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THE AUSTRALIAN Bee Bulletin.

A MONTHLY JOURNAL, DEVOTED TO BEE-KEEPING.

VOL. 7. No. 82. JANUARY 28, 1899. PER COPY, 6D

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A JOURNAL DEVOTED TO BEEKEEPING.

MAITLAND, N.S.W.—JAN. 28, 1899.

IN the Northern part of New South Wales, away from the coast, the box flow is over a month earlier than last year. The apple-tree is now out, the honey with its dark color and burnt disagreeable taste being not accounted of value. Blended with lucerne or other light honey it may pass. Otherwise it is better to leave it in the hives for winter, as there will apparently be no white box winter flow, and in our own case, do not anticipate any yellow box flow till next October. The amount of young foliage now coming on the yellow box trees that have bloomed give promise of a good flow at that time. Attention should therefore be paid to re-queening and increasing stocks by artificial swarming. So much has appeared in our pages from time to time on queen-rearing that we fancy most of our readers should be well up in the matter. Perhaps a few words may not, however, be out of place. Only young nurse bees supply the food for larval or queen bees. The greater number of young bees the better the queens. If a hive is placed in a position that it has a great number of young bees with no larvae of any kind or age to feed, or a queen in the hive, all their energies will be devoted to the raising of queens from larvae not more than 30 hours old that may be given them. Be sure it is not more than 30 hours old, otherwise good queens will not result, as it is then well on its way to form worker bees and will not make the best of queens. Hives formed now with good young queens will have time to get strong before winter sets in. On the tenth day after placing larvae in queen raising hive, the queen cells may be cut out, placed in a cell protector with spiral attachment so she can come out into it without being lost in the hive, and either kept in the queen rearing hive till wanted, or given to a queenless hive, where on being looked at two days after, the young queen, now out, may be liberated in the hive. . .

The way we make artificial swarms is get a new hive, put in it one frame of brood, all ages, place on old stand. Remove old hive with bulk of brood and young bees to a new place. The flying bees will swell the one frame to a fair swarm If desired kill the old queen, and place queen cells as above described in each hive, looking two days after to see if the young queens are emerged from the cells, when they may be set at liberty.

A very fair tea is made by mixing bran and honey, and drying same in an oven. No duty is paid on it.

Swarming is said to have been prevented by closing the regular entrance for 18 days, making an entrance in the super.

A farmer up north had a ton of honey. A local dealer called, offered him £13 for it which he took. The dealer got £22/10/- for it in Sydney. £9/10/- easily made less carriage.

Large tracts of land round Tamworth have recently been sold, and are being cleared for cultivation. This means the destruction of a grand lot of box and other honey producing trees. We deeply sympathise with the local beekeepers.

Previous years the Murrurundi beekeepers have sold the bulk of their honey to one local buyer. That man this year can't take any as his buyer is overstocked already. The Murrurundi beekeepers are troubled.

An old beekeeper from Murrurundi paid us a visit lately. He said that years ago when bush bees were plentiful the tree swarms with most honey were those that overlooked the great plains, not those in the centre of the forest ridges.

Owing to the want of Railway accomodation at the Redfern Railway terminus the Railway Commissioners have instructed that all goods arriving from the country must be removed before six o'clock on day of arrival, otherwise demurrage will be charged.

Mr. A. Gale lately gave a demonstration of transferring bees from box to frame hives before pupils of the Hawkesbury Agricultural College. He used no veil, and the ease with which he accomplished the work, and the freedom from stings were quite a revelation to the onlookers.

As we have had several enquiries respecting the Messrs Haddon and Co., of London, England, whose communication and prices of honey and wax we gave in the November number, we have great pleasure in giving the address of that firm, viz:—Messrs John Haddon & Co., Salisbury Square, London, E.C.

When queen raising, pick a strong hive—blacks or hybrids preferred—unqueen and leave so for some five or six days. Then open and destroy all queen cells. Give larvae not more than a day old from your choicest queen. Result—Best queens in abundance. In ten days time cut out queen cells and put them in protectors in nuclei or hives from which you have just killed inferior queens. This is our plan.

In the day time when honey is being gathered, a little smoke will enable bees to be handled without any trouble. Be careful, however, in early morning or late in the evening, as all the workers are then at home. Also when honey is not coming in, as robbing is so liable to be started. The bees commence fighting to defend their stores against the robbers and everything else gets a share of the stinging.

Some four months since we sent to a commission agent in one of our largest Australian towns, 40 tins honey, each weighing on an average 62½ lbs., or 60 lbs. honey per tin. Two months afterwards we got a cheque on account. Four months afterwards got a settling up cheque. After noting all the usual charges, we noted also that we were credited with 40 *tins containing* 57 *lbs. each.* We are waiting for a reply where the 3lb per tin has gone to.

Mr. J. Trahair has hit on a new and novel way of increasing the consumption of honey in Sydney, and suburbs. He has engaged a number of young women canvassers, who starting out after breakfast in the morning, with honey samples in bag or basket, call from house to house soliciting orders. The occupation is respectable and the young women make fair wages. Hooray for good man Trahair! and good new ideas.

We could take a lot of honey from our hives now, but knowing the quantity at present in stores in Sydney, the dullness of sale and the low price, have resolved to leave it on, and devote our time to requeening all our hives with young queens from the best stocks we have, rearing them under the best conditions—the greatest amount of young bees with the smallest amount of larvae for them to feed or attend to—in fact that larvae to be only the choice larvae we give them to rear queens with.

Mr. Hallewall of South Australia, suggests we should give some dates as to the times of the year the different gum trees and other great sources of honey yield their harvest. This is a puzzling order. Trees have different names in different localities, they bloom some earlier, some later, according to the latitude, or the weather. Some species bloom every year, some every two or three years; some take a rest every third or fourth year. In our own neighbourhood yellow box has bloomed three years following, this year earlier than the two preceding, commencing in June and over early in December. Two years ago it commenced in October and was not over till February. The two first years it bloomed very little, this time heavily, commencing in June. Four years ago apple trees gave an enormous yield. A little only each year since. Perhaps some more of our readers will contribute some information of this class.

QUESTONS.

E. J. R.,

188.—What is largest comb any bee-keeper has handled or seen of our ordinary bees (Apis M. and L.)?

F. W. S.

189.—Why is the honey and pollen of poisonous plants like the foxglove not detrimental to bees visiting the flowers?

F. BOLTON.

190.—I found 8 queen cells in a hive after a swarm issued, and when cutting them out I noticed all the caps were sunken in and the contents brown and rotten. Can you give any reason, as the queen that left with the swarm was healthy and all the rest of the brood?

191.—Are Autumn reared queens better or worse than those reared at other seasons?

NO NAME.

192.—When robber bees are about a hive, what method do you adopt for opening the hive so as to prevent the robbers getting in?

193.—When robbers have effected an entrance into a hive, what is the best way to get rid of them? I have tried contracting the entrance, also putting wet grass over the entrance, but without avail?

194.—What is the best way to get rid of the wax moth from a colony of bees, when it has been in for any length of time.

195.—How often should you look through your hives.

196.—Is there any danger of bees leaving their hive if smoked too much.

197.—Which is the best extractor for a small apiary.

F. W. PENBERTHY.

188.—Six feet long in a bee tree, and cells 3 inches deep in a section. Cap that somebody.

189.—The plant that produces poisonous honey and pollen would soon become extinct.

190—First symptom of pickled brood.

192.—Open the hive at sundown.

193.—Cover right over with the fly of a tent, or a sheet, or better still "hessian" large enough to lie on the ground all around for two or three hours.

194.—Clean them out, strengthen the hive and put in an Italian queen.

195.—From 2106 times a year.

196.—Bees don't need much smoke if you don't jar the hive or frames.

197.—Two frame Cowan.

F. WARD.

190.—I have noticed a similar case. My explanation is—The bees swarmed when queen cells were merely started, and there were not enough bees left to care for the larvae, which perished; the cells being outwardly completed by the bees, perhaps for the same reason that makes them sometimes cap empty cells when empty combs are substituted for full ones at the end of a honey flow. Young larvae is often allowed to perish after a first swarm has issued, when the apiarist practices removing the old hive and locating swarm in its place. The hive removed thus looses the stragglers from the swarm, and the bees that are out foraging, and as it may contain practically none but just hatched bees, the reason why the young brood is sometimes neglected is obvious.

191.—The time of the rearing has no influence on the quality of queens, provided the conditions are right; a good colony of bees in this climate can rear a good queen in winter if it be necessary.

DRONE TRAP.

188.—I have seen combs in honey tins six to seven feet long, but if your inquiry has reference to frames of comb, I extracted from several weighing up to 12½lbs. last season, R.H. on wired foundation.

189.—I presume that the poisonous principle of such plants is not contained in their honey and pollen.

190.—I cannot definitely recall a similar experience just now.

191.—With our local conditions as to flows and climate, and with our treatment, autumn queens every time for me.

192.—I prefer not to open at all at such times, but if obliged to do so without a tent would open as late in the afternoon as practicable, and close up and leave all snug for next morning.

