equipped can produce virgin queens at will. Getting these introduced and fertilized is another story.—S. P. Culley, in *Progressive Beekeeper*.

HONEY VINEGAR.

How to make a First-class Article for Market.

MRS. A. J. BARBER, in *Evenings*.

Use about one pint of honey to the gallon of water (you will soon be able to tell by the taste when it is sweet enough). Put it into a keg or barrel with a good tight head, and leave a hole not larger than one inch for ventilation. Keep it in a warm place and put in some good vinegar or yeast to start it. After it gets to working, draw off a pailful now and then and pour it back; or if you have more than one keg, pour from one to another. It helps new vinegar to put old vinegar into it; but it spoils the keeping qualities of the old vinegar to put fresh vinegar into it.

We save all the washings from the extractor, tank, strainers, and cappings, for vinegar. We wash the cappings by pouring warm water through them again and again, until about all the honey is out of them. They are then rinsed by pouring a pail or two of cold water through, when they are in fine shape for the wax extractor. The water is all put into the vinegar-barrels. It took us two years to get really good vinegar from the start in new barrels. Now that we have our old sour barrels and good vinegar to start with we can get good vinegar this season from last year's washings. For the last four years we have made from four to twelve barrels each year. We have twelve for market this year, and

now at the last of July four new ones coming on for next year. We expect to make several more before the season closes. Each barrel should be cleaned every other year. Unless this is done the "mother" will begin to decay and break up, making the vinegar flat in taste and muddy in colour. The barrels that we started vinegar in this spring had the sweet water put in with the remnant of last year's saleable vinegar. Next spring the vinegar in them will be drawn off and put into clean barrels to keep until sold. When we get an order for a barrel of vinegar we draw off again and put into a clean barrel. By this time there is but little "mother" forming, as the vinegar is ripe and will keep indefinitely.

We have a house specially for our vinegar. It is a double-wall frame with a ten-inch space between walls, packed with sawdust. The ceiling is covered with several inches of sawdust, and the vinegar keeps nicely all winter. We put the barrels into the house in November, and take them out in April. They stand in the sun all summer.

When we take them out we find which barrel has the best vinegar. The vinegar is drawn off and put into a clean barrel. The head is then taken out of the one just emptied, and it is well scrubbed with water and a stiff broom. When clean it is reheaded, and the contents of the next best barrel drawn off and put into it. Thus the barrels are cleaned and the vinegar put in shape for market. We have a long low bench or platform for the barrels, where they stand in two rows. The first barrel drawn off is placed at the east end of the south row. That is No. 1, as it is the first to be ready to sell from. The next barrel drawn off being next best is placed next to No. 1 on the row, and is No. 2. So we go on till we get to No. 12. When we sell a few gallons from No. 1 we draw from No. 2 and replenish it; draw from No. 3 and fill up No. 2; from No. 4 and fill No. 3, until we have gone through and left the empty place in No. 12. When No. 12 is empty, or nearly so, we fill it with sweetened

water again, and it makes No. 1 for next year. Nothing helps so much to make vinegar clear and sparkling and sharp as the working from one barrel to another. It seems to act like kneading on dough. It sounds, to tell of it, like a lot of work; but, really, when one has good faucets in all the barrels it doesn't take long to run a few pailfuls from one to another of the whole lot. I try to get at mine once a month, and oftener when we sell a large quantity.

I believe the secret of success in the bee-business lies in looking after every part of the business, and saving everything produced; and what cannot be marketed as first-class honey should be turned into first-class vinegar.

I have been asked if honey vinegar will keep pickles. I have put up quantities of them in the last three years, and have never lost any, but have sold a great many, both of whole and mixed pickles. We are using mixed pickles now that were put up last August, and they are as firm and brittle as they ever were.

If the vinegar is old enough, and has been properly handled, it is of the very best quality for pickling or anything else that vinegar is used for.

CORRESPONDENCE.

G. H. A., Inverell, :—Busy extracting, honey coming in fast, and of very fine quality, have another fortnight extracting ahead of me. Hoping you are doing well.

