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West Maitland, N.S.W.: E. Tipper, December 23, 1893

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THE AUSTRALIAN BEE BULLETIN.

A MONTHLY JOURNAL, DEVOTED TO BEE-KEEPING.

VOL. 2. No. XX. DECEMBER 23, 1893. PER COPY, 6d
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TUESDAY, FEB. 20TH.

At West Maitland.

TUESDAY, MARCH 20TH.

At Lambton.

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Pure Tested Queens	16	0 each
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Queens crossed between Doolittle and Italian, which are brighter—

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Prices of colonies on application,

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The Australian Bee Bulletin

A JOURNAL DEVOTED TO BEE-KEEPING

WEST MAITLAND—DECR.. 23, 1893.

In August last, at a committee meeting of the New South Wales Beekeepers' Union, a letter was read from Mr. J. E. Taylor, of Cowra, complaining that 300 acres of the Cowra Temporary Common, from which he derived his principal honey supply, was about to be ring-barked, and asking the Union to use its influence to prevent it. It was resolved the Secretary write to the Under Secretary re the matter, and a deputation was also appointed to interview him if necessary. Now in regard to one at least of that deputation appointed he is perfectly innocent of any further proceedings in

the matter. We are led to these remarks because another most serious matter has come to our ears. If true, the land laws of New South Wales are a disgrace to the Australian colonies, and it is the duty of every beekeepers' association, and the beekeepers of the colony as a whole to take the matter up. The trouble is this. Mr A. J. C. Vogele, selected land on the Paterson mountains for the purposes of a bee farm. A certain amount of improvements have to be effected each year under the terms of the agreement. Naturally he would not destroy the source of his honey supply, and so made his improvements in the way of fencing, house building, &c. Notice however has been received by him that a *certain amount of RINGBARKING MUST be done to constitute the required improvements, or his selection will be forfeited!* We sincerely trust it is not as we have stated, but if it is, and the New South Wales beekeepers do not take action, then they are not the men we've taken them for.

We are very pleased to be able to announce that that veteran beekeeper, Mr J. F. Munday, is steadily overtaking his severe losses in the floods of March last. He has now over 80 colonies, with some of the best bred queens obtainable, and we believe we shall soon be hearing a great deal more about him. On another page we give copy of a hive record card he has sent us, which we are sure will commend itself to every intelligent apiarist.

In many of the excellent press notices of ourselves the readers are told that no apiarist should be without the *A.B.B.* We feel we cannot do better than use the same language in respect to Messrs. Hebblewhite & Co.'s "Price List of Labor Saving Appliances and Specialties,"—which we have just received—not only to beekeepers but to every house-keeper and settler. Read advertisement on our cover, and write them to send you their catalogue. And should you have occasion to visit Sydney, even if you don't want anything, give them a call.

Mr. Trahair, the manager, is one of the nicest fellows we know.

Just as we were all "made up" and going to press a lengthy and very interesting communication arrived from "W H" New Zealand. We shall insert it in our next issue, and sincerely trust to have more of the same sort to put along side of it. We are also compelled to hold over several other excellent articles.

KIND WORDS DURING THE MONTH.

Mr A. E. Kendall, Bibbenluke, writes—"It is with pleasure that I recommend your valuable little paper."

The Richmond River Herald—"The *Bee Bulletin*, since starting, has steadily improved, and the number before us is the best we have seen."

Mr S. Fizzle, of Botany, writes—"My son, who is very much interested in bees, is very much pleased with your paper—it is very interesting."

The Muswellbrook Chronicle, Nov. 28, says the *A. B. B.* is the best publication of the kind in Australia, and should be taken regularly by all persons engaged in apiculture."

The Hauraki Tribune, N.Z., says—"There is a wonderful amount of bee information and special directions for beekeepers, to whom the *Bee Bulletin* ought to be very instructive."

Mr. C. Jordan, Upper Copmanhurst, writes—"I am greatly pleased with the paper, as there is a good deal of information in it that must be of service to beginners in apiculture."

Speaking of the *A. B. B.*, the *New Zealand Herald*, Dec. 2 says—"It is a well-got up little paper, which should be in the possession of all beekeepers. . . The little journal has evidently a useful career before it."

Mr J. Wilson Green, of Logan River, Queensland, concludes a most interesting communication with—"wishing the *A. B. B.* a long and prosperous career, and a success financially to its plucky proprietor."

The Australian Agriculturist, Dec. 1—"The day has passed for wishing success to the *A. B. B.* It is a success, and becomes more useful and interesting with each issue. . . If you keep bees take the *Bulletin*, it will pay you."

Mr Joseph Waugh, Woonona, near Bulli, writes:—"I have to inform you that I have received the second copy of the *Australian Bee Bulletin*, and I am very much pleased with it. I have handed the paper around to some of my friends, and they all seem to like it much."

Mr G. W. Gordon, of Jamberoo, writes:—"I am enclosing my subscription for the coming year, and I must say your publication is full of information of practical use to the beekeeper. To be blunt, I must say there are some letters published in your pages that make me think very hard."

Mr George Butler, Brisbane, Queensland, in sending his year's subscription, says:—"I must congratulate you on its continued improvement. It supplies a long-felt want, and is the means of keeping beekeepers in touch with the times, and also the fresh ideas which are daily coming to light."

Mr Thos. Ellerton, Muswellbrook, N. S.W., writes:—"Please accept my sincere thanks for your very handsome bonus (Langstroth by Dadant). I am delighted with your promptitude re labels."

Wishing you the compliments of the approaching festive season, and hoping you will have even greater successes with your excellent publication next year, I am, dear sir, yours sincerely," &c.

Captain Slade, J.P., Alberton, South Gippsland, Victoria, concludes a communication to us with—"Being an old man in my 88th year I may not live to enjoy another year of your valuable little journal."—We trust the dear old captain has a few quiet peaceful years yet. And we are sure many of our readers will join us in the wish for some bee reminiscences of so long and we have no doubt most useful life. We have heard before that beekeeping tends to longevity.

HUNTER RIVER BEE-KEEPERS ASSOCIATION.

As was stated in last issue the H.R.B.K.A. proposed holding their monthly meetings alternately, at their meeting room at Maitland, and at some local centre.

The first meeting under the new arrangement was held at Paterson on Tuesday, 21st inst., in the Odd Fellows' Hall, kindly lent for the occasion at the request of Mr. A. Voegelé. Mr. John Tucker, Vice President, at the Association presided.

The Chairman, in an interesting speech, explained the new departure of the Bee-keepers Association, expressed his regret at seeing so few of the members from Maitland side present; but was pleased to see such a good attendance from Paterson, Vacy and the neighbourhood generally. He stated it as his opinion, that no district in the colony could count the same number of hives within the same limits as could Paterson. And the fact of such a number attending, there were over fifty present including several ladies, bore out his opinion. He then called upon Mr. C. Mansfield, Hon Sec. of the Association, to proceed with his Lantern exhibition, which consisted of over thirty views, bearing upon apiculture, kindly loaned for the purpose by the Technical Education Branch in Sydney. Mr. Mansfield described the uses and nature of the various views, and as the exhibition progressed, the interest taken by the audience was evinced by numerous questions propounded. It was rather late when the meeting ended, but the interest seemed to be sustained to the end, and on the whole much benefit must accrue to the district by the spread of apicultural knowledge. It is the intention of the Secretary to procure additional views of an interesting nature, before the next itinerating meeting, which will take place at Braxton in January next. The idea of these movable meetings seems to be a good one, and should do much to maintain the prestige of the Hunter River in apicultural matters.

On Tuesday evening, Dec. 21, the monthly meeting was held at the Technical Workshops, West Maitland, the principal business being a welcome to Mr J. W. Pender, one of the vice-presidents, on his return from a trip to Europe and America. The president, Mr R. Scobie, M.L.A., occupied the chair. Mr Pender gave a very interesting account of his trip—the Italian apiaries, English prejudices, the wonders of the Columbian Exhibition—his being made a life member of the North American Beekeepers' Association—the wonderful buildings, the excellent fruit and honey packing—Salt Lake City, about one of the most moral in the States, and with no poor people. —Fruit, cake and tea were handed round by the ladies and a most enjoyable evening was spent.

BEE PARALYSIS.

Mr. Thos. Kitching, of Clover Meadow, Campbelltown, wrote us, Dec. 4:—

I wrote you in September re bee paralysis in my apiary, asking the question—Would a new queen bring the disease into the apiary? But little notice was taken with this question through your paper. I have tried all possible means without success. While writing it is heart-sickening to see the destruction going on in the apiary. One hive has died out completely, and four or five others show strong symptoms of the disease. The bees not affected with the disease fight the diseased bees as they would robbers, so that I am losing them in more than one way.

I would like some experienced beekeeper to take up the subject and advise me in this serious matter.

Re Honey Vinegar answers to question in the issue of November, I notice one from L. T. Chambers—30 gallons of water, two quarts of whiskey, and 3lbs of honey. I have for the past five years successfully made honey vinegar by mixing well together 4 quarts of water to 1lb of honey, and allow to stand twelve months in a vinegar cask. I fancy L. T. C.'s receipt could be more correctly called whisky vinegar.

We forwarded Mr Kitching's complaint to the Department of Agriculture, New South Wales, from whom we promptly received the annexed reply; also another letter from Mr Kitching, stating that Mr Helms had arrived at his place. Promising also to send particulars of results. We also mentioned the matter to that experienced beekeeper, Mr J. F. Munday, whose opinion is, that bad food is the cause of bee paralysis, and also it is not conveyed by the queen.

“Department of Agriculture,

“13th December, 1893.

“Sir,—In reply to your letter of the 6th inst, I beg to inform you that Mr Helms of this Department has now left for Campbelltown, for the purpose of carrying out a series of experiments in the treatment of bees for bee-paralysis at Mr Kitching's place.

I have the honor to be, Sir,

Your Obedient Servant,

WALTER S. CAMPBELL.

for the Under Secretary.

Mr. E. Tipper,

“Australian Bee Bulletin,”

West Maitland.

Mr. J. W. Hopkins, Tickhole, writes:—At the late show at Wallend, there were six entries of extracted honey, of which Mr. Ayerst of Minmi carried off first prize, and myself second. There was six entries of Italian queens of which Mr. Wm. Hughes had three, Mr. James Langworth two, myself one. I took first prize, and Mr. James Langworth, second prize. Mr. Ayerst, Minmi, Judge.

FOUL BROOD.

Mr. John S. Dick, Port McQuarie writes he has 50 hives rotten with foul brood, and the bees all over the district are being fairly decimated with it. Try the McEvoy cure in the September number of the *A.B.B.* pages 117-118.

Mr. W. Bieleter, Bombala, asks:—Could you inform me, from actual experience, if the plan of taking bees out of old hive, giving them fresh starters of foundation, and after four days destroy all comb built, cures foul brood. [Yes, and it worked very well.—Ed.]

A NEW QUEEN-HATCHING CAGE.

Mr W. Crawford, of Wingello, has sent us—"one of my hatching and introducing cages, which should be a benefit to queen rearers. It is for hatching out queens, and does also for introducing. When you have queen-cells capped over, and within two or three days of hatching, cut them out and insert them in the cage mouth downwards through the auger hole under the tin cover. Also put some feed in the little hole at the end. Straighten out the piece of tin that's bent round the cage, which is to hook on the top bar of frame when hanging in the hive. Hang them among the bees. They are very handy to keep young queens in after hatching till ready to make up nucleus hives. By supplying with food you can keep them in as long as you like. When trying them I went to a hive that had 21 cells built and within two days of hatching. I cut out 20 and left one in the hive. I inserted them in ten cages, as you see each cage takes two. Nineteen hatched and one missed, and the one left in the hive missed, so I let one out of a cage into the hive, and kept the other eighteen in the cages in the same hive for eight days before introducing into nucleus hives. So you see they are very handy if you have not the nucleus hives ready."