193.—I have used a strip of rag saturated with turpentine on the alighting board, the homing bees passing in over it, but the robbers not liking it apparently. I have gained the same effect by using new paint on cracks and joints, such as robbers try to enter by. A writer in one of the back numbers of the A.B.J.—Since writing the above I have turned up "Notes and Comments" by Rev. E. T. Abbot, in A.B.J., May 30, 1895, in which he says—"At such times I have not found anything better than a good hand spray pump. Put a little carbolic acid in some hot water and mix it thoroughly. Put this mixture in a pail of cold water and give the hives and bees a good sprinkling and it will generally put a stop to the robbing for the time being." A pane of glass set so it will lean

against the front of the hive that is being robbed is also a great benefit, as it confuses the robbers and prevents them from finding their way into the hive. I saw this in some of the journals several years ago, but do not know to whom the idea belongs. Dr. Miller, I think mentions an exchange of colonies as a proposed cure, if you can locate the robbers.

194.—Much depends upon the amount of damage done to the combs. You can make no mistake by Italianizing or Ligurianizing, which I presume you have not yet done. Meanwhile you may help matters and save a few weeks by exchanging or at any rate inserting a comb or two of Italian hatching brood, the bees from which will attend to the moth while the brood from the introduced queen is being perfected. I have practiced this method at times while Italianizing.

195.—The less the better.

196.—I hardly think so but as a rule use the smoker as little as little as possible.

197.—I do not know the dimensions of "a small apiary, but my choice of extractors would be a two frame Cowan Reversible, soundly made of 24 gauge galvanized iron, with deep storage tank. My own is set upon and screwed to a stand high enough to take a 60lb. tin under the gate, and large enough to permit me to stand at the back and steady by my weight while turning the handle.

ELLIOT J. RIEN, M.H.A.C.

188.—Mr. F. G. Daley and I robbed a swarm in St. Peter's Church, Richmond. Several of the combs filled the space in a brick turret, being 30 inches long by 18 wide by 2 inches thick. This is the largest comb I've handled.

189.—Are the honey and pollen themselves poisonous ?

190.—To free the comb of bees I have a habit of giving strong combs a jar on the ground, forgetting there were queen cells on at times. They suffered in a similar manner to Mr. Bolton's queens when not far advanced. Also I have had cells in the nursery just lately; the queens not appearing in due time, I have found the cells almost empty, a small insect being the cause.

191.—Have not observed any difference.

192.-I don't open at any price. If forced to then I should do it in the honey house, or under a bee tent.

193.—Play on the hive for a time with a fine spray of water after contracting entrance, or exchange robbers with robbed swarm. If this is not effective I would shut up hive, robbers and all, and remove to a cool place. Keep them so till all excitement has cooled down, for a day or two or even more. If you keep the hive in a cool place and well ventilated no harm will result. Then put out on a new stand again. Of course this can only be done with one or two cases, but it will cure.

194.—If it is as bad as some I have seen, scald hives, floor body and cover, and put bees on new combs; melt down old combs. If the combs are not too far gone, pick out the grubs and cocoons, &c., you can see, and then hold the frame up by one hand, and with a lead pencil or little stick tap the frame lightly; you will be astonished at the number of grubs which will fall out, tumbling over one another in their haste. Then give to your colony. If blacks, introduce an Italian queen, and you will not be troubled with the wax moth in future. Then go through the hive every few days to help the bees in their work of clearing up.

195.—Roughly about once a week, but you can tell very well from the outside how your bees are doing when you get used to them. In winter not at all; use judgment.

196.—The man who uses a smoker on a swarm enough to drive them out deserves to lose them. Sometimes offensive things are burnt in the smoker have that effect. Use as little smoke as you can is a safe rule, unless they are hybrid Italians and go for you; then smoke them, smoke them. I have had a swarm collar the smoker and all.

197.—The Cowan is none too good if your means will allow, as unless you have limited time and sense, you are not always going to have a small apiary. The Novice next. Don't bother with the Little Wonder; it is too slow.

J. KERR.

189.—It is difficult to answer. One of nature's secrets I believe. Plants in some respect resemble animals and insects. The body of the snake affords food for the aboriginals, the head containing the poison glands is rejected by them. The beautiful flowers of the Laburnum tree yield honey and are favourites with the bees. If I remember correctly neither the foliage nor flowers are poisonous, but the seeds undoubtedly are, as children have been poisoned on several occasions through eating them. The bee itself contains honey and poison at the same time.

191.—Queens, judging by the English catalogues, are considered more valuable if bred during the spring and early summer months, and fetch a higher price than those reared in the autumn. I would prefer queens, animals, or birds raised during spring to those of the latter end of the season.

192.—A manipulating tent of netting, similar to that figured in A.B.C. of Bee Culture.

193.—When robbers attack a strong hive, a contraction of the entrance ought to be sufficient, but if the hive is weak in numbers and the robbers have effected an entrance in force contraction is of little service; better I believe to remove the hive say into a shed for a day or two, close the entrance with wire cloth, and if necessary increase the ventilation at top of hive in a similar manner. Or you could cage the queen of robbed hive on a comb in the hive, and if the

robbers proceed from one of your own hives just change the positions of the hives, that is take the hive of robbers and place it on the stand of the robbed, placing the latter on the stand of the former. This plan will settle the robbing I believe and it will add a considerable number of bees to your weak hive. You can liberate the queen caged in comb in a day or two.

194.—Should the colony of bees be in a box, transfer them to a proper hive with frames containing foundation. If the combs are not much injured melt them for wax, otherwise burn them and so get rid of moths and grubs. If the bees are in a frame hive, remove a frame or two containing moths or grubs, shake off the bees and place the combs in a strong hive of Italians, removing a comb or two, which can be placed in the hive from which you removed the moth infested combs. Repeat the foregoing next day and until you get all the combs cleaned out. You can rearrange the combs of both hives as the cleaning proceeds ; moths and grubs should be entirely absent in even an ordinary hive of Italians under fair management.

195.—Examine in early spring to see if bees have sufficient honey to enable them to start brood rearing and to see if queen is all right. Examine when flowers are becoming plentiful to see if bees have sufficient room to store the honey in. Examine for symptoms of swarming so as to prevent or otherwise. Examine to see if supers are filled with honey and fit for removal. Examine before winter sets in to see if bees are fairly strong in numbers and have sufficient stores to tide them through. As a rule disturb them as little as you possible can at other times.

196.—Smoke the bees as little as possible or only when they become unpleasantly familiar, or when they become too crowded on top of the frames so as to interfere with the manipulation of the hive. It would be cruelty itself to smoke them to excess so as to drive them from the hive. Use a little only just when required.

197.—Cowans two frame reversible. "The Little Wonder" is a useful makeshift, but there is too much exertion attached to its use. Purchase a proper one at first and you will find it the best.

QUESTIONS NEXT MONTH.

198.—Which do you prefer, the eight or ten frame hive ?

J. KERR.

199 –Does the Porter bee escape with board afford sufficient ventilation for the time when placed underneath a top story full of honey and bees during hot weather ?

200.—What district in N. S. Wales do you consider best suited to bee farming ?

201.—Will Easter week be a good time or too soon for the next Convention of the National B. K. A. ?

202.—A protected queen cell put in a queenless hive. Will the bees tear down cells they have started previously or wait for the emerging queen to do so ?

PLAN FOR WHOLESALE FEEDING BEES.

MRS. JENNIE ATCHLEY.

We made a trough about 12 inches wide by 10 feet long, and 6 inches deep, and made a float or frame just large enough to fit inside the trough, so it would float up and down, as the food was taken out or poured in, and left a space at the end of float for pouring in food. The float is made out of three-eight material, and filled crosswise with slats three-eighths of an inch apart, or not closer than one-fourth of an inch. The bees can take the feed from between these slats, and not even get their feet into the food, and there is no chance for them to get into the feed, unless they crawl headlong into it, which they will not do, as they can get the feed without doing that. The frame of float and the slats are about 1¼ inches deep, and the feed will rise up between the slats, and the bees will take every drop of food, and scarcely a bee get lost. A funnel can be used to refill the trough, as a hole can be left at one end of the trough, but must be kept covered up when not pouring in food, as the bees will rush in if not kept tight. We have fed about 4000lbs. of syrup and honey, mixed, to our bees this season, and after we fed the first day, and got the trough and float adjusted we did not kill but few bees. We mixed the feed about 3 parts sugar syrup to 1 part honey, and the bees took it well. We put in two measures of sugar to one of water, and brought it to a boil, and then added the honey, and it makes a food just as near right as we could well get it.

A trough of the above dimensions will be large enough for 100 moderately strong colonies. At first you will think the trough is not large enough, but, as soon as the bees are well started, and some going and some coming, and others loading, it will give plenty room. To get the bees started all at once we took a little of the food and raised the covers of the hives and poured it right on the bees and frames, and went over the yard as quickly as possible, and in less than ten minutes the air was roaring with bees, and they would seem to be inclined to rob for a few minutes, but soon they would all find the feed trough, and no more robbing, as the hives could be manipulated just as well or better than if there was a honey flow on. We could even leave the hive covers off and walk about the apiaries, and hunt empty combs, and no sign of robbing. One hundred colonies will carry in about 500 lbs. of food in a day. If the colonies are strong 1000lbs. may be fed in a day. If ever you wish to do any wholesale feeding, try the above plan, and I am sure you will like it.