J. S., Pampoolah :—The beekeepers on this river are very much pleased with the stand you are taking re Foul Brood Act. For cool Australianism, I recommend the N.B. A., of (5) five.

T. M. H., Lismore :—Weather very hot and dry. Rain is badly wanted. Honey season so far only middling but a fair flow on just now. Hoping you are having a good season.

G. A., Cobbitty :—We had a very good honey flow up here last year, got 23 cwt. from 13 hives. I have got 30 hives this year and have extracted 15 cwt and expect to have a lot more yet.

T. P., Candelo :—The season here promises to be a fair one. I have taken several sixty pound tins of honey already and expect a heavy flow shortly. At time of writing it is raining, which I hope will increase the honey flow.

The "Beekeeper's Record" says :— Well pressed heather sections fetch from 12/- to 12/6 per dozen wholesale, and pressed heather honey in jars about 9/6 per dozen. Second grade stuff is less than the above prices.

O. L., Sutton Grange, Victoria :—I look forward with interest to the arrival of your little journal the A. B. B., every month, out of which I gather much needed information for myself as a beginner with the frame hive.

T. H., Wagga Wagga :—This year I have bred a lot, and have requeened my hives with the exception of a few. My bees were never better. Honey is coming in fast and the quality is as usual very good. Forest gum is blooming but river gum is not. Both bloomed in '98.

R. L., Narrawa via Goulbourn, :—It has been a splendid year here for breeding bees, grand weather. Just a little more than sufficient flow for breeding purposes, but until the last week or two no surplus honey. With regard to the Foul Brood Bill which you requested an opinion on, I don't see what benefit any practical beekeeper receives from it. No man that gets his living by bees is going to allow Foul Brood to remain in his apiary, bill or no bill.

J. C. H., Rosebank :—Bee matters are very quiet with me this season. I have had no honey worth speaking of up to the present. There are however indications of an improvement. I wish to add that I fully endorse your action with regard to that proposed Foul Brood Act. If we are to have such an Act let it be formed by practical bee farmers, not by some one looking for a fat billet. Personally I can't see what good such an Act will do, if a man gets foul brood among his bees he is the man to cope with it, it is his own interest at stake. Foul brood I am happy to say is unknown here.

W. Abram, Beecroft:—During the last week honey is coming in fast and every prospect for a continuation. I ought to have corrected a few errors on page 165. For instance it reads: escape impregnation; should read *impregnation*. Then carniolan and leather included should read *heather*; and Queen Bee Journal should read *Teeman Bee Journal*.

S. G. F., Mundarloo:—Out of about 10 queens introduced before swarming, I lost every one. When the bees swarmed the queen would not leave, and after two or three attempts was always carried out a corpse although she had been introduced a month before, and still any queens that (so far) I've introduced after swarming, I never lost one; mind it may have been my fault, but I cannot see why?

Shall we call this a pretty little query. A young queen does not want to swarm, so much as an old queen. Would a natural time for queen to go out with a swarm always be the same as from swarm to swarm. Perhaps some of our experienced readers will enlighten.

W. H. H., Emu Plains:—My apiary is in excellent condition this season with a fair amount of honey coming in. The blossom has been heavy on the mountain

this spring, but for some reason the flow has not been so heavy as I expected. Swarming started briskly in the early part of the season, but checked during the time when the dry westerly winds were on, most of the colonies with old queens supplementing instead of swarming. I have had a successful run with queen rearing, and all introductions have been successful from the start, my only loss being a newly purchased select tested breeder, introduced to hatching brood, and that was lost through being attacked by small black ants. I have had one great misfortune in the loss of a young and very useful horse, that was stung to death by a passing swarm about 6.30 a.m. one morning. The poor animal must have had fully 4,000 or 5,000 stings, and died in a few hours from the effects of the poison. Hoping we shall have a successful meeting.

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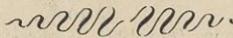


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DECEMBER 28, 1900.

The Australian Bee Bulletin

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