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THE AUSTRALIAN BEE BULLETIN.

A MONTHLY JOURNAL, DEVOTED TO BEE-KEEPING.

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The Australian Bee Bulletin

A JOURNAL DEVOTED TO BEEKEEPING.

MAITLAND, N.S.W.—MAR. 27, 1897.

THE N. S. W. CONVENTION.

WE are very sorry, in the interests of the beekeeping fraternity, to have to insert the following from the energetic and hardworking hon. sec. of the N.B.K.A.:—

Sydney, 20th March, 1897.

Dear Sir,—As up to the time of writing I have had no notification of attendance or correspondence of any kind except one note from you, I called a committee meeting with a view to declaring the proposed Conference off, but it was decided, "That I should write to your paper and draw attention to the above and that an endeavour be made during Easter week to get as many as possible together and wind this Association of brother beekeepers up," so without further comment, I remain,

Yours faithfully,

H. RAWES WHITTELL,

Hon. Sec.

P.S.—I may state that my resignation as Hon. Sec. is written out, and will be handed or sent to the senior Vice-President without delay.

Mr. Whittell and such of the committee as have had the opportunity of meeting together have spared neither time nor money in their desire to do the industry good. The successful Conferences that have been held amply show the work done by them. That more was not accomplished was not their fault. Certainly there was not much the Convention could now do. The Supply Co. has broken down and no one would attempt to start another with that failure so recent. The adulteration question in N. S. Wales is settled as shown in our last, by the Public Health Act, but the Foul Brood question still remains unsettled. If among civilized communities when plagues and epidemics are about, the most scrupulous care has to be exercised to avoid creating hot beds for the disease to propagate in, the same rule holds good among the beehives, and the man who carelessly lets his hives become such hot bed to the loss of his neighbour should certainly have some restraint put upon him. But the great loss will be the mutual intermingling of experience and ideas and the many and lasting friendships that have and would again spring up.

We think, however, there are reasons for the failure of the holding of the Conference. Up to the time of the holding of the Bathurst Conference, in June, 1895, the keeping of bees had been painted in the most alluring colours and many persons believed it was only necessary to get a few hives of bees and great results will follow. Whatever may have been the value or otherwise of these anticipations, the great drought of 1895-6 put a good set on them. Many lost so heavily that they are not beekeepers now. But of the beekeepers who remain, there are a far greater proportion of experienced and really practical ones than ever there were before. It is a Convention of such men as these that is wanted, and if every inducement was held out previously by the Government to persons to become beekeepers, and to give free passes to Conventions, surely now, when the weak ones have drifted out, and there are established and valuable apiaries throughout the colony, not only should the Government give it the light of its countenance more than ever, but the beekeepers who have fought through and established themselves should feel the greater need of assembling, fraternising, and co-operating. Though this Convention may have fallen through let us hope there is a spirit, though now dormant, will yet lead to greater Conventions and greater results than hitherto. Should there be a gathering in Sydney of a few beemen, at the time settled for the Convention, let us hope some good will be the outcome.

We have several excellent articles on Foul Brood for succeeding issues, one by Mr. W. Abram, another by Mr. R. Helms.

HAVE you prepared your bees for winter? If not it is time you had. The winter problem in Canada and other cold countries is a most important one, the beekeeper having to place his bees in cellars for some five or six months of the year. Here in Australia, with the exception of a few places, no such care is needed or taken, and we may almost say the winter problem is a neglected one altogether, the result being that the spring finds many hives empty of bees, and others too weak to do any good for the following summer flow. A few precautions taken now will save any amount of trouble and loss. To begin: Be sure you have sound covers, watertight, and airtight; that there is a sufficiency of honey, comeatable by the bees in the worst freeze; that there are good queens in every hive with a fair amount of brood, get them if you have not; a good blanket and no big vacant space above frames. If you have fill it with old newspapers, chaff, or any like material. Is it a small swarm? If so, make it comfortable and compact by a follower. Then leave the hives severely alone. The bees will do the rest, will arrange their stores where their instinct knows they will want them, and propolise all unnecessary ventilators. They are good miners, and understand a good deal more than we give them credit for. Having seen to these matters, leave them alone till next September. To open them, on no matter how nice the day, in winter, destroys their propolising arrangements, which they cannot replace in a night, and brings on chilled brood, and possibly foul brood. In the warm parts, such as the Richmond, beekeepers about there have no foul brood. But in the cool parts, we hear of it very much. Scientists say there is no connection between chilled brood and foul brood, and we would not dare to gainsay them but we remember reading a book on the great plagues that have devastated Europe during the past 1000 years, and the writer asserted that every one of them was traceable to some great battle field, where thousands of dead have been left unburied, to rot and ferment in the air. There are deep depths that science has yet to go. Is it anything strange that if hundreds and hundreds of bees and larvæ are left to rot in their hives that a foul brood plague should break out? The man who keeps bees and cannot attend to them properly, is as guilty of cruelty to animals, thousands of times more than the man who is fined or punished for ill-treating a horse or cow, because he is acting cruelly to thousands instead of one. The strongest and best swarm we had last year, that worked up first in the spring, and gave most honey, was one we did not look at the whole of the winter.