TRANSFERRING BEES.

At the special request of the committee of the Auckland Agricultural Show, N. Z., Mr. I. Hopkins, the well-known apiarist, gave a practical illustration of how to handle bees, and this proved one of the chief attractions on the show grounds. The rough manner in which the bees were knocked about without the least sign of resentment was a revelation to the hundreds who witnessed the exhibition, the object of which was to show how bees and combs may be transferred from common boxes to modern movable frame hives. An unusual feature in all Mr. Hopkins' manipulations is that he never uses smoke or covering of any kind over his face or hands. He simply takes off his coat, turns up the box hives one after the other and drives the bees out of them into empty boxes, and then dumps them down without ceremony in front of a Langstroth hive to which he is transferring them. Another noticeable feature is that the bees are so subdued that they make no attempt whatever to interfere with the onlookers, although the latter are not protected in any way, and may be said to be amongst the bees.—*New Zealand Farmer.*

BEES IN BATHURST DISTRICT.

The following clipping from the *Lithgrow Mercury*, has been kindly forwarded to us by Mr. Wallace, of the *South Coast Herald*, Illawarra :—

"Mr. J. Dobbie, J. P., writes:—In last *Mercury* you quote Mr. John Hughes, of Sussex Farm, as the first who brought bees over the Blue Mountains - in 1839. You also quote the first person who introduced bees to the Bathurst district was Thomas Arkell, Esq., of Charlton, in 1842. Now, both Sussex Farm and Charlton are in the Bathurst district, and Mr. Arkell did probably bring a hive in 1842. In the summer of 1842 while passing through the Glanmire estate, six miles east of Bathurst, I was surprised to find myself surrounded by a swarm of bees. On inquiry I found bees had been brought to the district a few years before, and the person named, but I am now not sure of the name. I think it was Mr. Hughes. It is clear they were in the district before 1842." (Mr. Dobbie has a memory no less capacious than his knowledge of district affairs.—Ed. L M.)

ROBBING.

As over a good portion of the colony the box trees have ceased to bloom, and the dry weather prevents honey coming in from other sources, the bees, deprived of their forage, seek it where they can, too often from neighbouring weak hives —queenless, or a weaker strain of bees, particularly the Italians on to the inferior black bees; a hive kept open too long for manipulation; honey or syrup laying about too long exposed. When once a hive of bees have adopted robbing as a profession, there is no knowing where they will end. Robbers may be known by the way they fly about a hive,

in a sneaking way trying to effect an entrance somewhere, if not at the proper entrance by rushing past the guards, buzzing about any cracks they may discover. Great confusion will be noticed at the entrance, and if the robbers have effected an entrance, bees will be seen coming out loaded—their abdomen being enlarged with the stolen honey. A little flour thrown on them will enable you to know what hive they came from. Sometimes, however, a conquered swarm will join with their foes, and with them carry out their own honey.

The remedies for robbing are: Contract the entrance so only one bee can pass at a time; place wet straw at entrance; sprinkle some strong odour at entrance; get strips of wood, and so place them that to enter or come out they must have a tunnel with a turn to pass through. If you must manipulate a hive use a tent made of mosquito net or with light wood frame; or cover the robbed hive with a sheet, or remove it to a new location, which the bees will mark on removal of sheet next morning.

ONTARIO BEEKEEPERS' ASSOCIATION.

The following is the annual report of Mr. W. McEvoy, Foul Brood Inspector of Ontario, for 1897:—

During 1897 I visited bee yards in the counties of Welland, Lincoln, Wentworth, Brant, Norfolk, Kent, Huron, Grey, Perth, Oxford, Waterloo, Cardwell, York, Ontario, and Simcoe. I examined 60 apiaries and found foul brood in 34 of them; I found several of the largest and best apiaries in the province very badly diseased through bees robbing foul brood colonies that had been brought from other parts of Ontario and placed near them. Some of the owners of these fine apiaries had invested from five to eight hundred dollars in bees, one man over one thousand dollars, and to get their good apiaries badly diseased through foul brood colonies being shipped into their localities was pretty hard to bear with, but I am satisfied that none of the parties that either bought or sold the diseased colonies that had been shipped knew that they had foul brood at the time of the sale. I also found many colonies very badly diseased through the owners using old combs, that they got from parties that had lost all of their bees with foul brood. None of these men knew that the old combs were diseased, or were not able to tell the stain mark of foul brood on the lower side of the cells. Comb foundation is a very safe and very valuable thing to use, and those that need combs should use plenty of it, and not run any risk by using the old combs from apiaries where all the bees had died. When going through examining every colony in a diseased apiary I marked them according to the condition I found them in, putting one pencil cross on the front of one hive, two on another, and three on all the very bad ones. After we get through examining all the colonies, we know the true condition of things by the number of crosses on the front of the hives. Some of the colonies I advised to be doubled the same evening, and the combs made into wax, and when the work was done in the honey season I had considerable increase made from those least diseased, and as a rule ended the season with more colonies than I begun with and in grand condition. At our annual meeting that was held in London in 1892, I said that my method of curing diseased apiaries of foul brood would in the near future be followed by the beekeepers of Canada and the United States, but it is all the go in far off Australia, and for this nice state of affairs I thank the editors of all Bee Journals. Everywhere that I went in the past season to inspect the apiaries I found every beekeeper pleased to have me examine his colonies, and for the very nice way that I was treated by every person I return to them my most heartfelt thanks. I burned two colonies in one apiary, two in another apiary, and two in a third place, and a number of diseased combs, and three in a fourth locality. The owners helped to burn some of the diseased colonies, and the other beekeepers were consenting parties to have the few worthless colonies burned. I am also pleased with the way the other beekeepers took hold and cured their diseased colonies that had foul brood in the summer. While examining their colonies to see if the bees had enough honey for to winter, some people found things not right, I found it to be pure foul brood. I explained how to cure it and the most profitable way, and put everything in order. My time, car fare and livery hire was $525.00.

At the Ontario Beekeepers Association, Mr. Alplaugh—As I am the inventor of the Solar extractor, probably I can say a little something about it. If you run honey through it time and again, without cleaning your screen or pan, it is going to colour your honey more or less. That is one thing you have got to do, keep the pan and screen perfectly clean, be-

cause every time you melt there is a kind of dark sediment or matter there; the next day that will heap up again and honey passing over that will become discoloured. Another thing, you want your pan just as short as it can be made to catch the drip, so as not to allow it to pass over the dark metal that is under the screen. When I first made them I made them too long and I have eventually shortened them up, and maybe those that some of the members have are still too long.

In a discussion at the Ontario Beekeepers' Association, re using a honey knife dipped in hot water or dry, the majority preferred to use the knife dry.

Mr. Darling, at the Ontario Beekeepers' Association:—I am not a comb honey producer, but I take a few sections sometimes for my own accommodation, or that of other parties, and I have found what has led me to believe that the bees do not build down or draw out comb as fast in sections, as they would in one solid sheet. It has been my impression in the past and I adhere to it still this evening. You know I use the Jones frame and I sometimes drop a sheet of perforated metal and take out my honey at what Doolittle calls the side storey; it is a good deal more difficult to get the bees to draw them out and fill them, than it is if you drop in a sheet of foundation in the frame. If I drop one in the front in order to keep pollen from going in the sections, and if I drop another behind, the probability is that the sheet which is behind will be drawn out and filled before the sections are that are between the two. Why is it unless they hate to work in those little holes.—*Canadian Bee Journal.*

Mr. J. J. Branch, reports:—White box in bloom in Granville, 13 miles west of Sydney.

G. S. W., Cargo, Jan. 6th:—I am now working day and night trying to take care of the heaviest honey flow I ever saw.

A. S., Jindera, Dec. 27th:—Bees are doing well in this district. Honey is coming in fast, but the last two seasons were a failure altogether. I also beg to state I am well pleased with your little paper; no beekeeper should be without it.

F. W. S., Currabubula, Dec. 22nd:—We are experiencing a terribly dry season here. There is very little grass and the water is drying up very fast in most places. If we don't soon get heavy rain we shall be in a terrible state. Bees are having a bad time of it, in fact it is not safe to touch them for robbers.

H. S., Ramsgate, Tasmania, Jan. 10: Just a word to say the season has opened up very wet. The pinkwoods are coming out splendid and should we have fine weather anticipate a heavy flow of honey. Bees are not so strong as they should be on account of so much wet and cold right up to the present time, but we hope for a good flow to make up the deficiency. Do you know of anyone using the large frame and large hives such as the Dadants recommend in *Gleanings?* If so, do you know with what success in Australia?

We do not know of any such. Should there be any, would be very glad to hear.