[The cage arrived same time as letter. We showed to several experienced beekeepers, who were fully in accord with our own ideas as to its utility and general get up. We then put it to practical use by putting in it two queen cells that would otherwise have been doomed, and wrote to Mr Crawford to send us more. We heartily recommend queen-breeders to give them a trial.]

MR. C. MANSFIELD.

(These answers arrived too late for insertion in our last.)
IN REPLY TO MR. GRINDROP'S QUESTIONS, p. 149.

(1). This question is embraced in my remarks on the Special Subject.

(2). I have quite recently had a case of a fertile worker, and an unimpregnated queen being in same hive, the said queen being one of a batch

of cells raised in same hive. Fertile workers and laying queens do not exist together, but a young queen when short of space to lay in, will lay as many as five or six eggs in one cell.

MR. HEWITT'S QUESTION.

I practise clipping queens, and I do not loose any from that cause, but occasionally an unclipped queen gets away. There are rare cases where a swarm will ball a queen just clipped and let go among them. But if the job is done neatly and quickly, without exciting the queen too much, there is not much danger, and the bees seem to set quite as high a value on a clipped queen as on an unclipped queen. I cannot think that Mr. Hewitt's queens were superseded through being clipped. Perhaps they were autumn raised ones. These in my experience are not characterised by great longevity.

The Special Subject next Month.

QUEEN INTRODUCING.

QUESTIONS FOR NEXT MONTH.

12. Why does extracted honey candy before strained honey?

13. What is the best way to stop robbing?

14. What is the best and surest method for bleaching wax

15. Why is egress not advocated from the out side of the upper story, say at the back.

16. Have any experiments ever been conducted by any of the scientific staff of any of the colonial Agricultural Departments (under the Government), to destroy the so called objectionable flavour of Australian honey, without injuring its quality any way, and make it suitable for the palate of John Bull? Will some of our bee keepers well up in chemistry make some investigations or trials.

Kindly send replies, to arrive by Jan. 20th.

QUESTIONS.

W. C. Braidwood. writes:—

1. How long should bees be caged before they are returned to their hive to start queen cells?

2. Is it better to cut the cells down to say half-length, for them to build cells on? I have tried it several times, but the bees destroyed nearly all the eggs.

3. Why do bees destroy the eggs given them to start cells upon?

4. Can you tell me how I may know if a queen cell will hatch out?

5. Would you kindly tell me how to introduce queens by chloroform?

6. Do you recommend the chloroform method?

7. About how long does it take the bees to kill a queen when they ball her?

I may mention, that I have lately had a rather unfortunate experience in introducing queens, for out of eight I lost five: seven out of the eight were balled, and two out of the three, that I considered safely introduced, must have been injured in some way, for after they had been in the hive and laying for about a week, they suddenly disappeared, certainly not by swarming out, and now I can only show one out of eight. I almost think that a record, and a very bad one too.

I almost believe that these black bees can tell the difference in the color of the queens, for all the queens referred to had been in the hives from three to five days before, they were released, and would certainly be odourised by that time. I tried two plans of introducing, viz., by using cages similar to the Benton, and by bending the four edges of a piece of wire cloth up and caging the queen on some sealed brood and unsealed honey. I was under the impression that introducing queens was a very simple matter to any one, but I have slightly changed my mind now. Worse however than the loss of queens is the loss of honey, for I tried to introduce to my best colonies, and the result was they were without queens just when they required them.

P.S.—If I am not trespassing too much on your valuable time I should also like to ask you—8th—the best way to stop robbing.

[1. We presume you allude to the Alley method of queen rearing, and our answer is: When the caged queenless and broodless bees have commenced to roar or cry for a queen and not before, an hour is generally long enough, though bees of different colonies differ.

2. Cut the cells down to half the depth or even less, the cut must be clean, a warm knife being used, old comb should not be used. If cells are torn much as when using old combs they are apt to be in the cutting, the bees will destroy the eggs.

3. We do not know. There are many reasons why the bees destroy eggs, but suspect in your case that the bees had not been long enough queenless and broodless.

4. Can I tell how I may know if the queen will hatch out? A day, or perhaps two days, before the time for her to hatch out the bees gnaw off the point of the cell, whereas should the inmate of the cell be dead very few will be about that cell and the cap be left alone.

5.—Re introducing by chloroform. Mr Gaggin gave the method in the *A.B.B.* of September, 1892:—Take a piece of flannel 8 x 24 inches and fold it three times so that it is about eight inches square. Now measure two teaspoonfuls of chlo-

roform and sprinkle upon the surface of the folded flannel. Then instantly pull off the quilt and place the flannel with the chloroform side downwards upon the frames over centre of the brood chamber. Replace the quilt quickly pressing it well down over the flannel and leave matters for one minute. The queen, having been caged in the centre of the brood nest, should now be released and the hive closed. The thing is done." Mr Gaggin spoke of it as being a great success. Mr W. S. Pender informs us he did not succeed with it.

7. It may be only a few minutes. If one of the bees lodges a sting in the queen she dies very soon. Bees may ball a queen for some hours and then release her.

[We are making Queen Introducing a special subject for next month, and how to stop robbing? one of the questions for same.—Ed.]

ANSWERS TO QUESTIONS.

R. L. STUDDERT, Boggabri.

Re Questions 9. I have found that honey, if it does not candy, gets much darker with age, especially if closed from light. No. 10. I used queen excluders between boxes last year, but do not this year; I do not believe bees like them, and store honey quicker without. No. 11. I think honey improves in flavour with age, for I find that my children do not care for honey when first extracted, but after laying by for six months or so are very fond of it.

Mr J. WILSON GREEN, Logan River, Q.

7.—No. I have seen splendid honey completely spoiled in a galvanised tank. I once washed some cappings in a tub and left it all night. I kept the vinegar two years; it was very strong, but never lost smell or taste of the galvanising.

8.—Open the vessel and stand in warm water, heating through gradually.

9.—Majority gets darker.

10.—Decidedly less, as when the queen has access to top story, and lays in centre of frame, the bees commence and fill the top and sides, and as the brood hatches fill the combs completely. When the queen is kept below they often commence the bottom, leaving the top empty, as they will go no further from the brood than compelled.

Mr JOHN SMITH, Mount Cotton, Brisbane, Q.

6. We have an American professor who goes into ecstasies about basswood—yield and quality of honey therefrom, &c. But our Department of Agriculture does not seem to see its way to introduce it into Queensland. They may do so after private individuals have first tried the experiment and made it a success. See A. B. C. book—"66lbs. of honey gathered by one hive in one day."

7.—Galvanised iron should not be used about honey.

8.—Hot water under boiling point. Stand jar or tin in it.

9.—Don't know. Never can keep any long enough.

10.—Less honey, but occasionally expedient to use them.

MR JOHN S. SKINNER, Maclean, Clarence River,

7.—The leading beekeepers and appliance makers in England condemn galvanised iron for extractors or any vessel to store honey in, as there is a danger of the action of honey on the zinc forming a poison something similar to what salt will produce, namely zinc acid.

8.—To liquify candied honey place bottle or vessel containing honey in a vessel of cold water. Remove cork, place the vessel over the fire, and heat till dissolved. It does not injure the flavor of the honey if clarified this way. When dissolved remove from the fire and cork tight. Honey dissolved this way will not often candy again.

9.—Have not been able to keep honey long enough to see any difference in color.

10.—My decided opinion, from the very slight trial I gave queen excluders is that you get far less extracted honey by its use. The only advantage in section honey is that it keeps the drones from getting at the sections to eat the honey. I consider excluder zinc a waste of money.

11.—I have some honey eighteen months old, but there does not seem any difference in flavor in that short time.

N. Z.

6.—Basswood (*Tilia Americana*) grows very well in New Zealand. At least I have seen some very healthy robust young trees growing not far from Auckland.

7.—It is not advisable to use galvanised iron in utensils for holding honey, as the iron is covered with oxide of zinc, a poisonous substance, which is frequently found as a corrosion on and detachable from the surface of the sheets of iron. It is continually "working," as the manufacturers say—that is, continually corroding and giving off a white substance, which is poisonous, and is likely to get mixed with any liquid matter coming in contact with it. Tinned steel is the best metal to use for tanks and extractors.

8.—The only method I know of is to heat it in either a steam or hot water bath. Great care, however, must be exercised in any case where heat is applied to honey, as it is very liable to take on a burnt flavour, which quite spoils it. The vessel in which it is should never be placed next the fire or it will be certain to burn. If placed in a water bath the temperature should be raised gradually till not higher than 150° Far., at which or lower it should remain till the honey is liquified. I believe there is a volatile substance in

honey that in a great measure gives it the peculiar aromatic flavour very noticeable in the best honeys, and this I always thought was thrown off when heated. At all events, I know that it does lose a good deal of its nice flavour when heated.

9.—I have not noticed any change in the color of honey when kept so that it will not ferment.

10.—Less honey, as the queen-excluding honey boards tend to make the brood-chamber warmer, and so induce swarming, which is a hindrance to the storage of surplus honey. I would rather put on an extra super and allow the queen to take charge of the top box next the brood chamber when raising extracted honey than limit her to the lower one by the use of the said boards, and put up with their disadvantages.

11.—I have had honey several years old, but I don't think it improved with age. I think I would have noticed if it had.

MR G. HARDY, Rose-hill Apiary, Lambton.

6.—Never heard of the American basswood being grown in the Newcastle district.

7.—I should undoubtedly use tin in preference to galvanised iron for honey tanks, extractors, &c.

8.—Candied honey can be easily liquified by placing the tin of honey in a boiler, and placing on a slow fire. Raise the tin a few inches from bottom of boiler, so as to prevent burning, and now and then stir until the whole contents are liquified to your liking.

9.—Re losing color of honey. I don't think so—if anything it improves its color.

10.—I use the Langstroth 10 frame and I can assure you that if the queen lays ten frames of brood I don't think you need trouble about her laying in the top story. I am of opinion you can realise more honey by leaving the bees alone, especially if you have the same hive that I use.

11.—Honey improving its flavour as it gets older. It all depends on where you keep it. If you place the honey in a room subjected to damp, and the water condenses on the surface of the comb, it soon dilutes the honey and then it sours.

On the other hand, if kept in a dry room, with free circulation of air, the older it gets the more improvement in its flavour.

MR. ELLIOT J. RIEN, Richmond.

6. Not grown in this district, there are two of the European Linden (*Tilia Europea*), growing at the temporary college, Richmond, which flourish and flower profusely. The bees worked on them well, but did not get a chance last season on account of the wet weather, and this season it was hot and dry.

7. No.

8. In a water bath, but care must be taken not to over heat it as its colour and flavour will be injured. Some honey can stand a greater degree of heat than other.

9. Not if properly bottled and kept in a dark and cool store room.

10. Less.

11. Our honey did not improve from last season. The honey obtained in this district candied very early last season, and as soon as the warm weather came in this season it commences to ferment, no matter how packed. Some was in 60lb tins, others in 2lb jars, and in extracting this year, I came upon some which had actually fermented in the cells, although capped by the bees, and left in the hive all the time.

G. STREATFIELD, Forest Reefs, Beneree.

6.—Re linden, &c. There is a tree which is called lime growing very freely at Orange, but I have not ascertained its botanical name. Intend doing so.

7.—Is it advisable to use galvanised iron, &c? My experience is, that I put about 180lbs of honey in a galvanised iron vessel, and left it there for some months, and could not perceive any difference or change in either color or flavor, therefore see no objection to its being used.

8. When honey candies, &c. Having several tins of honey which was so candied as to be solid, I put a tin in a large boiler of warm water and increased the heat slowly till it liquified.

9.—Does honey lose its color, &c? I have some frames of honey two years old, and I can perceive no change of color from the time they were first taken from the box or hive. I have one frame from the same box as the one I brought to the first Bee Convention at West Maitland in April, 1892, and it is just as clear as then and same in color.

11.—Does honey improve, &c.? A very wide scope of opinion may come into this theory, because tastes differ so much. To my taste honey a few months old is preferable to new honey, if uncapped or extracted, and kept tightly closed up. If exposed it seems to me to get "flat," losing a great deal of its piquancy.