A. H. V., Menangle, Dec. 27th:—I find a great deal of valuable information in your paper and would not be without it. My bees are doing very well but such a lot of honey is candied in the hives or almost so. Could you give any reason for it being so, unless dry weather would account for it?

The honey must have been capped over before it was ripe.

W. Abram, Beecroft, Dec. 23rd:—My intention has been for some time past to write something on a matter or two in the A. B. B., but I cannot get the time to do so, as the honey flow is something enormous of late and I have more work than is good for me already. Still I do not wish to lose the opportunity to wish you (and all beekeepers) good health, happiness and prosperity in the new year.

CATCHING SWARMS.

Mr. McKnight, at the Ontario Beekeepers' Association.

What I have used for fifteen years is considered to be the best thing of the kind that is used anywhere. Its construction was not original with me; I saw it mentioned or described in *Gleanings* fourteen or fifteen years ago, and I was a comparatively young beekeeper at that time, testing nearly every thing I saw that came along; this is a very simple and cheap contrivance. Those of you who were brought up in the old country will best imagine what it is like when I tell you it is on the principle of a chimney sweep's brush, only a chimney sweep's brush is wire and this is made of wood. Take, for instance a piece of stick two inches square and say two or three feet long, as you please, champer the four edges of it and make it octagonal in shape, eight sided. Cut off a few pieces of lath, rip your lath up the centre, cut them into pieces about two feet long and nail them around on these eight bevels, one after the other, till you get it filled down well, six or eight inches would be quite sufficient. At the other end cut a tin ferrule, put it on the stock, with perhaps two inches or two and a half inches to receive the stick that you put into it. Have in your yard half a dozen or more different lengths of stick that will slip easily into this socket. When your swarm is clustering, that is the best time to do it, but it does not matter; you can do it almost as well after it is clustered. You can see at once what length of stick is required to reach the cluster; take the stick that you have in hand, put it into the socket and as they are clustering put this in amongst them and they will cluster on it every time. I have taken swarms of bees off the top of a big old elm tree; simply by tying one onto the other you can reach away up to where the cluster is. If they are clustered, as very frequently they are before you have noticed them, take your stick again and give a sudden jerk near the cluster of bees till you dislodge them from their resting place. I will guarantee to catch ninety swarms out of one hundred with that simple contrivance. Having them clustered, then you can set your stick on the ground and take it away. When they are all settled upon your chimney sweeping brush, lower your stick, drop the stick that was in the socket, carry home the swarm of bees to the front of your hive and give it a sudden jerk, and there they are.

Salt and vinegar have been recommended as a remedy for bee stings.

THE BIGGEST BEE HIVE IN THE WORLD.

Did you ever see a bee tree with a swarm of bees around it? Well, magnify this about ten thousand times, and you will have a slight idea of a natural bee hive in Mendocino county, Cal. It is a rift in the face of a cliff, and tradition has it that there is a large cave on the inside, where the myriads of busy insects make their homes.

This great natural curiosity is known to residents of the adjacent country as the "Bee Rock," and they have grown to look upon it as common place, when in reality it is the only beehive of the kind in existence.

There is no danger of a person getting very near to this natural beehive without knowing it, for at all hours of the day a swarm of insects hovers about several hundred feet in all directions. An incessant, maddening buzz fills the air that can be heard an eighth of a mile, and serves as a warning not to venture too near. But men do venture near after having first put on a suit of leather clothing, fastened a mask of wire screen about their hat bands, and lighted a good big torch. These precautions are absolutely necessary.

It takes nerve to approach close to the opening in the rock, and the experience is a never-to-be-forgotten one. Bees to

the number of millions of millions will light on the intruder, humming fiendishly and endeavouring to sting him to death. They form a perfect cloud, and the air is filled with a fetid smell and a fine dust that gets through the wire screen, and causes an irritation to the eyes. The tiny insects really show signs of viciousness, and fly into the flames of the torch in countless numbers, as though they intended to extinguish it. Round and round they fly, with a deafening buzz, and strong indeed is the man who can stand the onslaught of the tiny foes for more than a few minutes.

It is almost impossible to make out just where the entrance to this natural bee-hive is. There is a sort of cavern in the cliff that seems to have a crack through the inner wall from top to bottom, but most of the bees hover around a hole about eighteen inches wide, and appear to make that the point of ingress and egress. Many days it is impossible to even see the cliff, so thickly covered is it with insects, and they roll in and out of the opening like a stream of molasses.

During the summer dead birds can always be seen on the ground around the mouth of the hive. They have been stung to death while attempting to fly through the swarms of insects. Four-footed creatures never venture within half-a-mile, seeming to know that death lurks there, In front of the mouth of the hive there is a pile of dried honey that has flowed from the interior. It looks like a heap of molten lava that has been hardened after being discharged from a volcano.

A party of men living in the vicinity claim to have entered the beehive several years ago. They selected a cold day in winter, when the bees were half dormant and poured coal oil and benzine around and into the opening. They then made a big fire of wood, so that the whole cavern was filled with flames. They then poked red hot embers down into the opening, and so killed every bee in it.

But there was not much to see after the men got inside—only a large cave, with the walls covered with wax and dried honey, and enough of the sweetness in pools in the bottom to last a big city for several years. Of course the honey was unfit for use on account of being full of dead bees and ashes from the fire. The men, however, did not linger in the cave any great length of time, as it was foul smelling and stifling. Although countless millions of bees must have been destroyed on this occasion, the next summer they were as numerous as ever, and just as vicious.

Indians of the neighbourhood say that in the "good old days" the bad men of their tribe were bound hand and foot and carried to within a short distance of the beehive by men wrapped in blankets. There the helpless creatures were left to suffer the agony of being stung to death. —*Contemporary.*

HOW TO RE-QUEEN CHEAPLY.

DELOS WOOD IN *Gleanings.*

It seems strange to me that so many beekeepers spend so much of their own labour in trying to save work for their bees. This may do for those who keep a few bees "for fun," but with me it is a matter of bread and honey, or in other words, I keep bees for profit, and I want them to save work for me: Farmers do not spade up their ground to save work for their horses. They make the team plough the ground to save work for themselves.

Perhaps a professional queen-breeder like Mr. Doolittle can afford the time to make artificial cell cups and grafted larvæ; but I am sure the honey producer cannot. Neither can he afford to hunt up queens day after day, to keep those first hatching from destroying the others. I believe that the man who produces tons of honey each year can also produce as fine queens as anyone who does nothing but rear queens, One colony will produce hundreds of the best queens during one season and store a fair amount of honey, and, I think, with less labour than by the Doolittle plan.

I would set apart my two best colonies of Italians, one for rearing drones, and the other for queen cells. To the one for drones I would give a large amount of drone comb. The other I would stimulate by feeding, to induce the swarming fever, giving plenty of worker comb in two story hives. so as to get as large a swarm as possible. This swarm with the old queen I would put into an empty single story hive, and let them build comb in as many frames as possible. After the queen has begun to lay a small circle of brood in several combs I would take her from the hive and give her a new colony. I would then take each of these new combs of brood and cut around through the circle of cells, just in the same ring that the queen lays, leaving the larvae (just hatched) at the bottom of the piece of comb left in the frames, taking off the lower part of frame containing only eggs. These larvæ are hatched, usually, the third day from the time the eggs were laid. The bees are now in their best condition for all kinds of work, and will build queen cells by wholesale, and of the best quality, and will put them on the bottom of this cut comb, which, being cut in the shape of the edge of a saucer, will cause the ends of the cells to spread out from each other as you can spread your fingers apart. This gives room to cut out each cell without injury to any other.

These eggs were laid within a few hours of each other, and will all hatch at the same time, and may all be removed to the nuclei at one time, and the young queens will all, or nearly all, begin to lay at the same time. These queens will be raised in a full colony, under the natural swarming impulse, and will be "the best queens in the world." If one chooses to watch the old colony awhile, many good queens may be obtained from that. Queens raised in this new comb are, I think, apt to be brighter than those reared in dark combs. Advocates of leather-coloured queens should hive the swarm on old combs.

The colony used as I have said will build several lots of cells before becoming discouraged; and by giving an occasional comb of hatching brood it may be kept building cells almost indefinitely. Perhaps one trying to supersede a queen might keep it up longer, but I do not think they would build so many cells at one time as they might do under the Doolittle plan.

I have never been successful in getting good queens started from the egg. My bees, when given eggs only, will wait for them to hatch before starting cells, and by that time they seem to lose their vim, and start fewer cells, and build them smaller.

By remembering that the egg usually hatches the third day, the larva is sealed the sixth day, or nine days from the laying of the egg and that it is sealed over seven days, and that the queen is hatching sixteen days from the egg, there is no watching to do. Queens may be pulled on the fifteenth day, and let run in at the entrance, but I prefer to cut the cells on that day and insert them between the top-bars of the frames, without marring the combs, and let them hatch in the hive.

Please do not think I am trying to offer advice to the professional queen-breeder. I have no such aspiration. I have written this chapter from my own experience, for the benefit of my busy brother beekeepers who wish to requeen their apiaries with as little outlay of labour and time as possible.