Mr JOHN HAYWOOD, Oaklands, Pambula.

I have great pleasure in answering Question 6 last issue. There are two linden or basswood (*Tilia Americana*) trees growing on this estate. They are elegant trees, and grow luxuriously in this latitude, which is about 37° S. Elevation 10 feet above sea level, and three miles from the sea, land alluvial. The trees are about 45 years old and 35 feet high. They can be classed amongst the most handsome and ornamental grown, and are a fine shelter tree. The flowers develop about Christmas time, when the bees can be seen in myriads on the trees. No doubt these trees will grow anywhere in the colony, excepting in the very dry parts. I am posting you a few small branches, and if beekeepers would like to see the leaves and flowers when developed I will post same on receipt of 2d. stamps, and can supply cuttings in season (about June next).

[The samples came duly to hand. We showed them to a gentleman some five or six years from England, asking if he knew what they were. The prompt reply was, "Why that's what we call the lime tree in England."—Ed.]

W. S. PENDER, Drumfin, West Maitland:

7. No. Zinc. i.e., the coating iron gets in so-called galvanising, is readily dissolved by the acid properties in honey, and forms a poisonous compound. Some bee-keepers wax the inside of galvanised iron vessels. This is good as long as it lasts if thoroughly done, but to clean honey vessels, boiling water has to be used which melts the wax, so the vessels need waxing every time they are thoroughly washed. Why not use tin, it is safe, easier cleaned, needs no waxing and not very much more expensive. Zinc also spoils the colour of wax.

8 (a) Gently melt it on the stove, placing a board on the stove, and the tin of honey on top and do not have enough heat to scorch the wood. (b) Any way that the honey can be melted by an even heat, not exceeding 175° F, free from all moisture, is better than melting in a copper though I have had to use the latter. I did it thus. Fill the copper boiler with sufficient water so that it will not flow over when the vessel of honey is placed in it. Well cork the vessel of honey, and place it in the water, three inches above the top of the copper. To keep it at this height it can be suspended with a rope from the ceiling. If the water should boil it cannot get to the honey, and corking is necessary to prevent the honey absorbing the moisture driven off by the heat. Use a thermometer and do not let the water exceed 175° F. Boiling heat, viz. 212° F, spoils the honey.

9. Not if well tinned and hermetically sealed.

10. That depends on what use you make of them. During a good flow of honey they are not needed. Excluders should be a special subject, not sufficient space for it here.

11. Honey will improve in flavour the longer it is kept, if it is so strong in flavour as to be unpalatable, and is kept open in a dry atmosphere, but if the flavour is right it will not improve because that flavour will be lost.

THE SPECIAL SUBJECT.

Mr. R. L. STUDDERT, Boggabri.

I think the subject "Honey extracting" is the proper thing for this month, for if other beesmen are like me they are up to their necks in it. I started extracting three weeks ago from the yellow jacket and box trees, and the honey is fairly rolling in. I have 35 hives, and they keep

me well employed. I find the cross (Carniolan queen mated to Italian drone) fairly whips the Italians and blacks all to pieces in the matter of honey gathering. In August last I received four Italian and Carniolan queens and introduced successfully into black colonies of about the same strength, but from the jump Italians were not in it, and although I have taken twice the quantity from the Carniolan, they have now 20 frames full of honey, and had to put a third box on to keep them going till they cap up. The swarming season is over here, and strange to say, whether through accident or design, my bees, (although I have twenty colonies of blacks out of thirty) did not swarm this year, or rather, I got one black and one crossbred swarm, only from them. They never attempted to make queen cups and seemed to think only about how to get honey in. I caught a few stray swarms of which there were any amount flying about, so it could not have been any fault in the season—can anyone explain?

ELLIOT J. RIEN, R.A.C., Richmond.

My method of extracting is as follows:—I brush or shake the bees from the frames, putting them (the frames), into an empty super, or comb bucket, and carry them to the honey-house. I prefer this method to putting on bee escapes. I find that in the warm weather the bees will stay in the super for two or three days and then there is the labour of putting them on and off, and with a properly constructed honey-house it is immaterial to me whether I get rid of all the bees, as they will make their escape through wire cloth screens or the swinging window, and if these windows are put in one side of the house only, the bees will not interfere with my work. The caps are then cut off. For my own use, I prefer the novice honey knife, but I keep two Bingham's in the knife heater for the use of students, as they do better work with these knives. The caps are put in the uncapping can to drain, going from these to the solar wax extractor. The combs are then put into a novice honey extractor, and the honey taken out. The empty super is then exchanged for a full one, while the boys are uncapping and so on. The honey is strained into the honey tank, and allowed to stand to let air bubbles arise before being bottled, I do not extract unsealed honey

N. Z.

The extracting house if part of a building should be at the warmest end of it, though for many reasons I prefer to have it by itself with of course a storeroom for the honey as part of the extracting house, but so that it can be shut off entirely from the extracting room when required. The storeroom flooring should be well supported and strong and at least one part

should be from 2½ to 3 ft above the level of the ground outside, with an opening (wide door) at that part to allow of a waggon or dray to back in and the platform to be on a level with the floor. This plan saves a lot of laborious work when loading with cases or barrels. The house should of course be bee-tight and the windows made to turn on their centres, so that when any bees do get in and eventually fly to the window by turning the latter you get the bees all out at once. Size, etc., depends upon requirements, but working amongst messy stuff like honey plenty of room is needed, and the nearer you have a supply of water the better. In my early days I used a two-comb extractor after the pattern of Root's "Novice," but later I had a six-comb reversible basket extractor made exactly similar to the one figured on page 150 Hopkin's "Australian Bee Manual," which I found answered splendidly; especially after having gearing put to it that could be worked from the side instead of directly on top. Quite a number of them are now in use in N. Z. and some in Victoria. They are substantial, heavy enough to stand perfectly firm without any frame work, and will last a lifetime. I know Stanley's and other reversible extractors, but have never seen any equal to those mentioned. My extracting arrangements were arrayed thus:—A platform 3ft high on which stood the extractor with room enough for a man to work comfortably on and for the comb baskets, &c. At each side of the platform stood a double honey tank to hold nearly 1½ tons. When one was filled we simply turned the extractor round and filled the other. By this time the honey in the first tank was ripe enough to tin, and so on. Near the platform stood a large uncapping can or rather two, and over each tank was a series of three strainers one above the other, the top one rather coarse, the middle one a little finer and the lower one very fine, through which all the honey ran before reaching the tank. Three men or lads were required at extracting time, one to bring the combs in from the hives, one to uncapping and occasionally help the first one, and the third to extract. We used about 6 tin comb baskets holding 6 combs each. I have seen one continuous stream of honey running from the tap of the extractor without a break except at lunch time, from 9 a.m. till after 5 p.m. The combs taken from the hives were generally capped from one third to the whole frame. Our honey generally speaking was ripe enough to tin in from 2 to 3 days from extracting. The chief thing is to store in large shallow tanks, exposing as much surface to the air as possible. My tanks were 6 ft x 4 ft x 18 in deep with a treacle tap at one end.

This article I'm afraid won't come up to your requirements, "short and pithy," but then it is so difficult to know just what is wanted, as the subject "Honey Extracting" covers a lot of ground more or less intimately connected with the process. [Never mind, its good and readable.—Ed.]

C. MANSFIELD, Hunter River Apiary, Largs.

My vote goes for the Munday hive, for the following reasons. The hive itself is of a compact shape, being, as the old saying has it, "nearly as broad as it is long." Consequently the brood nest is more snug and compact. Its capacity is just about the same as the eight frame Langstroth hive, and of course it can be supered to suit the flow of any locality; if two storeys are not enough, a third can be added. Each body holds ten frames of the size to be subsequently mentioned. The frames are twelve and three quarters inches by eight and a half in the clear, thus admitting six one pound sections when required. The frames run across the hive parallel with the front, and so the pollen is stored in front comb. And as far as my experience goes it seems to be just the capacity, these ten frames, to keep an average queen busy in the lower story. Again, these frames have wide tops bars, the ends being narrowed to allow the workers to enter the top chamber, and so the brood nest is kept snug, no interruptions occur from bees passing to the top chamber, and no upward draught of cold air can pass through the brood. Moreover, the queen seeing she would have to leave the brood combs and travel up the inside of the hive to do so, seldom ascends to the top chamber, hence no honey board is needed. The frames are self-spacing, and can be moved several at a time in manipulating. If a cover is blown off a hive, it is little detriment, and the comb basket in the extractor can easily be adapted to admit the wide top bars. And further, the frame, besides being of a handy size for manipulation, can be used in queen-rearing nuclei, and returned to the hives again at the end of the season.

W. S. PENDER, Drumfin Apiary, Maitland.

I will say but little as to the method of taking the honey off the hives for extracting, for that will depend a good deal on the system of hive construction and management, but such system should be adopted as will get the comb into the extracting house in as short a space of time as possible. If double story hives are used the bees maybe got from the combs by using a bee escape the night before and putting a set of empty combs between the upper and lower stories, but as a rule bee keepers have not sufficient empty combs to do so. If half stories and shallow frames are used a little smoke will usually drive most of the bees down. In the long idea hive the full combs can be taken and empty ones substituted. Whatever method is adopted some extra combs should be at hand. I will speak of hives that are storied. Proceed to the first hive, having sufficient empty combs in your comb bucket or barrow, take off all combs that are sealed, singly shaking and brushing the bees in front at the entrance,

and put in your bucket or barrow, substitute empty combs in their place, take these to the extracting room and when emptied exchange with the next hive, for those filled with sealed honey and so on from one hive to another. If the bee-escape and empty combs are used, each hive can have the upper stories removed the morning following the putting on of the escape and be found almost if not quite free from bees. These sets of comb are carried to the extracting house. At evening when finished, the escapes and empty combs can be placed on other hives to get sufficient combs for the following days' work, and so on until the whole of the hives are extracted. Of course a few bees will find their way to the extracting house. This should have a window on the north side and the opening covered on the outside with wire cloth, securely fixed at the bottom and two sides and carried 4 to 6 inches above top of window, and nailed to fillets to keep the wire cloth about $\frac{3}{4}$ of an inch away from the outside wall, thus giving the bees a passage out, very few if any bees will find their way into the room. All bees carried into the room will fly to the light of the window, and rise up the wire cloth, until they find themselves outside. It is a great nuisance confining bees inside a room, they get on the floor and up ones trousers, into the honey, etc. Now having the combs in the room we proceed to extract the honey from them. The extractor should be placed at a sufficient height above the floor to allow of a bucket being put thereunder, or better still a honey tank with strainer: if the bucket is used, it is to be emptied into the strainer of the tank. The extractors I use and recommend are a novice two frame, and Cowan two frame reversible, the one at one apiary, and the other at the other, of course the latter is more rapid. An uncapping can, *i.e.*, a vessel to catch the caps as they are cut from the combs, and an uncapping knife complete the equipment, any wide can will do to catch the caps as a milk dish with a couple of strips of wood fixed across the top to rest the comb on, but where a large quantity of work is to be done, the Dadant uncapping can is advisable. As to the honey knife, I have used nearly all patterns, and prefer the Bingham. To proceed, take a comb, rest it on end on the fillets of uncapping can and slice off the cappings as thin as possible, allowing them to fall into the dish below. When one side is done do the other, and place them in the extractor. If two persons are at work, a hive body with tin dish will be required to hang uncapped combs in and catch drippings while waiting for the extractor. When placing the combs in the extractor choose two of nearly equal weight as they balance better and cause the extractor to run smoothly and not jump about. If the combs are placed so that when the handle of the extractor is turned, the inclination of the cells

will be in to the direction of motion, the honey will leave the combs a little quicker. Turn the handle just fast enough to throw the honey out and as long as any comes out. When one side of the comb is extracted, turn the combs and proceed with the other. In hot weather, and having heavy combs, it is often advisable, especially if the combs are new, to extract only one half the first side then the whole of the other side, and then finish the first side. This means extra time, but it is often necessary to prevent breaking of combs. There will always be some broken comb, either through accident, dense honey, etc, so a few transferring wires are handy to keep the broken comb in the frames until the bees mend it. I prefer a transferring wire, that passes right round the frame, as "the Pender," though in the absence of these wires, pieces of string can be used. If extracting is done in cool weather the uncapping knife will clog, especially if the honey is thick, and will not do good work. All that is necessary to make it work sweetly is to wash it in hot water, in fact a small lamp heating a dish of water, in which one or two knives are hung is often a necessity, and a hot knife does more rapid and cleaner work than a cold one does. I always extract with the honey gate of the extractor open, allowing the honey to run into a tin bucket, which, as soon as it is nearly full, (about 30lbs), is emptied into the strainer over my 600lb tin honey tank, the tank is deep, and the honey being kept in it 24 hours or more is clarified before being tinned, and nearly all the honey can be run off free from air bubbles. The strainer I prefer and use is made of fine brass wire gauze. Cheese cloth would answer as well and is cheaper, but not so convenient. If the combs to be extracted contain brood, care should be taken not to turn the extractor fast enough to displace the brood. The amount of speed will be known by experience. No harm is done to brood by extracting if it is kept warm enough to prevent chilling, and is not disturbed from its position in the cell.