NEW LIGHT ON A DARK SUBJECT.

1.—*The origin of Foul Brood is found in a fermenting mass of neglected dead animal matter and excretions, combined with the presence of a weakened colony, breeding and feeding amongst, and warming up to blood heat such neglected matter, which they in a deteriorated state are unable to remove.*

Our scientific friends say at once, "Dead brood can not turn into Foul Brood, and there can be no such thing

as spontaneous generation." It is no use replying that we quite agree with them. Dead brood as they think of it, may remain, and even rot down, and no disease such as foul brood need exist. But, if they will only follow our proposition to the very letter, they may have the same experience that we have done, they will have the same ending to their experiments, and a new light will enter their understanding.

Notwithstanding the expression has many times been thrown at us, we do not support any theory of spontaneous generation, and until our scientific critics will go over exactly the same ground that we indicate in our proposition—and none have done so—they cannot conscientiously assail our position. They rely upon what they know, and what most of us have known since our lamented friend Cheshire's researches have been published on the subject, regarding the action of the *Bacillus Alvei* as a cause of foul brood. Thus what is only a continuating cause is looked upon by many as the origin of the disease.

We do not take it for granted that the micro-organisms so far discovered are any more than the fungoid plant-like growth, which like the latter has the power of continuation by the constant spreading, parting, and breaking up of its rootlets, filling space indefinitely where suitable soil for its rapid extension is provided. But the root is not the origin of a plant; there is the seed before the seedling, and we may well suggest that the primary seed of foul brood is so infinitesimal that no scientist has so far discovered it, and no microscope may ever bring it within the scope of man's vision. Then may we repeat we do not advocate a theory of spontaneous generation.

One may build a new house, he may place there a family with no trace of disease for years before or after, and yet ultimately through some defect in sanitary conditions, that house becomes the habitation of disease, and a source of infection through the medium of micro-organism therein developed. It may be the water is contaminated by the choking of a sewage pipe, but its contents nevertheless are the refuse of the inmates, and from them has been conveyed some hidden seed undiscovered and unsuspected, until the suitable soil occured for the seed to germinate and spread devastation around.

We may well consider that man carries within him hidden seeds of disease, which may or may not develop into destructive germs according to his conditions of living or vitality. It has even been suggested that though in perfect health, within his mouth may be found disease germs identical with those accompanying that dreaded malady diphtheria. And why should not the unsanitary conditions presented by our proposition—the living, feeding, and breeding among the rotting dead—why should they not, we say, result in organic disease? Then we have to admit that every colony carries with it the primary seeds of disease which lie dormant while a natural vitality is maintained, and sanitary conditions are ensured. On the other hand, with the contrary conditions presented we arrive at the Origin of Foul Brood, as distinguished from its continuation by infection.—*Bee Chat.*

OMAHA CONVENTION.

We take the following extracts from the above, held Sept. 13-15, 1898:—

At the Omaha Convention, Mr. Whitcomb, said:—I don't believe unhealthy children can be found in those families which use honey as an every day diet.

At the Omaha Convention, E. R. Root, says:—Some years ago the president of a glucose factory wrote me in regard to adulterating honey with glucose. Of course, I encouraged him all I could, to find out all I could about it. He sent me some samples, one of which was very nice to eat; it was pleasant, and had none of that brassy taste. But he said they could not furnish that unless we

paid a price away above the price of honey—out of the question. The grades that could be bought for three or four cents a pound were very poor indeed—vile stuff. All glucose that is used for adulterating honey has more or less of chemicals left in it—sulphuric acid—and this test in tea shows the presence of the acid in the glucose. If you could get a chemically pure article of glucose I don't know that it would be particularly harmful for food. It reminds me of the gum that comes off the peach-tree; it is rich, and perhaps to a certain extent nutritious. The way the factories are run now there is no method of producing a low-priced glucose that is fit for food. It is a cheat and a swindle, and a danger to human health and human life. Prof. Cook once said there was no legitimate use for the product of the glucose factory —that it was only used to swindle.

Dr. A. B. Mason:—Cuba is without doubt one of the finest honey countries in the world. I consider it as fully the equal of California, and in some respects superior. Should Cuba be annexed to the United States, thus not only doing away with all duties on honey shipped to this country, and duties on hives and implements from this country, but in time improve facilities for transportation all over the island itself, it will, I think, affect the honey markets of this country far more than the great crops from California have yet done. It is well for us to look these facts squarely in the face. At present there is a Cuban export duty of 6 cents, and an American import duty of 20 cents per gallon—over 2 cents per pound—on honey from there. These duties and the wretched government of the island itself, are what has kept our markets from being flooded with Cuban honey. Remove these two conditions and the result is plain.

Dr. Mason—Is there formic acid in the poison that comes from the sting?

Dr. C. C. Miller—As I understand it the latest investigations show that the poison in the bee-sting is entirely separate from the formic acid. Formerly it was said that the formic acid was the poison; but that is not so understood now.

Mr. Whitcomb—Perhaps there is an explanation as to why honey taken from bee trees makes people sick. When the tree is cut open and the bees aroused, their first instinct is to save everything they can, and they run around over the combs with their stings thrust out and little drops of poison may fall upon the combs and get into the honey. Honey taken by the old-fashioned robbing process, where the bees are allowed to run over the combs and the poison runs off of the sting, will make people sick. I don't know but that sometimes a single drop of the poison might kill a person taken either into the stomach or into the circulation. We ought to be careful to keep it out of the honey. I have had cases under my observation where people could not take a teaspoonful of honey without making them sick, if taken by the robbing process, while honey taken by the bee-escape process would not affect them. There was a case of a lady in Chicago who had been from a child unable to eat any honey. I took some honey up to the house at night and she ate of it—ate as much as any of us. There was also another case at our State fair, where a man who had not been able to eat honey before, ate of it several times there, and reported that it hadn't made him sick. In the robbing process or in cutting bee-trees, the bees rush over the honey and run the sting out, and small particles of poison may drop on the combs.

Dr. C. C. Miller—Whilst not desiring to contradict that, I want to add an interrogation point. It is not settled that the poison does not get into the honey but it is possible that Mr. Root's explanation should go along with that—that when honey is taken from a bee-tree by the robbing process people may take an unusual amount of it, and that unusual amount is enough to account for there being made sick, without any poison in the case.

Mr. Whitcomb—If I find that honey taken by the robbing process makes people sick, while honey taken by the bee-escape process does not, I don't see how to account for it in any other way than by supposing that honey has been poisoned.

Dr. Mason—I want to take Dr. Miller's interrogation point away. That matter, so far as I am concerned, is settled. I have sometimes eaten of this poison. I have been stung several times on the tongue, and have felt the sickness coming on without any doubt. In uncapping, I have the habit of chewing on the cappings, and sometimes I have unconsciously put a bee into my mouth. I have often felt the sickness coming over me, without any doubt from the effects of the poison. I know what it is.

Dr. C. C. Miller—I remember a time when I received—I think five was the number—large, heavy boxes filled with material to be put together. I opened one, finding part of the pieces I wanted but not all. There was no means of knowing whether the parts wanted might not be in the bottom of the box, so almost the entire contents had to be emptied. Not until the fifth box was opened were the proper parts found. Understanding that there was scarcely room for the boxes in the room where they were, and that it was heavy work moving them around, you may appreciate the situation. The moral of it is, that it will be well in sending out goods to have in mind not merely the convenience of packing, but to have some regard for the convenience of those at the other end of the line. It would be unfair not to make grateful mention of great advance in this direction. The last considerable shipment of supplies I received was a lot of shipping cases. It wasn't this year! Each package was complete in itself, containing all the parts needed for so many shipping cases; there was no need to open another package till all in that had been used up, just the right amount of each kind of pieces, the right number and the right kind of nails—I tell you it was a real pleasure to know that someone had been studying not how to get through with his job in the easiest way possible, but to make my job as pleasant as possible. One of the great evils is the trying to have everything at as low a price as possible, without regard to lasting quality or permanent value. Just so the price is low. I don't know whether beekeepers or manufacturers are most to blame for this. The result is some tendency towards sham shoddy. A good many believe—and perhaps no one disputes it—that the most satisfactory hive-cover, and the cheapest in the long run, is one covered with tin. Will you show me such a cover listed in any catalogue? Those who want them and will have them must pay the extra price for varying. Would it not be a wise thing for manufacturers to encourage, rather than to discourage, what they must believe for the best good of beekeepers, by putting such goods on their lists, even if the price must be high? Give us the chance, at least, for getting the best goods, if we are willing to pay the price, and encourage beginners to get what will be the cheapest in the long run. Cement nails, are away ahead of ordinary nails. You can put in a nail so small that it won't split the wood at all, as an ordinary smooth nail would, and the cement nails would hold much tighter. It is cheaper in the end to use the cement nails; they cost a little more per pound, but you get more to the pound, as you can use a smaller nail.

CAPPINGS.

From American and other Bee Journals.

Sprinkling salt at hive entrance will keep down weeds.

A Miss Prekard of Winconsin is said to have managed an out apiary without assistance, producing eight tons of honey.