BRUSH-MADE FOUNDATION.

By M. SCOBIE.

Brush made foundation is made by brushing a thin film of wax on a plaster mould, with the impression taken from a sheet of machine-made foundation. The mould must be kept well soaked in cold water just before and while being used or the wax will adhere. The thinner the sheets are made the better. Rather have a few small holes than try to rectify it by brushing over it again, unless using a small brush especially for the purpose. If the foundation is made too thick, the bees will be unable to find the base of the cell worked out on the side on which the impression is taken. The impression or rather pattern in brush made foundation is only on one side, and this side is

worked out first by the bees, and they are then very likely to build irregular cells or possibly all drone cells on opposite side.

The mould should be made just the size to slip easily inside frame used, and the frame may be wired or unwired, but is better wired, as the wires are covered with wax, need no embedding and help to lift the sheet off the mould. Use a good sized paint brush to spread wax. Keep wax just hot enough to flow well, but not too hot. When newly made, bees work it out just about as ready as machine made, but it is best worked out in top stories, placed in pairs between worked out combs, with the sides with the pattern facing the combs. If the smooth side is faced to combs, the combs are unduly bulged into them, and this side may be left smooth, but by placing them in pairs as suggested, as soon as the one side of a part of it is worked out, then the bees are forced to work between them or leave a vacuum; and if well made, they are worked out both sides almost as well as machine made foundation. Some combs are worked out with every cell a worker cell, but more often some patch is too thick or is imperfect, and there a few drone cells are put in if in stocks with old queens. That it practically prevents excess of drones, evidenced by the great efforts made to build drone cells in any vacancy. As the sheets are made so light, every scrap of wax on hand may be used up, a few pounds of wax will go a long way in making this style of foundation.

HEREDITY IN BEES.

W. ABRAM, BEECROFT.

In his article on "Heredity in bees," Mr Gale declares: "The subject of the difference of the constituents of the hive have occupied my attention for years past; and long since have I come to the conclusion that the food theory is wholly untenable." He undertakes the task to explain facts in support of other more important factors, and declares them to be more important, relatively, than the food theory. He is led to this conclusion by noticing, "That the efforts of Nature to mature a queen are almost opposite to those to mature a worker bee, and that the aids Nature uses in the one case is almost entirely changed in the other." Mr. Gale asks, "What produces these and a score of other differences?" And nature gives him this answer—"The porousness of the queen cell; the absence of cocoon from the larval queen's abdomen; the extra size of the cell; the cavities of its external surface; the position of the queen within, have all more to do with the development of the generative organs of the queen, than feeding with larger quantities of food."

I differ from Mr Gale because the larger quantity and the quality of food given to the queen larva, is so clearly a point of fact, that no

practical bee-keeper can ignore it. In a long and extensive practice a bee-keeper has opportunities of noticing many things which the novice has no idea of. I have seen queens cells of all sorts of shapes and sizes; I have let queens emerge from cells from which they could never have liberated themselves, because the queens were in a most unusual position in the cell, with the head upwards; and I have seen queens to take nineteen to twenty days to hatch. But although these cells were of various sizes and various shapes, and the queens occupied positions entirely contrary to Mr. Gale's statement, nevertheless quite perfect queens developed, because the main factor, the food was abundant. A queen developed in a large cell is no larger nor superior to her sister, which occupied a small cell. Very often the bees are required to build queen cells upon worker cells containing young larvae. These are surrounded by worker brood, and therefore lack the conditions essential to their development, according to Mr. Gale. These eggs are never intended for queen progeny at the time of being deposited nevertheless quite perfect queens hatch from these cells, equal to those reared in natural cells, provided food is supplied them of the proper kind by the bees.

That the size of the cell is immaterial, so long as it is not too small to hold the quantity of food and the natural sized insect is also shown by the fact, "that worker bees reared in drone cells are not particularly in excess of ordinary bee size and never anything else but worker bees." I have more than once bred bees in drone cells and I have now a small piece such brood in spirit ready to submit to any test. Again, I have seen worker cells containing nymph free from any covering, so that fresh air for respiration had access in abundance, but with no other result than rearing worker bees. All these facts declare against Mr. Gale's assumption.

The quality and quantity of food is undoubtedly the main factor capable to develop the queen. In case of scarcity the consequence proves fatal. The required temperature is always present where breeding takes place. I have seen queens reared, while the outside temperature stood far below freezing point; but if during the latter period of the queen's development the required amount of warmth had been withheld, retarding to some extent the larvae, she would have hatched from three to four days later than usual. It will thus be seen that the conditions and agencies vary, but the result is the same, as long as food in required quantities is present. If the conditions and agencies have all the influence upon the constructive and mental characteristics Mr. Gale declares them to possess, then why should in-breeding, prove what it always does, an ultimate failure, and absolute retrogression? The conditions and agencies are unaltered, but the result is utter

ruin, because heredity in character is due to different causes, and not to what Mr. Gale assumes.

Now let us see whether the quantity and quality of food varies as do the conditions and agencies, and mark the result. We find that brood food consists of albumen substance, fat substance, sugar substance. Of the three different constituents, the queenly larva receives the highest percentage of albumen. Before the cell is sealed over it has fully fifty times more food rich in albumen within its reach for consumption than the worker larvae receives. This is the only practical and natural answer as nature declares it, and must be the main reason why the organism of a queen differs from that of a bee. Whatever else appears is due to nature, and not to extraneous circumstances. In their germination both are alike. Both are alike up to five days old as regards mental and constructive character; both are fed on food of almost the same quality, only the queen larva gets a greater quantity than the worker larva. Henceforth a change takes place. The cell which is to contain a queenly larva is enlarged and extended downward, and the same quality of food as hitherto is given in great proportion; while the cell of worker larva remains small and the quality of food changes materially. The great quantity of food required for the development of a queen explains the reasons for the largeness of the queen cell. Where else could the bees store the amount of food? The queen does not require, nor could she fill the space. Any queen cell is large enough for a queen. The food for the queen larva is freed from any indigestible substance, it is semi-digested, and its quality is always of equal proportions, no matter whether the larva is in the first stage, from one to four days, or in the second stage from four to seven days old. This is of importance. But the quantity of food varies according to the time of the season, the strength of stocks that rear queens, etc., etc. That a natural queen cell usually presents the form of an inverted cone, finds its explanation in this: The bees when building their combs, have no consideration for queen cells; these combs are built for other purposes, and there is not much more than bee space between each comb and parts of the hive or frames left. When the desire for queen rearing arises, the bees utilise some of these spaces between comb and hive, or frame, and they mostly use the edge of the comb to build the queen cell. If now, space permits to continue these cells, straight down, they do so, but if not, as near the bottom of the comb, then the cells are bent horn shape, with no bad result whatever. The bees could not well build upwards, therefore instead of an erect cone, a queen cell represents an inverted one. Besides the larva might get drowned in the quantity of liquified food, were

the cell upright. But a different form is necessary to indicate the importance of its occupant.

The worker larva is fed on semi-digested food similar to that of the queen larva for the first four days, but henceforth the albumen and fat are decreased, and the sugar substance increased. Why so? Because the larva has to develop into a worker bee, and its food must be rich in respiration material. Is this wonderful preparation a matter of Nature's law, or is it intentional? If we take into consideration, that during the height of the breeding season there are in a hive from 10,000 to 20,000 larvae to be fed daily and some 2,000 to be sealed, we must indeed admire the development of heredity.

The drone larva receives for the first four days likewise semi-digested food, which is even richer in albumen than that of the queen larva, but from the fourth day more raw material in the form of pollen and sugar is given.

In looking back upon Mr. Gales' statement regarding the agencies of food, the sexual organs of workers ought to attain greater perfection than those of the queen, because the former receives more producing material than the latter.

Further, Mr. Gale states: "The sexual organs of fertile workers are never receptive and can never be excited to become so." Well, I admit that a fertile worker cannot become receptive, but I maintain that some worker bees are receptive, though before they become fertile. Perhaps Mr. Gale has never heard of such a thing as a complete connection of a drone with a worker, but nevertheless it is a fact. But the imperfect developed sexual organs of such workers hinders her from fulfilling the full duties of a mother.

The greater width of a queen cell prevents the larva from spinning a complete cocoon. The reason or object is this: The bees build always more than one queen cell, in order to safe guard against any possible accident. Now, if a queen has hatched and the bees have no desire to swarm, does she await the hatching of these queens still in the cell? No, she does not wait until they hatch, she pierces her sting into the cell containing a queen, at a place where there is no cocoon, and destroys her rival. Should the cocoon cover the whole interior of the cell, the sting of the queen would pass through it, but she could not withdraw it again, which would cost her her life. In many instances the bees do the work of destruction for the queen, but they also know just where to open the cell so as not to have to cut through the very strong cocoon. This is the reason why a queen only spins a half cocoon; the width of the cell prevents her from spinning a full cocoon. If the bees have no choice but to transform a five days old worker larva into a queen larva, the size of the larva prevents the bees from widening the

bottom of the cell, and in such cells the larva spins a full cocoon, like a worker bee.

Another matter worthy of mention is this. When the bees cover a queen cell over, the seal is not flat, but pointed. The larvae when spinning the cocoon does not touch the cover, but leaves a small space between, and when the transformation of the larva into nymph takes place, that is in about twelve days from the laying of the egg, the bees remove the cover, and the cocoon can be seen quite plainly. One would almost think the bees mean to destroy the cell. Nothing of the kind, however, happens. The next day we find another cover, but this right upon the cocoon, and sufficient fresh air passed through the very porous cocoon by removing the less porous cover for a short time.

In submitting the above information to the readers of this journal, I have intentionally refrained from any remarks regarding mental characteristics. We have no alternative, but to accept nature's law, which proves that in bees' life, all fertile eggs possess the characters required for a mother. There are in nature certain matters which the Creator has wisely hidden from our observation. These are but simple statements, devoid of questionable terms and hard quotations, and ordinary minds may understand what I have written. Mr Gale's article on the other hand may do for learned men, but will not suit practical bee-keepers like myself.

EXPERIMENTS.

The United States Agricultural Department have organised an experimental apicultural station at the Michigan Agricultural College, the experiments being conducted by Professor J. H. Larrabee. The following are among some of the results, for which we have used the pages of *Gleanings in Bee Culture*.

THE BEST BEES.

In a recent report Professor Larabee says:—A number of Carniolan queens were introduced and queens bred from them. Added familiarity with the cross of the Carniolan bee with the yellow race increases my satisfaction with their valuable traits. They have proved themselves fully as desirable as either race in their purity, and they have some points of superiority.

REMOVING THE QUEEN TO PREVENT SWARMING.

Early in spring two colonies were selected, nearly alike in strength as it was possible to get them. These were kept at the same strength, the amount of brood in the hives having been equalised several times. The harvest did not open until about July 6, and upon the 8th suppers were

given them. July 12, queen-cells were found partly constructed in colony No. 1. The queen was removed, and four days and also eight days afterwards all queen-cells were destroyed. On July 25 (thirteen days after her removal) the queen was returned. This colony did not swarm at all. The other colony (No. 2) was allowed to work without interference, and it was not until July 21 that they swarmed. As the harvest from Linden was about closing, the swarm was returned and all queen cells destroyed, in the hope that they would not again attempt to swarm again before the close of the season. They did not swarm, yet it may be supposed that this interference with their instincts tended slightly to decrease their energy. The results in total amount of honey gathered are as follows:—No. 1 gained in weight 37 pounds between July 6 and 25; and No. 2 gained 46 pounds during the same time.

If from the total gain of No. 2 we subtract 5lbs as the weight of brood it contained in excess of the brood of No. 1 on July 25, we still have 4lbs as the amount of honey gathered by No. 2 greater than the amount gathered by No. 1. These colonies were both worked for comb honey with like treatment of supers. This experiment is valuable testimony to prove that the removal of the queen to prevent swarming does somewhat affect the amount of honey gathered by the bees.

WAX SECRETION.

To determine the amount of honey consumed by the bees in secreting one pound of wax, this experiment, first undertaken in 1891, was repeated this year. As the conditions were much more favourable the results were very gratifying. There was entire absence of a natural honey flow, the weather was favorable, the colonies were of the same strength, and in prosperous condition, they took the food rapidly, and built comb readily. The result gives a less amount of honey as necessary to be fed the bees in order to have one pound of wax secreted than was obtained in this experiment last year. This was to be expected because of the more favourable and exact conditions. Two colonies were taken, which I have designated as Nos. 1 and 2. No. 1 was given a virgin queen and no comb or honey. No. 2 was given a virgin queen and empty combs. It was noticed that the bees did not fly from either of these hives as vigorously as from others of the apiary, and that No. 1 was the more quiet of the two. Twenty-four and a half pounds of food were given, and almost exactly 1 lb of wax was secreted by No. 1. By weighing the combs both before and after being melted and taking the difference, the amount of pollen was ascertained. In both colonies the young queens had begun to lay, having been fertilised during the ten days the experiment was in progress. I now feel confident that more careful work on the part of others who have

undertaken to solve this question will give practically the same results as are here summarised:

WAX SECRETION.

	Colony No. 1.		Colony No. 2.	
	Lbs.	Oz.	Lbs.	Oz.
Weight of bees	7	5	7	3
Gross weight, Aug. 2, with bees	27	8	34	4
Gross weight, Aug. 12, with bees	42	10	56	8
Gross gain in weight 10 days	15	2	22	4
Feed given	24	8	24	8
Minus honey extracted	12	8	20	8
Leaves honey consumed	12	0	4	0
Honey consumed by No. 1 in excess of No. 2.— 12—4, equal to 8lbs.	15½			
Wax secreted by No. 1	1	8		
Pollen in combs at close				
Honey, wax, and pollen removed (8 pounds honey consumed in secreting 15½ ounces of wax	14	15½	22	8

EVAPORISATION OF HONEY.

Neectar of flowers taken into the stomach of the bee undergoes certain chemical changes before it is finally deposited as honey in the cells of the honeycomb. The recent analysis, by direction of the United States Government chemist and those instituted at the Michigan State Experiment Station, prove that there is no chemical change made in the honey by the bees after it is deposited in the comb. There remains, however, much water in this honey that must be evaporated by the heat of the hive and the current of air through the hive caused by the fanning of the bees. It is well known that this labor of evaporation and the room occupied by this thin honey interferes greatly with the rapid gathering of neectar. In this opinion I am confirmed by a

study of many records of colonies placed upon scales during the honey flow. It is often desirable to extract all of the honey gathered from one species of honey-plant before the flow from other sources begins and before the former has ripened to the usual consistency of good honey. The property of granulation in honey is so troublesome that its prevention would be very desirable. The experiments in this line have plainly indicated that the "water of crystallization" can be easily expelled by a proper artificial heat and the product sealed, so as to preserve it in a liquid state for an indefinite time. For these reasons it was thought best to experiment in this direction with various forms of artificial heat in the effort to devise some cheap and sure method to assist the bees in this work. For this purpose there were constructed a series of six shallow pans, 19 by 28 inches in size, with partitions 2 inches in height, open at alternate ends, similar to the partitions in a maple-syrup evaporator. These were arranged in a cabinet, one above the other, so that honey entering at the top was obliged to flow some 75 feet before passing out at the bottom. An oil-stove was placed beneath the whole, and a pipe at the top caused a current of heated air to pass upward over the honey. The fumes of the stove were carried off by means of a second pipe, in order to avoid all danger of their injuring the flavor of the honey. Honey of average body, with 10 per cent by weight of water added, was reduced again to the normal condition by passing twice through the pans at a temperature of 120 degrees, and about 100 pounds per day was evaporated at that temperature. Thin nectar, extracted from the hives very soon after being gathered, was evaporated to the thickness of good honey at about the same rate. This apparatus was kept in operation about ten days upon honey of various thickness and upon clear water with the above definite results. The flavor of the first honey was injured—probably by the first acid action of the honey upon the outer coating of the tin. Afterward this was not as apparent. The color was also somewhat affected. The heat of the sun was also tried for purposes of evaporation. A shallow pan 28 by 54 inches in size was filled 3 inches deep with thin honey. This was covered with glass 6 inches above the honey, and left in the sun for four days, when about 5 per cent of moisture was evaporated. As the honey lies at rest, the water rises to the top, somewhat aiding evaporation. The flavor and color are not affected as much as by the method of running through pans. In this way honey with 30 per cent, and even 40 per cent, of water added, was evaporated to the consistency of very thick honey in three weeks' time, so thick that it has not at this date showed any signs of granulation. During favourable periods of sunshine a temperature of 165 degrees was reached. By this method a tank 4 by 6 ft. with 6 inches of honey, and weighing 1300 lbs

should be evaporated 10 per cent., or from the consistency of freshly gathered honey to that of average body, during about two weeks in July or August.

The common method of exposing to the air in open vessels in the warm upper story of a building was also tested with honey to which 10, 20, 30, and 40 per cent of water had been added. That having 40 per cent added became strongly fermented in a week's time, while only a slight change had taken place in the 30 cent dilution, and at the end of a month it tasted like a very poor quality of commercial extracted honey or like honey dew. The 20 per cent dilution was not nearly as bad, and the honey with only 10 per cent of water added was, during the month, returned to the consistency of very fair honey.

Nectar extracted two or three days after the combs were placed in the hives contained, during the dry weather of July and August, from 10 to 15 per cent of water above the amount always found in honey that has been sealed in the comb by the bees. This was determined by evaporating in test-tubes in hot water.

Summary.—(1) The method at present promising best results for artificial evaporation is that by solar heat under glass well ventilated. A small portion of a greenhouse or forcing-house arranged for conserving the heat of the sun, and so located that honey could be run into the shallow vats directly from the mouth of the extractor, and drawn off from the bottom of the vats into marketing receptacles, should give good practical results.

(2) Very thin honey or nectar will not sour as quickly as supposed by many, and may be safely kept during any period of cloudy weather we may have during the hot summer months.

3. The method of exposing to air in a warm room cannot be depended upon to ripen very thin honey, although it may be serviceable for evaporating a very small per centage of water.

(4) The method of evaporating by artificial heat of stove or furnace is expensive and troublesome, requiring constant watch and care, and not giving as good results as had been hoped for.

(5) The possibilities in the line of evaporating honey for the purpose of increasing the yield and preventing granulation are very great. A series of experiments to determine the increase in production by extracting freshly gathered would be next in order and value. When the utility of this method is fully demonstrated, supers with fixed frames and extractors holding whole case will be used, and other apparatus conformable to the needs of the new system.

Mr Joseph Cooper, Armidale, N.S.W., reports—Honey coming in pretty freely, chiefly clover, bees doing well.

Mr. J. H. Burke, Cessnock, writes :—Bees are gathering very little honey here at present, and the moth is very troublesome.

HOW TO SECURE A MAXIMUM NUMBER OF BEES.

Read at the late Beekeepers' Conference in Melbourne by C. FULLWOOD, HAWTHORN.

Of course I mean just at the right time, and, if you will, in the right place. A maximum number of workers would be of no benefit where there was not anything for them to do, or before the work is ready for them, or after it was finished. We want crowds of workers just when the honey flow begins, and we need them concentrated in just the number of boxes necessary to contain the supply. A crowd of bees scattered over a large number of combs will not be able to spare a field force sufficient to gather in the nectar awaiting them, whilst the same number properly concentrated, with surplus apartments ready furnished, will produce a boon that will gladden the greediest apiarist.

HOW IS THIS DESIRABLE CONDITION TO BE SECURED?

Need I say, intelligent investigation, and application of knowledge experimentally and practically required, are here essential? The beekeeper who depends solely upon books and journals for guidance will not fully succeed, and those who imagine they know everything and are too independent and conceited to accept advice from others will lose considerably in the race. There must be a combination of attained knowledge, from the library, the workshop, and practice in order to the larger measure of success.

The characteristics of the locality and surroundings need to be understood. This can only be obtained by personal investigation and years of experience. The time when the supply is most likely to be at hand must be known, and the probable yield during a given period; this will be gathered by observation. To be ready for this just at the right time marks the intelligent from the careless, unobservant apiarist.

IS IT POSSIBLE TO BE THUS READY? AS A RULE, YES.

The first essential is good, young, healthy, fertile queens. Heredity has a great deal to do with quality and quantity of your bees. Never keep a poor queen. She will produce poor drones, and a succession of poor bees will result. The next essential is good, well protected hives that will prevent the fluctuations of temperature appreciably affecting the brood nest; the queen is very susceptible to atmospheric changes. I thoroughly believe our hives are constructed, on erroneous principle, simply because properly constructed weather proof hives would be expensive and cumbersome.

The next important matter is proper feeding at the right time, with the preservation of a regular proper temperature for breeding purposes, so as to secure a field force exactly when required—this to be accomplished in such a way

that swarming unduly will not be induced. I am aware this would be a somewhat difficult matter, but not impossible with proper appliances and watchfulness. It might be necessary to remove some queens for awhile, and this would entail other work. Means would suggest themselves to the intelligent observer as circumstances arose. The disposition to produce drones should be checked as much as possible. The fewer the drones the less swarming as a rule.

In any locality where the season is early—that is, where the honey supply is at commencement of summer—it is a good plan to go into winter with fairly strong stocks on few frames, using cushioned division boards to reduce the nest and preserve the internal temperature. Then as soon as breeding commences, carefully—not too soon—and gradually enlarge the brood chamber, being specially careful how and when this is done, in order to avoid chilling young larvae. I am convinced foul brood largely arises from the variations of temperature to which the bees are subject in this climate, the larvae being very sensitive.

I am very partial to good quilts over the brood nest. I consider them a great convenience and protection, permitting of opening and handling when it would be unwise were they not in use.

For queen rearing and the many operations necessary in connection therewith, I am strongly in favour of a properly constructed bee house. I used one for years, with pleasure and advantage to myself and others.

VISITING.

By E. T.