A teacupful of slacked lime scattered on the bottom board is said to absorb all dampness of the hive and bees during the cold season.

Bees have been known to go eight miles in a straight line, crossing a body of water that distance to land.

One foreign journal recommends moth balls or napthaline for driving ants out of hives. Another says tomato plants.

A Belgian journal says the older bees are the less pollen they carry, as the hairs on their legs are rubbed off as they grow older.

The Dadants are thorough believers in large hives for extracted honey—larger than the 10 frame Langstroth, and with a deeper frame.

The Canadian Government have issued 30,000 copies of a bulletin cautioning the spraying of trees in bloom, or immediately after as contrary to law.

Wood barrels are much used in some parts of America for storing honey. Recenty an experiment proved that a barrel before honey was put in, weighed 28lbs. After the honey was removed it weighed 40lbs—having absorbed 12lb of the honey.

Cuba is said to be a wonderful honey land. At present the trouble is bad roads, and difficulty in getting honey to a shipping port. Some fear that its opening up by the United States will have a material lowering effect on the price of honey.

An uncapping apparatus is described and illustrated in Praktischer Wegweiser by A. Janello. A strong tin dish 20 inches long, 12 inches wide, and 6 inches high, has resting in it, supported at proper distance from bottom, a piece of wire cloth with meshes five to the inch. On this rests a sort of roof of the same wire cloth, the two sides of the roof allowing two operators to uncap at the same time. The slanting surface of the roof allows the combs to rest with little or no holding, and all the honey that dript is caught in the pan below. Of course the size could be varied according to the size of the combs used. A larger size would do better for frames in general use in this country.—*A.B.J.*

Mr. Richardson, a Californian beekeeper, last year produced 65 tons of honey from 1000 colonies. Two men take charge of the uncapping and extracting, while two remove the comb from the hives to the house. He does not like the modern smoker, but an old stew pan filled with rotten wood, which he contends is far more effective.

The Drone in the *Australasian* advises an enquirer:—To make a living from bees alone is a very difficult matter, and requires experience. It would be better for you to content yourself with one hive for a year, and learn something before commencing in earnest; otherwise your attempt to become an apiarist is pretty certain to result in loss of capital. A six-months' experience at an apiary, properly conducted, would be the best thing for you, as it would give you an opportuniy of learning what is now a very intricate trade.

Another novel way for introducing queens has been practiced successfully by our German friends across the water for a number of years. They make a cage of comb foundation by rolling a piece of the proper size around a finger. They then pinch one end shut, and make a few perforations with an awl or the point of a penknife. It is now ready to receive the queen; and after she has run in, the cage is closed by pinching it shut. Thus the caged queen is inserted between two combs. This method has the advantage that one will not have to look after the cage, as the bees will remove it themselves, after the qneen is safely installed. Try it. *Probatum est! Gleanings.*

MOVING BEES IN SACKS OF BURLAP.—If you have old hives full of holes, plug them up with batting or old rags. Ventilate them so they will not smother, then get some burlap and make a sack which will hold the hive nicely, and, after fastening the top and bottom boards on tightly, put the hive into the sack and sew it up as you would a sack of barley or wheat, and you can drive over rough or rocky roads, or any kind, and not a bee can get out to bother man or beast. I have moved hundreds of them in this way without accident of any kind. *Gleanings.*

The California Beekeepers' Exchange has now on hand orders for more than 600 tons of honey for export. Owing to the failure of the honey crop this season in Southern California, it seems now to be a question just how to hold the European demand which the Exchange has created. There will always be a demand for sage honey where it has once been introduced; but the market developed for cheaper grades from the Pacific coast may find substitutes in abundance.—*American Beekeeper.*

In the East wax is a principal article of staple commerce, due to the manner in which the cloths worn by the natives are dyed. These cloths, when fresh woven, are covered with a thin layer of wax, leaving exposed the portions which it is desired to dye. The cloth is then soaked in the dye, and the wax which covers and protects the fibre where it has been spread prevents any of the waxed parts from taking up the colour. This manner of dying is so general in the East that there is a tremendous demand for wax at all times. The wax also is exported in large quantities to Europe for making candles.—*Chicago Tribune.*

J. W. Tefft, says in *The American Beekeeper*:—I have a way to introduce a valuable queen, that I have never lost a queen by introduction. It is this way: I remove the "whole business," bees, hives and all, to a new stand, place a new hive on the old stand, return to the old hive, hunt up the old queen and the frame upon which I find her I place in the new hive on the old stand, give her some empty drawn comb and a frame or so of honey. While doing this, you see, the old bees go home to the new hive. The object is to draw off the old bees so as to introduce the valuable queen to the young bees and hatching bees only. Young bees will take the new mother readily. As the old bees are the ones that would kill the new queen, I merely readjust the brood nest and place the caged queen on top of the frames, giving the bees access to the food in the cage.

Dr. Miller, says:—If you give the bees their choice, they will use old, black combs in preference to nice white ones, either for brood or honey. The old combs have silk linings in the cells that make them warmer for winter. I know the objection is sometimes made that the cells become filled up with the silk cocoons and are thus made smaller, consequently the bees reared in them will be smaller. But the deposit is largely at the bottom of the cell, and the bees lengthen out the cell to make up for it. If you will measure, you will find that a piece of old black comb taken right out of the middle of the brood-nest will be —if it is old enough—an eighth of an inch thicker than a piece from the same place that has not been used more than two or three times for rearing brood. So of course these cells have been lengthened out. I have combs more than 25 years old, and so long as they have no other fault than age and black colour, I would not think of discarding them.—*A.B.J.*

I think it is agreed that a large colony produces more honey *in proportion to the number of bees* than a smaller one. It will also consume less honey in a year in proportion to the number of bees than a small one. Suppose my field is such that its limit will be reached if I have 5,000,000 bees in the season. I may give extra stories, and have 75 colonies with 66,666 bees in each, or I may take the plan you suggest, and have 100 colonies with 50,000 bees in each. The 75 stronger colonies will consume less and store more than the 100 weaker ones, and the 75 will take less labour than the 100. So when you have all your field will bear, the profitable keeping of bees does not depend so much upon having the combs and hives occupied to their full capacity as it does on having each queen occupied to her full capacity; in other words having as strong colonies as possible.—Dr. Miller, in *A.B.J.*

BEES AND FRUIT.
INSECT JAWS.

PROF. A. J. COOK, IN *A. B. J.*

I am led to take this subject from a statement made by Mr. Thos. W. Cowan in his admirable address made before the last California Bee-Keepers' Association in Los Angeles, on the relation of bees to fruit. While I agree with him in all his conclusions—that bees do not even pierce or injure sound fruit, and that the bees are of far more value to the pomologist than are the flowers of the orchard to the apiarist—yet I have never thought that bees could not bite into the skin of ripe peaches or other fruit. Every bee-keeper knows that bees can even tear splinters from the hive and cut the cloth and foundation which he may place above or within the frames. That they can do this has always argued to me, convincingly, that they could tear into any fruit, and especially through the soft rind of the ripe peach, apricot or pear. Yet while I believe it is possible for the bee to make such abrasion, I am very positive that they never do. From a study of anatomy of the jaw and observation of what bees do do, I believe bees can wound fruit; from a long, close study of the bees in the field I am sure they never cut through the skin. The first is opinion, to which I have no better right than has Mr. Cowan, until I witness the act, which I never have; the second is knowledge, gained from wide observation.

(*a*) The grapes in a vineyard are wholly free from bee visitors—not a bee is seen upon or among them—when lo! on some hot, sultry morning, all at once the bees swarm on the grapes in force. Yet for days the bees have been idlers, because the harvests were not. Does it stand to reason that the bees have all at once, with one accord, rushed to the vineyard and commenced to cut into the fruit and suck the oozing juice? No! Reason and observation alike show that the juice is oozing, and the bees rush to gather the wasting juice. Had the juice remained sealed by the unbroken peel no bee would have touched it. But let the bird, wasp, or Nature through fermentation induced by wet or heat, cause but a tiny droplet of the juice to ooze from the grapes and at once the odour attracts the bees, and they at once fix their suction-pumps, and commence the rapid work of juice-abstraction.

(*b*) I have repeatedly tried this experiment: I have placed sound grapes at the entrance, and even within hives at times when bees were in enforced idleness, and they remained sound and were untouched. All observers know how ravenous bees are at such times, and know that were their habits and Nature in accord with attack, no grape would remain for an hour.

I then pierced certain grapes with pin or needle, that the juice might exude, when, presto! the bees rushed to the bleeding fruit, and quickly sucked it juiceless. Yet no unpierced grape was disturbed.

Thus I have become convinced that bees do not delve for sealed sweets, but must be attracted by escaping odours. The wasp or bird may mine for the coveted nectar drop—the bee, never. The flowers that most woo the bees ever hang out open-mouthed nectries advertised by aid of bright, gorgeous petals, whose life service is to attract the bees. They also fling forth penetrating odours, that the bees may be lured to the useful service of pollinating the flowers. Thus, the whole life experience of the bees is to go to exposed receptacles, not to those sealed, and, so, odourless. Thus we understand why the bees are developed as they are, to seek not for hidden treasures, but for those only that are exposed for the very purpose of enticing the bees to valuable service.

It is suggestive that in Europe, and in the older sections of our own country, the idea that the bees are enemies and not friends of the fruit-grower is never broached. The fruit-men know that the bees are necessary agents and factors to full fruitage, and so the insects are ever welcome in the orchard and vineyard

Such sentiment is fast growing in Southern California. Soon the cry will not be against the bees, but the question will be, How can we manage so as to keep our fruit sound, that bees may not be attracted? and how can we fence against their injuries and annoyance in the driers and canneries? Already improvements in these lines are being made. Soon they will, we believe, become perfected, so that the valuable services of the bees will be secured, with no count against these invaluable aids to fruit-growing.

THE JAWS OF INSECTS.

Apropos to the above, a word regarding the jaws or mandibles of insects may be of interest. These organs are often called the first jaws, as insects possess two pairs of jaws—these mandibles and a second less strong pair—the maxillæ. Often these second jaws, which are always just below the mandibles, are so jaw-like in form that they may be very effective in biting and crushing. In bees they are modified, and are elongated and grooved, and may be, on occasion, converted into a colossal sucking-tube. Both pairs of jaws are appended to the lower end of the side-pieces, genæ or cheeks, and instead of moving up or down as they crunch, they move sidewise. In some cases they are very large, as seen in the stag beetles, and in the elephant beetle they have branches, and look not unlike the antlers of the deer or elk.

While the mandibles are always of one piece, and thus simple, they are variously roughened or touched, as their functional needs require. In the locust they are roughened raspers, and can strip off bark from the hardest twig. In the tiger beetle and wasp they are armed with sharp teeth, so that they can pierce and destroy the insect foe, or, in case of the wasp, can easily break into the pulp of grape or peach. These jaws are found strong and effective in wasps, bees, ants, slugs (larvæ of saw-flies), caterpillars, beetles, and the larvæ or grubs of the same, locusts and lace-wings and their larvæ.

Organs much used, and for a variety of purposes, are certain to be much modified. Thus in the evolution of life, such organs have changed most, and so are most used in classification. Thus as teeth are of first importance in systematic zoology, so the jaws are much used in classifying insects. *A. B. J.*

CORRESPONDENCE.

Something to cheer Australian beekeepers a little—We take the following from the *Australasian*, under the head of "Dinner parties and Table Decorations in France":—A very important point is the arrangement of light, which should be brilliant, to show up the toilettes and decorations. Electric light, though charming for the dresses, giving lovely shades, has been found unbecoming to the complexion, giving sallow or greenish hues; so in many houses they are returning to the old wax candle, the most expensive and becoming of all lights.

J. J. B., Granville, Jan 18:—A few trees of white box are in bloom here just now. It is raining steadily as I write a much needed refreshing downpour which I hope may continue awhile. I have made the acquaintance of a few beekeepers here with whom I have an occasional chat when we meet. Though I miss my bees very much as also my poultry, though I have a few of them again I could not be content with an empty yard, so bought some fowls just that I might have some pets, as the conditions are not very favourable to bees here, though some keep them in the vicinity.

W. W., Ponto, Jan. 3:—The *Australian Bee Bulletin* is a useful, pleasant, and friendly paper, and ought to make good headway amongst the beekeeping fraternity. I have not long started in that line myself, but with its help have made considerable progress. I commenced last year with five hives of Italian bees, and by the close of the year, or last autumn, increased them up to 37, besides sending away 1½ tons of honey. I also lost, I think, about ten or twelve swarms,

not being able to attend to them properly in the harvest time. I have read nothing in your journal to beat this record. I am very much troubled with the small black ant here, and have tried all the remedies mentioned in your paper, but without success. At present I have tins under every hive, in which I keep a mixture of liquid sheep dip and water, but as it is expensive, and takes up considerable time, owing to the evaporation, it is not a good plan. I would like very much to know of an effective remedy. I will note anything mentioned in your journal. Wishing it prosperity.

A. E. F., Grafton, Decr. 21 :—Becoming interested, if not to say a little fascinated in bee study some two years ago, I started with four colonies of blacks, reducing to three, Italianising same and increasing to 10 strong colonies—my present stock, which is quite as many as I can manage, having other business to attend to, but giving my bees, which are a mile away, attention on the weekly half-holidays, finding such to be a most pleasurable pastime. I have lost some good swarms owing to distance, but it could not be helped; the queens were two or three I had not clipped. My little experience of the Langstroth 8-frame hive has not been as favourable as for the Langstroth 10-frame, which appears to me as perfect if reckoned by points as any hive could be wished to be. My queens fill up every frame with brood in the 8-frame before the oldest larvæ are hatched, hence a greater tendency to swarm for want of laying room, whereas with 10 frames she appears to be provided with sufficient empty cells from hatching brood to keep her moderately in constant laying. I am now using all 10-frame hives. Am inclined to make experiment next season with one 20-frame hive with the Langstroth frames, placing a 20-frame half-super over. Honey flow ceased here, all drones killed. Wishing your excellent little paper a prosperous career, and yourself the season's compliments.

E. A. D., Junee, Dec 26 :—Just a line to say that I am always glad to receive your paper as it contains a lot of useful information, and should be taken by all beekeepers, and is well worth the small subscription and enables beekeepers to exchange their ideas. I have about 70 hives at present, but have had very bad luck for the last two years owing to the bad seasons. Have lost a great many through robbers, all my weak hives have been lost. Can you tell me any way of preventing the stronger hives from robbing the weaker ones? Our country is white box and red gum and give us honey of the best quality and colour. There are several small beekeepers around here, but between the bad seasons and the ants they have had a great doing. I am cultivating a vine, grows well on the fences called the Cruel Plant, it is a great trap for the bee and other moths; they fly on to it, and there they stick. I am enclosing you a sample of the flower and the moth as it may be strange to your district. I got the seed from Germany, but have no doubt it can be obtained from the seedsmen in N. S. Wales. I will now close, wishing your paper every success.

Sample to hand, rather crushed. Have no doubt, however, from its appearance it would do what you say to the moth.

A. B., Nurrabeil, Jan. 12 :—I thought at one time I should have no bee news to write again, for the drought brought me so low I thought bee farming was going to die out, but I didn't, for while I had a queen and a hive of bees I intended to go ahead. Out of 250 hives I was left only 27 weak ones, spring count. However, the swarming has brought me up to 70 again in good order, and a good honey flow just on (yellow box) so I hope to have a bit of bread and honey yet, though it is rather late. Cool weather has deprived us of a few weeks gathering. Still though a limited honey crop in the district, we fare as well as we deserve, bees are scarce and honey is 4d per lb, and we cannot complain. Mrs. Atchley kindly sent me a good queen which arrived all right herself, but not an escort alive. Well, she is a beauty and doing well. Amongst bee farming you hear some

queer stories. Here is one from an old bee-farmer in the adjoining district: I was thinking out a plan to save the expense of comb foundation and yet keep the bees working in the frames. So I sent to the store for a few knots of tape thinking if I did not succeed the old woman could use it. I set to work, got some wax melted, run the tape through it and then placed it in the groove and fastened it there, put it in the hive, and watched how it would act, and oh! they worked beautiful on it, so I did nearly all my hives like this and they worked away fine. One day I looked at them and lo and behold you I found my bees tangled up in yards and yards of cotton, They had eaten the tape into threads and it got around their feet and round their necks till they got tangled all up, so I found it would not do. No doubt comb-foundation is the best after all.

Mrs. Jennie Atchley, Beeville, Texas, November 23:—I am glad to inform you that I always read the *A. B. B.* through and through, ads. and all, the first chance I have after its arrival, and she comes regularly each month. I take as much interest in your paper as I do any that comes to me, and I gain valuable information from its pages, and I think you are improving the *A. B. B.* with each issue. Your description of the spiders was too good to keep from the public, and I took the liberty of printing a part of your letter in our paper. We are often troubled with spiders, and it takes us a great deal of our time to keep them out, and they reduce the colonies sometimes before we hardly know it. Our honey season turned out badly after all, and we had to fill our orders for honey from other sources, as we did not raise enough from our own bees. In the beginning of last spring we had the promise of a very heavy crop, but the drought cut it off. We have had to feed a great deal this fall to get our bees in shape for winter, and then we doubled back considerably. This is the first feeding we have ever had to do that amounted to much in the fall of the year in this country, as usually our bees gather sufficient fall honey for winter. We have had some good rains lately, and we are looking forward to a good season for 1899 We fed our bees in a wholesale way this fall, as there are no other bees near our apiaries, and we fed out of doors. I describe our feeder for you, as you may wish to do some feeding some time, and this is the best known plan to us for out door feeding. We had perfect success clear through with our mode of feeding, and we fed nearly 500 colonies.