We found ourselves at dinner time in the melancholy town of Wallsend—melancholy because of the state of the coal trade. We knew that veteran beekeeper, J. W. Hopkins, did not live far off. The bush for miles around is very dense, as coal miners use coal instead of timber for household purposes, and there is no ringbarking for cattle pasturage. Being anxious, however, not to lose our way we made a few enquiries. Our first informant told us there were two ways, one a good four miles, the other about two miles and a half. The first was a fairly level road when once you got on the high land, but he would much rather go that way than the shorter one, as there was *such a big hill* to get up. Number 2 informed us there was a big two hours' journey, and *such a rough road*! Number 3, a lady, said it was *such a distance*! A good two hours' walk. They didn't know we had been bred amongst hills, and had also marched in the ranks. So spite of advice, and a lingering touch of lumbago we gave the order "Trail arms (walking-stick)—Forward." Up by the public-school, down by the Chinamen's gardens, past the Jubilee Shaft, and we supposed we were at the foot of *such a big hill*. But up we went—up, up—by no means a good buggy road—tall

forest trees and dense scrub on either side—we thought a perfect paradise for bees—beautiful glimpses now and then of the townships and country around, and the water-worn pebbles under our feet reminding us of the mysterious forces working through the ages that had raised these hills from perhaps far below the bed of the ocean not many miles away. The top was reached and a gently sloping road brought us to friend Hopkins' house, 45 minutes from the time of our starting. He was among his bees, smoker in hand, and a genuine hearty hand-shake now took place. We spent an hour with him among his bees, and he has some beauties too!—recently imported Italian (leather and golden.) He has here some hundred hives at an average distance of fourteen feet from each other. He uses full sized Langstroth frames, and would even prefer a larger to a smaller size. He reckons November a bad honey month—the spring blossoming has ceased, and ironbark and other forest trees were not yet in bloom. He uses carbolic acid for uniting and other purposes. He has some very choice trees in his apiary, which consists of about five acres. After a visit to the honeyhouse, where was a well-made four-frame extractor, manufactured in the Newcastle district, we sat down to a most enjoyable tea, in which preserved peaches that Mrs Hopkins had gained a first prize at the previous local show furnished a capital item. Accompanied by Mr Hopkins and a visiting friend we descended the hill to the pretty railway platform at Cardiff a mile away, catching the evening train to Newcastle, and so ending a most pleasant and health-giving afternoon's outing.

Mr G. W. Gordon, of Jamberoo, writes—I am a believer in the Gallup hive. I have every indication of a big honey yield this season. So far I have taken 8 cwt. this season, principally willow tree and clover, and at present it is flowering from dandelion and clover. Spring count 20 hives, at present about 40. Here the season has been very dry, and yet strange to say that last year, when we had an abundance of rain and grass to your knees, the honey flow did not start till December. This year I extracted on the 1st October, and the bees were in about the same condition both years.

Mr. Thomas O'Grady, Whiteman Creek, Grafton, writes :—I received last week the first copy of the A.B.B. I have seen, and am very much pleased with it. It should prove really useful to Australian bee keepers, if only as a means of comparing notes. I know the honey-tree referred to by Mr. Ayre, of Perth, W.A., as the "Bansha," more frequently called "Banshee" in W.A. It is well enough known in many parts of this colony as the Bankshia or Honeysuckle, there being no less than eight species in New South Wales. I may mention that I also have spoiled a lot of lumber by the

error, in Root's last edition, about making the top bars 18 $\frac{1}{2}$ in. Of course I thought they were made short to prevent propolizing. The directions are plain enough to make them that length. I think the bird referred to by Mr. Wooden, of Junee, as being destructive to bees, must be the *Merops canutus*, Rainbow bird, New Zealand Parrot, or Bee-eater. It is brilliantly plumaged and has two long feathers in the tail, and has long had a bad name as a bee destroyer. It rests in a hole in the ground. Re Native Bees, a friend whose veracity I have no reason to doubt, tells me he has seen them mount on the English bees' back and saw the latter's wings off with their mandibles. Another tells me there are three distinct varieties, one of which makes white comb and honey of first class quality. I have not been long enough at the business to be able to give an opinion about the arrangement of frames, but I notice that when they are at right angles to the entrance, that bees leaving the hive do not go down on the bottom board at all, but take flight from the upper edge of the entrance, especially if the bottom bar, is say, an eighth of an inch projecting over the end bars, thereby forming a bridge. This should save considerable walking to bees working on the far upper side of frames from entrance. I can endorse Mr. Skinner's statement re Japanese Buckwheat. It seems quite frequently to yield honey all day, which Mr. Root considered quite phenomenal in the States. Could you kindly give me some information re best heights for stands, and whether the ants annoy the bees in any part of this country. Root says not in America, but they may have. Enclosed stamp for reply.

[As far as we know ants are not a particularly great nuisance so long as the honey house is free from them. Mr George James, of Gordon, has the posts of his honey-house resting in circular cement troughs filled with water. Most of the apiaries have the hives resting on bricks on the ground.—Ed.]

BUDS AND BLOSSOMS.

The following extracts from my notebook re bee forage on the Hawkesbury and Colo may be acceptable to A.B.B. readers. Yours etc. G. R. Harrison.

August 11th 1893.—Honey is beginning to come in from scrubs.

Sept 24th.—Bees are beginning to gather from Orange blossom.

Oct 22nd.—Orange bloom about over, swamp gums and a few iron barks are out,

Nov 8th.—Saw Myrtle in blossom, going to bloom heavily.

Wooly-butt, stringy-bark, water-gum, apple tree, and blood-wood are going to bloom very heavily this year; grey-gums and peppermints will not bloom this year.

WESTERN AUSTRALIA.

Mr. John A. Ayre, Mel bonum Apiary, writes :—I am very pleased to receive the November number so soon, and I am sure it improves every month, and is worth twice the money as it is sold for. I am watching with keen interest the correspondence re Australian Honey on the English Market, and thanks to you, Mr. Editor, through your shining star, you are hastening the day when Australian honey will have a good footing in England. The bees over here are doing splendid. I am extracting now in real earnest. I have got an out apiary, but I have got only 25 shifted yet, I am shifting as fast as I can. I have extracted about 4000lbs, and am going it strong. Last week I happened to run short of queen excluder, so I set myself down to think whether I could not find some way of keeping the queen in the lower story of the hive. Well, I came to the conclusion I would try a sheet of tin between the top and bottom stories. I cut some sheets to fit my hive with just $\frac{5}{8}$ (five eighths) each side of the hive, for bee space, and as yet, I have not got a queen above. Perhaps some bee-keepers have used same, they could say whether it will answer or not. However I should like some of your correspondents to give their opinion. I have a splendid clean bottom to work on, and I cannot tell if it makes any difference to the quantity of honey gathered. Mr. Editor, I cannot see for the life of me, where I am wrong in referring to the communication from Mr. A.M.R., O'Connell Plains, in August 26 number. You tell me to turn to page 149 of the A.B.C. Well I did so, and what do I find, nothing in reference to frames, but in page 151, using Mr. Root's own words, he says, "Bear in mind that only the ends pieces are to be rabbited out on the upper inside edge. This rabbit is to be five-sixteenths wide by $\frac{3}{8}$ deep exactly." The hive is twenty inches long outside measure, the top bar $18\frac{3}{8}$ long, and the hive being made from $\frac{7}{8}$ timber, just leaves two-

eights for play. Now Mr. Editor, tell me how you work a 19 inch top bar in this hive? I have made a great many this size, and they always fit nicely. There's a mistake somewhere. [Mr. Ayre will see in our last we stated it was an error of Mr. Root's.—Ed.]

HEREDITY IN BEES.

I. H., New Zealand.

I have not had time as yet to take more than a cursory glance at the articles by Mr. Albert Gale, but I have no doubt he has handled the subject of heredity in bees in an interesting and able manner, and I intend on the first opportunity to read them carefully. I remember some four years ago, Mr. Grimshaw read a very interesting paper on the same subject before the B.B.K. Association, which was afterwards published in the B.B.J. There is one point I noticed taken up by Mr. Gale on page 135, October number, that requires further elucidation or correction. In speaking of the sex of the eggs being decided by the queen, he says :—"Whether it is to be a fertile or infertile female, is decided at the point of the ova depositor, as it is injected into the large pendulous inverted conical cell, or into the small horizontal hexagonal one, &c., &c. It is not quite clear whether he means that there is some process takes place at the point of the ova depositor, analagous to that going on when the worker eggs are passing the spermatheca, or the fact of their being laid in different shaped cells, is the cause of the difference in the offspring.

In either case however, experience contradicts the theory, and to prove this it is only necessary to point to the fact, that eggs laid in worker cells, if left in the cells in a colony with a queen, will develop into worker bees, but if the same eggs, in the same cells, be removed to a queenless colony, by a little manipulation of the cells and food on the part of the nurses, the same eggs will bring forth queens. This being the case, as all

bee-keepers know, Mr. Gale's statement that the matter is decided at the point of the ova depositor is not correct, neither is it correct to say the shape of the cell at the time the egg is deposited makes the differences.

SPECIAL WORK FOR JANUARY. N. Z.

The weather since I last wrote has not been so favourable as we could have hoped for, too much wet. The early honey crop in the northern parts has been a complete failure so far, and it is uncertain at present whether there will be any change for the better before the season is too far advanced. Usually at this time of the year there is a good deal of comb honey in sections coming into market, but it is very scarce indeed this season.

SWARMING.

We are still in the swarming season, consequently swarms may be expected, but as I advised last month, every means should be adopted to prevent them coming off. All the instructions in this connection given last month are applicable to this.

RELIEVING THE BROOD CHAMBER.

When honey is being stored rapidly, it is a matter of very great importance to see that the breeding department does not become a store-room for honey, and thereby cut off a great deal of the space necessary for breeding purposes, and drive the queen into the upper boxes, or, if she is shut out from them with excluding zinc, force her to swarm. A young prolific queen will during the height of the season, often require a good part of the whole ten combs in a Langstroth hive to lay her eggs in, and I think it is very bad policy to prevent her in any way from laying to her full capacity. Hence I object to the use of zinc honey boards, for I would rather the queen went into the upper boxes, than to have her cease laying from want of room in the lower one. The evil of having the queen laying in the upper boxes, can in a great measure be prevented, by keeping the brood chamber clear of honey, so far as possible. Usually, if not seen to, the two outside combs at either side of the hive, that is four out of the ten, shortly after the honey season has set in, will be found full or nearly full of honey. If this is not cleared away, the queen is forced to seek elsewhere for empty cells, and will of course go into the upper boxes if not prevented by queen excluders. In the latter case, preparations for swarming would be made. When the surplus boxes are about to be put on, the brood chamber should be examined, and any outside combs containing honey only should be transferred to the top boxes, and their places be supplied with empty combs, or sheets of foundation, if the weather is not too cold. When going through this operation the empty combs

or frames of foundation should be put near the centre of the hive. If there are two or more, place them alternately with a frame of brood. This will give the queen plenty of laying room for some time, and if this operation is performed occasionally through the season it will save a lot of bother with the combs in the upper stories. What I have said, chiefly refers to extracting hives, for it is not very frequently the queen will go into sections to lay, if such sections have been provided with *full sheets of worker comb foundation*. If starters only have been put in and the bees have built the balance of the combs in the sections, it will be mostly drone combs, and the queen in that case is pretty certain to lay in some of them, especially if the frames below contain only worker combs.

RIPENING HONEY.

It is of the very first importance to see that honey is thoroughly ripened before being put up for market. There is frequently great loss to the individual, and to the industry generally, through sending honey to market in an unripe state. In a very short time fermentation sets in, and the honey is of course in that state unfit for table use, and the buyer probably is so thoroughly disgusted, he vows never to buy honey again. With comb honey in sections sealed all over, there is little or no risk, but it is better even then to let it stand in a dry warm atmosphere for a day or two after taking it from the hive to "harden" before finally packing it for market. With extracted honey it is different however, as it needs great care from the first. Some beekeepers believe that every cell should be capped over before being taken from the hive to extract, others again think if about one-third of each comb is capped it is sufficient, while others again are of opinion that it does not matter whether the combs are capped or not, as they believe the honey can be as well ripened outside the hive as in it. I have tried all plans and could not detect any difference in them, provided when unsealed combs were extracted, it was done in dry weather, and proper precautions were taken to ripen the honey afterwards. As this matter needs some considerable space, I will go into it more completely next month.

REMOVING SECTIONS.

Care should be taken to remove sections from the hives as soon as finished and properly sealed over, for if allowed to remain, it not only interferes with the work of the hive, but the face of the combs in time get a soiled appearance caused by the bees continually travelling over them. After removal from the hives, which should only take place when every cell is sealed, the sections should be thoroughly freed from all propolis and stains before being offered for sale.

Mr. W. T. Seabrook on hives and Bee Paralysis next month.