F. B., Broadwater, Dec. 22:—Please find enclosed 5/- P.N. for subscription to *Bee Bulletin*. If it was more I would try and rake it together somehow, for very often the information I have gained from one number has saved me the full value of 12 months' subscription, and bee-keepers who do not not take it regular do not know what valuable information they are missing. I have 72 colonies now and in fine condition, a few of them 5 banded, some Carni-Italians and some blacks. I intend to Italianize them all but not knowing the value of the Italian bees for working when I started it means a great expense now. But I have proved in this district that the Carni-Italians are before them all, for last winter was a very severe test all over this district, for while the blacks were dying out everywhere, the Carni-Italian held their own and gave a surplus as well. But they are very saucy if you meddle with them toward sunset, and the workers are at home to attend to you, but during the warm hours of the day they seem too busy to notice any one. The five banded are very gentle and good honey gatherers (of course I am only speaking for my own). I have been troubled with a large spider tarantula. I saw one day a great commotion in front of one of my hives, and upon opening it I found the bees doing one up as the saying is. He had a bee in his nippers and a regular heap of heads and legs of bees. I smoked the bees off him and hooked him and his fragments out; he was dead and very much swollen with five stings stuck in

his body. They settled down again afterwards. I think stands about a foot off the ground very convenient, for the beekeeper can then keep his boxes free from insects and other pests.

J. S., Dubbo:—Bees are doing well here. Up to the present, average about 1½ cwt. per colony, since early in September. It is only a moderate flow, but lasting fairly well. H. R. L., Boggabilla, writing in reference to his bees dying. I notice that he states his hives are tight. Now, Mr. Editor, I really think that is where a big lot of the dwindling commences, I think we can kill our bees with kindness, especially in tucking them up for wintering. I always had an idea that I could not make them too snug, but after last winter, I shall never entertain the idea again. When closing them up for winter I put several layers of paper on top of frames and bagging on top of paper, and in mid winter they started to die, and on having a look at them, behold you the complete lot was saturated with water, the larger the colony the more water, and it struck me very forcibly they wanted ventilation, so I just took took all of the paper and most of the bagging off them, and in spite of the severest part of the season they came through in first rate order. I may say I went as far as raising the covers of some of the big colonies as if it were summer time, and they came on splendidly. Now, I think that the vapour that arises from the bees wants to escape; if it does not it must lodge somewhere in the hive, gets into unsealed honey, making it sour, and the paper or whatever is used for covering gets saturated, and the water eventually falls down amongst the bees making it very unhealthy abode for them. What men or animals could live in such a home week after week without it having some serious effect on them? I don't think any. Therefore I say give bees ventilation, plenty in winter as in summer, and if the vapour is allowed to escape from the hive, and the inside dry, I feel quite sure there will be but little dying in spring time or winter, no more than natural. Wishing all fellow beekeepers a prosperous New Year, with health and success to you, Mr. Editor.

A Mr. Greiner in *Gleanings*, has been making careful notes of the exit of queens and drones from their cells. The shortest time from the laying of the egg to the exit of the queen was 20 days and 2 hours. Of the drone was 24 days and 16 hours. The last drone just 25 days.

TOBACCO SMOKE FOR BEE PARALYSIS.

D. W. Light, in *A. B. Journal* says:—I applied salt water about four o'clock in the afternoon. That night they were all over the ground for a rod or more around the hive, making a terrible noise. The next morning it looked as if they were all dead. The queens were very prolific, and there was plenty of nectar. I waited two or three days, and the disease did not abate. Then I thought to experiment. I fixed up the smoker, put in plenty of leaf tobacco, and took out the frames one at a time, and held them in the air and sun for one minute each, and smoked them thoroughly once a day for a week, when it had entirely disappeared. This last treatment began to check the disease from the start. I do not know which one did the work, or whether all were necessary.

FOUL BROOD.

Translation from the 'Revue Internationale' of a paper by Dr. Lortet, who has for some time been making experiments and observations upon this disease.

The naphthol is that known as naphthol 'B' (naphthol beta), and not the ordinary naphthaline. As it is perfectly harmless, there is no danger in its application.

'Before beginning my observation of foul-brood larvae, either during the disease or after death,, and of adult insects already infected, I turned my attention to perfectly healthy bees as well as various other species of hymenopterae, such

as wasps, humble bees, carpenter bees, etc. After a patient and minute course of dissection I have arrived at the following results, which are based on an intimate acquaintance with the aetiology of the disease.

'I.—I find that various hymenopterae, besides adult bees, whether healthy or diseased, invariably present through the whole of the lower part of the digestive tube, a very large number of bacilliform bacteria, which are probably called upon to perform important, though at the present unknown, functions in connection with the chemical changes which take place in the food introduced into the digestive canal.

'In the bee, to mention only the species which immediately interest us, whether healthy or diseased, as well as in the digestive canal of the brood, whether in health, in disease, or after death, I have invariably discovered two normal bacilli, the presence of which has, without doubt, led some people astray.

'The more numerous of these bacteria are of a large rod-like shape, broad, thick, short, and bear a striking resemblance to certain bacteria which are frequently met with in soft water. They are never arranged in chains, but propagate themselves by means of binary fission; in the early stages they are often united in couples. When fully developed they become slightly rounded at the extremities, which swell perceptibly. These bacteria retain very well the stain communicated by Fuchsin, and after staining the club-shaped ends show a much darker tint than the central space of the body. In this state the bacteria present the same appearance as may be observed in the bacteria of malignant oedema.

'This species is most easily cultivated, especially in liquid media, less easily in nutrient Agar-Agar glycerine gelatine. When injected into the cellular tissue of guinea-pigs it fails to produce any harmful effect.

'II.—Another normal bacterium is also invariably found in the digestive canal of the bee. It is smaller, thinner, and short, its length being only equal to twice its breadth; it is not rounded at the extremities, which are shaped almost at right angles. These bacilli do not form chains, but frequently remain united in pairs for a long time. In this state they nearly resemble diplococci, though perceptibly more elongated than these latter. In cultivation they often group themselves in zooglaea, and in this case arrange themselves very regularly. These microbes multiply without difficulty in both solid and liquid media, and take a strong stain from Fuchsin or Methyl, or Gentian violets.

'III.—Lastly, in the digestive canal of dead or diseased brood, as well as of adult bees already infected with the disease, but in the digestive canal alone, a third kind of bacterium is found, which is without doubt one of the forms that have been examined by Mr. Cheshire. It is thin, and frequently extends in filaments. It thrives well in sterilised veal-broth, and it is therefore comparatively easy to obtain a supply of perfectly pure specimens for purposes of inoculation. In this nutritive element filaments appear in a few days, and after staining the fine granular elements of the formation become apparent owing to the differences in colouration.

'In the digestive canal of the adult the bacteria appear to maintain their rod-like shape for a considerable period perhaps, indeed, always; whereas in the digestive canal of the larvae, probably owing to the influence of albuminoids, which pass by osmosis through the walls of this tube, the bacteria, as in the case of cultivations effected in unsalted veal-broth, are rapidly transformed into very fine virulent granulations, which invade all the tissues, and soon bring about the disorganization and rapid putrefaction of the larvae.

'The adult bee, on the other hand, even when the foul brood bacteria have taken possession of its digestive canal, seems to be able to live for a certain time. It is, however none the less apparent, once the infection has taken firm hold,

that the animal is diseased. The digestive canal, and especially the surrounding glands, end by by being invaded by an enormous number of the rod-shaped organisms, the insect loses vivacity, grows languid, and finally perishes after a more or less protracted interval.

'Virulent granulations cultivated in salt veal-broth or on plates of glycerated Agar-Agar produce bacillary bacteria, which, when given in food to the larvae, undergo in their turn segmentation into virulent granulations, whereas in the case of the adult bees they still probably retain the bacillar form for a long time though they do not fail in the end to cause its death.

'The culture and transformations of the foul-brood bacterium cannot take place in the honey; so much is certain. Still I may mention that in diseased hives the honey and wax are always more or less infected on the surface by bacilli, virulent granulations, excrements, &c.

'I have on several occasions succeeded in reproducing the whole series of phenomena mentioned above experimentally and have, without difficulty, infected insects which had been perfectly healthy and vigorous up to the moment of the experiment. My mind is, therefore, quite free from doubt in the matter. It is the adult bee which is first infected in its digestive canal by a foul-brood bacterium obtained from some unknown source. In feeding the larvae it infects in its turn the digestive tube of this latter, and here owing to the action of the albuminoids, the bacillar bacteria are transformed into virulent granulations, which invade the tissues and finally bring about the death of the insect.

'Contaminated honey may be a cause of the propogation of foulbrood in the sense that, being polluted by foul brood bacteria or by virulent granulations, the healthy adult bee which allows this substance to enter its digestive canal is rapidly attacked by the disease, and will even itself soon communicate the infection to the brood. Experiment in such cases gives the most convincing results. Still, in the case of foul-brood, as in the case of virulent affections which attack vertebrate animals, certain individuals seem to enjoy exceptional immunity, and resist the infection. Is this due to previous inoculations, or to some individual predisposition? This is a point which I am not at present prepared to decide.—*New Zealand Farmer.*

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