NEW ZEALAND BEE-KEEPING NOTES.

Your November number came to hand in due course, and does you great credit. Your correspondents are evidently "live bee-keepers," as our "kin across the sea" would say, and you have plainly shown by what you have already done, that you intend to do your share to make the *Bulletin* a credit to bee-keeping in this part of the world. It now only remains for bee-keepers in every part of Australasia to give their support, not only by subscribing to it themselves, but also by doing all they possibly can to extend its circulation.

I like idea of special articles on the most important subjects, connected with our industry every month. I think in that respect, W. Z. Hutchison's *Bee keepers Review*, has done excellent service in the past. For a short time it may be somewhat difficult for your contributors to gauge the length most suitable for the articles, but no doubt that difficulty will soon be got over. Short pithy articles are no doubt the best, but there is the danger sometimes when trying to boil down matter, of stewing all the goodness out of it, and leaving little else but indigestible stuff. About one page of solid brevity, would be a fair space for one contributor to occupy. I should think, if he were thoroughly conversant with the subject he was writing about, and in most cases I don't think it would be too much.

Since I last wrote you, our weather has been very changeable indeed, and on the whole not at all good for bees, or at least for the owners of bees. We have had a good deal of wet, consequently the hot dry weather some of us have been expecting has not arrived yet, though of course, there is plenty of time yet for it to come this season. The temperature appears to be above the average for this time of the year, and this together with the extra moisture, is having the effect of forcing on vegetation and bringing out blossoms on some of our honey bearing trees much

earlier than usual. I expect to hear good reports from our clover districts shortly, unless something extraordinary takes place. One rather remarkable thing about this season, is, the very large number of Native bees to be seen (*Apis Trigona*). Usually there are very few to be noticed, in fact, so few that many beekeepers I have spoken to about them had not been previously aware there was a native bee, but this season several bee-keepers who have only seen them for the first time, remark upon the large numbers working upon our ti-tree and sorrel. What this portends, I have no idea.

I haven't anything very particular upon the Langdon Non-Swarmer to report this month. We are still testing them, but as the honey flow has been very poor, they have not had a fair chance yet. One thing noticeable is that they have been on about four days there is great risk of the hive from which the bees have been shunted, losing too many of its nurse bees, and thus leaving too few to care for the brood properly. It comes about this way:—The young bees before they cease nursing take as all bee-beepers know, a first flight in front of the hive on fine days, returning again in a short time to take up their nursing duties. This is done with the non-swarmer on, and the difficulty is they cannot get back again but are perforce obliged to abandon the brood, and go to the other hive. Now, this is a very serious matter and would in itself go far to condemn the use of the non-swarmer, were there no way out of the difficulty, but I think there is, and we are now trying the following plan:—We have bored a $\frac{3}{4}$ hole $1\frac{1}{2}$ inches deep into the edges of the bottom boards, on the sides near the backs of the hives. On the third day the cone exit is closed and darkened, and the new entrance, which may be closed with a cork, opened. The young bees are to take their flight from this, and it is believed that the new entrance will be far enough away from

the front one to prevent young bees from mixing with and following the old ones into it, and also to prevent the latter from making use of the new one. However, we shall see, nothing like experimenting to test the matter.

Our Pohutkawa, or Christmas tree, as it is generally known among Europeans is now in full blossom, unusually early this year. As a rule it is not in full bloom till Christmas, hence its name Christmas Tree. It is a remarkable honey yielder, and the honey is of a very fair quality. The blossoms are large, and of a scarlet colour, and the honey is so plentiful in them, that it can be shaken out in a kind of shower. The tree grows to a large size, and gives to many parts of our Northern Coast line at this time of the year a very pretty appearance. It is peculiar in this respect that it is only found on and very near the coast. Our Northern beekeepers always look forward for a very portion of their seasons crop of honey from this source, and it is rarely it fails them.

Our Government has just established a state farm, which I apprehend is intended chiefly for carrying out experiments in all branches of Agriculture, for the betterment of this and its relative industries: I intend so soon as the farm is properly underweigh to move in the direction of trying to get an experimental apiary attached to it. I think it is high time that something was done in every country where modern beekeeping is carried on, in the way of carrying out experiments on a thoroughly scientific basis that may assist us in arriving at some means for getting over our present difficulties, chief among which is foul brood. We know from past experience, that it is impossible to eradicate the disease by the ordinary germicides. Something more simple than the ordinary methods given must be discovered. I am afraid before we can expect to succeed in this matter, and it is out of the question to expect the average beekeeper to experiment even if he had the knowledge, as he would not have the time and probably not the

money. Something similar to the experimental apiary at the Michigan College, U.S.A., is needed in every country, and I shall do my best to agitate the matter in N.Z., when the proper time comes.

I sincerely hope our N.Z., beekeepers will show their appreciation of your efforts to cater for them. The last issue of your Journal I consider equal to the best periodical publication on bee matters I have ever seen.

MAORILANDER.

DOES FOUL BROOD

DEVELOP FROM CHILLED (DEAD) BROOD.
N.Z.

This question has been discussed by the most experienced apiarists in different parts of the world time after time, hence showing its importance, without however, having arrived as yet at any definite conclusion. In fact it seems almost as far off being settled as ever. There is one noticeable feature in the discussion of late, that whereas formerly many leading beekeepers positively denied the possibility of the disease developing from dead brood, you do not find, except in very few cases now, that same positiveness of assertion. There is more hesitation when expressing an opinion among those who were so prone to speak dogmatically on the subject. It seems to me to be a matter so difficult to decide scientifically that it is quite beyond the scope and power of even our cleverest bee-keepers to do so. No doubt it would require some scores of experiments, carried out under the greatest exactness, in order to eliminate as far as possible all risk of error before anything decisive could be known. How then is it at all likely that the problem could be determined by a comparatively few isolated cases where there was no intention of testing the matter in the first place?

Many of those who have held it very probable that, foul brood has developed from dead brood, have been reluctant to advance their opinions against those of well known men who have decided otherwise. I have had very many opportunities of examining foul broody colonies and have always believed that chilled or scalded (dead) brood has, and does cause disease.

I believe that wherever life exists, there also will be found the elements which will under certain conditions cause death. It is now a generally accepted theory that nearly all, if not quite all the diseases animal life is subject to, is due to living organisms. It is a scientific fact I believe that these organisms—disease germs—are everywhere present, and only require congenial surroundings to develop and multiply.

We are told that the spores of foul brood may float in the air, and be carried by this means over vast areas, and be quite harmless, until they happen to get into their proper element, when the disease develops in a very short time. In strong healthy animals there is a something that is destructive to disease germs, but should the system become weakened, their vitality lowered by any means, they become at once an easy prey to such germs. Now any existing condition that would cause brood to die in a hive would be unhealthy, and would therefore lower the vitality of the bees. Dead and decaying larvæ would also be a very unhealthy condition of things—in fact, just what we must suppose the proper condition needed for the development of disease. To bear out what I advance, I have known what was strictly scalded brood, in the first place pronounced foul brood, and the colony (Italians), condemned by an English expert on foul brood. He positively declared that whatever originated it, it was foul brood when he examined it, and that was within ten days or a fortnight of the brood dying. I could mention several cases all confirming and determining me in my opinion, but I do not think it necessary just now, as I am only giving my opinion for what it is worth. I think however on the whole, that the side I have taken is the most feasible one.

P.S. Since writing the above, I notice Mrs. J. Atchley, in reply to Mr. McEroy, has an article on the above in the *A.B.J.*, for Nov. 2nd. Mrs Atchley is I think inclined to be dogmatic in a great deal of what she says, and I consider it shows a very bad feature in a controversialist by stating that "if she did know more she would hardly be allowed the honours, as she is only a woman." This is certainly no argument, and although she makes a positive assertion to the contrary, she does not prove that dead brood is not often the indirect cause of foul brood.

HIVES.

The following is the concluding portion of Mr. T. Bolton's article on the Special Subject in our last issue:—There are other economies resulting from the construction of these hives, such as no feeder, quilt, cushions, or drone catchers being required; but these are not dependant on the divisibility of the hive, and are not peculiar to this hive, or need not be. What is called the Standard hive here in Victoria, possesses similar features. Another point is that, were I to establish an apiary of these hives, no nucleus hives would be required, i.e., no odd size boxes whatever, for by a simple adaptation, I can do all my queen-rearing in these hives, and secure the fertilising of two or more young queens under the same roof, and with a laying queen at work below. This is a further economy of capital invested; for that which

otherwise goes to procuring nucleus hives, would with me go to securing the hives proper, and thereby enlarging my apiary. In addition, there is the economy of time, of labour, and owing to the handiness of the cases, even when full of honey of this hive, economy of strength expended upon it. A few instances of each may help to a better understanding. Say, for example, spreading brood, destroying queen cells, ascertaining if you wish to, whether swarming is soon to come off; getting the bees to carry their honey from the upper part of the brood frames into supers, and so getting frames full of brood. Each of these can be performed in the time it takes to handle one L frame, by simply turning the Heddon case upside down, so economising labour and time; and this inversion also causes the frames to be built out so fully to the bottom bars, that I find no need for wiring the frames. So useful is this feature of readily turning up a case and if need be of leaving it turned up, that for me it has done away with all desire for swarm catchers and self hivers in an out apiary, six miles away, of now some seventy colonies.

Then for example in the honey harvest, we take off our honey, a case at a time, shake the bees out of it, and when it is extracted (the frames are spaced indoors), it requires but a moment to restore it to its place on the hive. Not so with the L, where time and exposure to robbers is involved in handling and spacing the frames one by one out of doors, to say nothing of the comfort at this season of doing much of your work indoors.

By using this hive one has but to lay a strip of wire netting to the entrance, and a ventilating bee-escape board laid on top, with two hay band loops holding all together, and the hive is ready for hauling, the wire net and hay band being the only extras required, and they do service over and over again.

Finally I prefer the Heddon hive because the expenditure on plant in anticipation of emergencies mentioned at the commencement of this paper is not called for as it is with the L hive.

A NEW HIVE.

By JOHN SMITH, Montrose Park Apiary, Mount Cotton, Brisbane, Queensland.

It is said that some editors of bee journals turn green nearly when they receive articles about new hives, as Napoleon the 3rd was said to have done when the "coup de etat" was struck in Paris. Let me therefore state right off, to calm the feelings of Editor of *A. B. B.*—that I have not invented a New Hive—that I am only now drawing attention to defects in construction of present hives with the idea that possibly some of the big supply firms may see their way to make some radical improvements in the style of hive that

will benefit the beekeeper and prevent such wholesale destruction of bees as generally occurs in the winter, especially in severe climates.

I am out therefore so to speak, on a rampage of grumbling and fault finding. First of all then, why should these grand old beekeepers imagine that it is impossible to improve on the present style of bee-hive. Surely a hive that everybody can find *some fault* with—that murders its inmates by scores of thousands at once—that no one, not even its most enthusiastic admirers feel quite satisfied with (to say nothing of its superlative ugliness), ought to be capable of considerable improvement; if only the concentrated intelligence of the bee-keeping fraternity is devoted to the task.

To start at the beginning. Let me express the opinion that from several important points of view, the old straw skep is far ahead of anything that has ever yet been invented in the way of hives. There is something artistic and poetical to start with about the straw skip, then it has great advantages in the way of sanitation. It is healthier for the bees to live in—more comfortable—more natural—cooler in summer—and warmer in winter—being better ventilated. Its defect is that it cannot be easily manipulated or filled up with frames as at present constructed.

The Dovetailed Hive—is easily manipulated, but its defects are—that however well made and painted, extremes of weather greatly affect it; in wet weather it becomes damp, and it is colder in winter and warmer in summer than is desirable. There is no proper system of ventilation the warping of the covers being apparently relied on to provide sufficient air. In winter the bees have to huddle together to keep themselves warm, and in summer there is an immense waste of bee energy in fanning air into the hive to keep the other bees from being suffocated. When the covers are so well made that they won't warp then the bees find it a sheer impossibility to fan the air right up into the upper portion of the hive, and they give it up as a bad job, and the inmates of the hive as they can't work inside just simply cluster on the outside of hive and let all the brood rearing remain and honey gathering business slide. And when the covers *do* warp—there is a great loss of labour and general disturbance in the fight with robber bees all round the top of cover. Now what we want apparently to arrive at—is that we should get a hive as comfortable and healthy as the old straw shep—and as easy to manipulate as the modern hive.

Why not try a combination of the two. I have myself made a few experiments to try to improve the wood hive, and some of these I venture to think are improvements and would answer very well for the Australian colonies, but I think where the winters are very severe something more like the combination hive would prove the correct thing.

I have constructed what may be termed the All Hollow hive—differing in principle

altogether to the chaff hive with thick durable walls—mine is made entirely of $\frac{3}{8}$ inch stuff with $\frac{3}{8}$ space in walls, cover and bottom board. I send you a rough sketch. In summer time double wire screens or perforated zinc is used instead of bottom board. Bee entrance all the width of front, but a piece of tin nailed on inside $\frac{1}{2}$ of width prevents direct current of air on to the brood chamber.

Neither the hive, bottom board or cover warp as they often do with thick lumber. Damp can never strike right through, and it is much cooler in summer for the same reason. It is ventilated on the natural scientific principle, self-regulating ventilation without draught—cold air descends, warm air ascends. Hence when the vitiated heated air rises to top of inside hives, unless there is an outlet for it, the bees would be suffocated. Covers generally warp—hence the bees exist. In winter however the warmth of the cluster escapes in the same way. To remedy this in America they have tried sealed covers. Result most of bees so timbered perished—were in fact suffocated with the foul air that could not escape at the top. These that pulled through will have escaped on the same system as mines are ventilated—a current of air formed by some peculiarity of cellar or disposition of hive has entered the bottom of hive and more or less caused a circulation if air inside. You will see by design of my cover (which by the way has a slight flexibility about it) that it can be made to fit even a twisted hive, that the heated air after it had ascended to top of hive and through into the cover has to descend before it can escape. The effect of this is that a cushion of warm air rests on top of hive down to underside of top bar of frame, there is no rush of cold air to the inside as the cold air can only enter in the same proportion as the heated vitiated air escapes. If some of our American friends would make a cover like I indicate with air passage right through the centre the outlet to be say three inches below top of hive walls—mine is only $1\frac{1}{2}$ inches—they might then seal cover hermetically, and I venture to predict they they would not lose near so many bees as they do. Bottom boards could be either lowered or left on. Of course it requires wire or perforated zinc on bottom of cover to prevent bees getting into air shaft, and to allow vitiated air to pass into shaft. The warmth is kept in hive top by the 3 inch descent of shaft. This may all sound like a complex piece of work but as a matter of fact it is the easiest as well as the best way of making covers.

To test this theory of ventilation, go into a crowded room, shut the doors and windows but pull off if you like the *boarding all round the bottom of room* (this will make it similar to a hive in construction) then get a pair of steps and mount up to the ceiling. You will gain a very practical idea of what sealed covers are to bees. Now fix a tube 4in in diameter to centre of top of ceiling, carry it outside, but make it bend down about

18 inches, then get up the steps again and try the difference.

Packing hives in chaff or straw is a delusion and a snare. If they were protected outside by twisted straw after the manner of the straw shep that would probably answer better, because whilst twisted straw prevents rain getting through it and is proof against sun and ice, it also allows a sort of natural ventilation, the air gradually percolating through it. I have no doubt if one of these straw skeps could be made large enough to cover a Langstroth hive and come about one third of the way down outside, that if the hive was first covered with wire cloth and then this put on like a big bonnet, I can see no reason why the bees should not winter well in it. But as for sealed covers—pure and simple—they mean simply murder. Any-one that has any experience of *thatched* houses could give you a wrinkle on this point with regard to comfort and ventilation. In conclusion cant somebody invent a *square* straw skep so that inside it can be filled up with thin wood walls and Langstroth frames, top thatched like a haystack, then before top was put on a wire screen to be placed over the frames, and there you have "A New Hive," perfect ventilation, warmer in winter, cooler in summer, drier, nicer, more comfortable, and just as easy manipulated as the present ones, and probably might also come in a little cheaper.

[We are sorry want of space prevents our giving sketches Mr Smith alludes to, but feel assured our readers will well understand his ideas.—Ed.]

CONFABULATION AMONG THE BEE HIVES.

By JOHN SMITH, Montrose Apiary, Mount Cotton, Queensland.

Apiarists will have to be real bee-keepers this season, they must not expect the Bees to keep them, and it will take a smart bee-keeper all his time to keep his bees through the next winter—judging from the honey famine we are having now. At the moment of writing, we have many trees, out in full bloom, but there is very little nectar in it. All dried up, looks shrivelled. Poor bees, they come home with empty sacks, and I almost think I sometimes see tears in their eyes.

Say, Mr Editor. If a bee-keeper orders a frying pan, and a warming pan is sent instead, is beekeeper bound to keep warming pan, and pay an extra price for it, because sender thinks, "it will just fill the bill?"

Pithy articles wanted re experiences in extracting. Ours shall be brief enough, got no honey to extract, and seems to be no probability of any surplus in the forest districts, so women folks are going to fit up our extractors for a cupboard and table combined, till some future generation of bees shall arise and re-discover the secret of gathering honey.

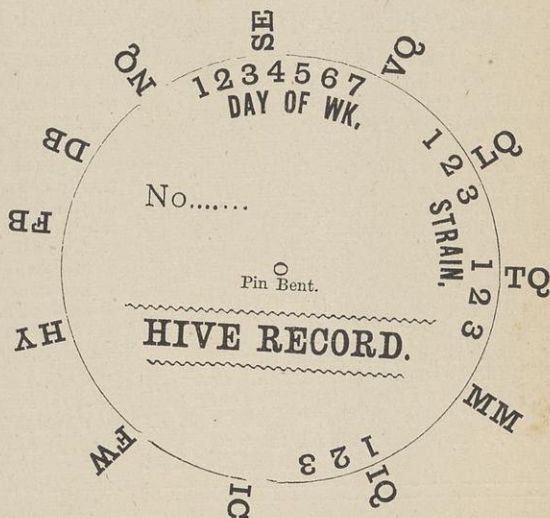
Friend Root thinks his success with shipments of queens to Australia this season, is mainly due to having "a very strong man kneading the candy in place of a women." Weakest go to the wall, first law of nature, but wait a wee. Am making some experiments, and if they go

Mr. Munday's Hive Record.

SE—Means Set Eggs
VQ—Virgin Queen
LQ—Laying Queen
TQ—Tested Queen
MM—Mismated Queen
IQ—Introduced Queen
IC—Introduced Queen Cell
FW—Fertile Workers
HY—Honey to extract or feed
BD—Drone Brood
NQ—No Queen
No—Number of Hive
FB—Foul Brood

By knowing the date of the week on which the eggs were set, the week is easily remembered.

1, 2, 3, is to indicate the strain or quality of bee, say Doolittle, Bianconcini, or some other one.



on as they are doing, think I can throw a new light on the candy subject.

In last issue, slight error, page 154, re hives, should read, "I find by experience that the thickest and strongest are *not* the most satisfactory in every way." This may seem strange at first, but there is a valid scientific reason for it, and I always try to build theories on facts, and the fact is the sun and the rain twist and warp strong made hives all to pieces, whilst they have little power on thinner ones, especially if made hollow. The hollow hive I advocate is different altogether to what is known as the double walled chaff hive. My opinion is that the hive of the future will probably be made of paper, compressed and painted. I should however like to see the "bottom board" made of "rolled glass," one inch thick, with slight perforating made in it, one sixteen inch inside to half inch underside. Cement and Terracotta bottom boards, are damp and disagreeable. Glass could be made, I think, cheaper and would be splendid.

In some news paper, which I forget, I saw it stated recently, that the blossom on the Queensland chesnut tree was poisonous to bees, and that hundreds of dead bees could be seen under every one of the trees when in bloom. Is this correct?

FOR HONEY VINEGAR.—Muth's recipe is the best. For mercy's sake keep out the whisky, or if you *must* use it, put it into the man who makes the vinegar, it would do less harm than by putting it in the barrel. "Of two evils always choose the least."

DO BEES STEAL AND TRANSFER EGGS?

In his letter on the above subject, Mr. James has entirely failed to support his former assertion. Instead he refers to what is written in some books and journals. If Mr. James believes *all* that is written, well and good, but it won't serve as forcible argument against my assertion. No authority on bees asserts what Mr. James, headed "true enough." His is not an established theory, and therefore easy upset without fear of "got to go down." Further, he misconstrues my statement. What I asserted the bees are unable to do, Mr. James says he can do. No doubt about that. But the bees have not done it. Now, then?

In conclusion I may state, that in correcting an error, I believe I have done no wrong, but since I am "just larfed at," which is no argument, I have done with this matter.

W. ABRAM, Beecroft.

MARKETING HONEY.

Mr. Editor, Dear Sir, It may interest some of your readers to know that there is in Sydney such a person as a *hawker of honey*, who has a snug little business connection all to himself. I encountered this individual some few weeks since in some of the back streets of Sydney shouting very energetically, "Honey 4d a lb, pure Garden Honey," and as I feel interested in anything likely to develop the honey trade, I introduced myself by purchasing a little of his wares and straightaway started pumping operations, for the good of the order, and in the course of a five minutes chat with him, gleaned the following information. He says "I sell two-sixty pound tins every day or 12 in a week. I pay 3½d for it from some of the commission men in Sussex Street and I am satisfied with ½d profit." He says it is no use asking more than 4d for it. He could sell anykind as long as it was pure, he has tried selling firewood, and dealing generally, but he has found honey the best line, so far. I explained to him about *Garden honey* but he still sticks to the old cry. The majority of the people of Sydney, and some of them smart shopkeepers, think that the only right and proper thing is *Garden honey*.

My purpose in publishing these few lines is more particularly to show to what extent the sale of honey may be worked up to. If this man I have just spoken of can dispose of six or seven cwt in the Surrey Hills and Woollloomooloo districts, which by the way is a good week's work to traverse, I think it would be a very modest estimate to reckon on a sale of 2-ton weekly if only half a dozen such energetic fellows could be induced to give the thing a trial. Selling honey in pickle bottles only pays the producers; a dealer could not buy feed enough for his horse out of the profits of bottled honey. The sale of honey over grocers' counters is surprisingly small. Some of the largest houses take a week to dispose of 60 lbs. and it is generally admitted to be all round a slow selling thing. I suppose we may thank adulteration for some of this. I find that so far as my experience goes that it is chiefly the middle class who patronise the bottled honey and it is they who fear adulteration more so than the poorer class, who are glad of the chance to buy from the hawker by the pound.

Were I a country bee-keeper with a large stock on hand I should certainly make satisfactory arrangements with some respectable dealer to dispose of my honey in the way mentioned, rather than allow it to lay for months at the Sale yards or commission agents.

Thanking you Mr Editor for this insertion,

I am

J. PERRY.

Mr Joseph Cooper, of Armidale, reports honey coming in pretty freely, chiefly clover. Bees doing well.



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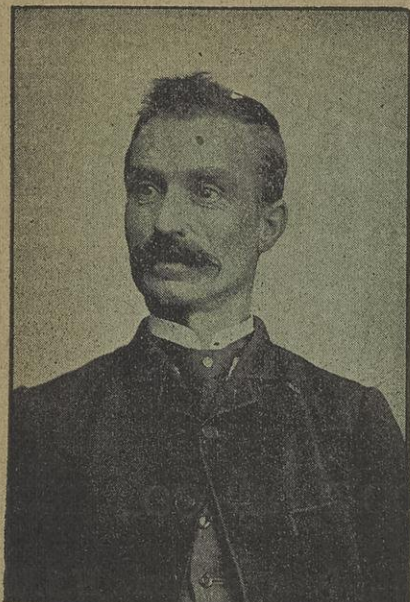
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