It is said there are 3000 species of bees in existence.

Mr. R. Helms, late of the Agricultural Department, Sydney, and now connected with the Bureau of Agriculture, Western Australia, has been contributing some valuable articles on "Foul Brood," "The Foul-Tick," and "Acclimatisation" to the Journal of the Bureau.

Mr. Elliot J. Rien, late of the Hawkesbury Agricultural College, after taking to himself "a rib" at Windsor, on Feb. 13, has gone to Wyee, on the Silk Farm where he intends starting a bee and poultry farm. Our very best wishes for future success and happiness go out to them.

We acknowledge receipt of copies of the *Pacific Bee Journal*, published by B. K. S. Bennett, Los Angelos, California. A very readable and interesting publication, well got up. With its present appearance and the number of beekeepers there are in California, there ought to be a good future before it.

One reason why hives should not be robbed too closely in the fall is not so much to give food during winter, as that the bees require quite an abundance of stores to feed the young larvæ in spring. Want of stores then is a great way cause of spring dwindling.

A lot of very interesting copy unavoidably held over to next issue.

We would call attention that the Messrs Hebblewhite of Sydney, in addition to their extensive bee goods business, are going largely into the bicycle business. As a bicycle is a most useful adjunct in an out apiary, we should advise all such as have out apiaries not to forget to give them a call and inspect them.

It is with very great pleasure we acknowledge the receipt of *The Farmer's and Fruitgrower's Guide*, issued by direction of the Hon Sydney Smith, M. P., Minister for Mines and Agriculture, and compiled by W. H. Clarke, editor of the *Agricultural Gazette*. It consists of 468 pages of the latest and best information on all matters relating to Farming, Grazing, &c. It is issued in paper at the low price of 1/-., and in cloth 1/6. The least we can say about it is, that no man who gets his living off the land can afford to be without it.

We acknowledge from Mr. Penberthy, of Elsmore, a photo of his apiary. It has been taken by a good photographer but his subject has also been a good one. The large number of hives, nearly all two stories, some three, so nicely and regularly laid out, with the forest of box trees closely around, leaves no doubt as to the possibility of raising the tons of beautiful honey Mr. Penberthy does every year. May coutinued success ever attend you, friend Penberthy.

If we observe, says Pastor Schoenfield a bush full of flowers which is frequented by bees, we notice that almost without exception the new arrivals alight on flowers which have just been visited and emptied, as if these possessed a stronger and more agreeable scent. He thinks the reason is that some of the fluid secreted by the bee in the process of suction finds its way into the residue left in the flower. But, he says, if the secretion is abundant enough to do that it is evident that the sweet carried home by the bee is no longer pure nectar, but has already begun its transformation into honey.—*Beekeepers' Review.*

W. S. P., Armidale.—This is a grand season for honey. The yellow box started to bloom in November, and honey commenced to flow and has continued ever since Numbers of box are in full bloom now; and stringy bark is just starting.

QUESTIONS.

104.—Can you tell by the number of queen cells in a hive whether the bees are raising them for the purpose of swarming, or for superseding an old or disabled queen?

105.—Does the colour of the timber of a tree give any indication of the colour of the honey from it—a light coloured timber a lght honey, a dark coloured timber a dark honey?

106.—Can you inform me if red cedar is suitable for hives. The only objection I can think of is that it may swell and shrink to match the weather. Perhaps some of your readers may have had some experience.

107.—What length of time should comb be left in the brood chamber before it would want replacing.

108.—Give suggestions re the forthcoming Conferences.

THOS. B. O'GRADY.

93.—The plaster mould is too cold. Try soaking in warm, not hot water first.

99.—The great variety of our honey renders it a difficult matter to combine. I almost think individual effort the better. A gentleman leaving this district for England has undertaken to dispose of a trial shipment of mine.

103.—Work extremely well and help to bleach the wax, but should be made of iron.

D. GRANT.

104.—No I cannot, and I do not think anyone could. There are other more reliable means of telling.

105.—I think not. Ironbark is a dark wood with light honey, apple tree a light wood with honey like black treacle, last season at any rate.

106.—Too dear, at least in most places. From the little I know of it, I should not think it any worse as regards swelling or shrinking than any other timber, especially if painted.

107.—I have not been beekeeping long enough to say anything about it; I suppose there is a limit, but none of my combs have reached that age yet.

108.—Yes. A good workable Foul Brood Act is badly wanted.

B. NAVEAU.

104.—If you have any record as to the age of your queen, it is very easy to determine what they are about, as superseding mostly takes place before and after the swarming season proper; not many cells are started, when for the purpose of superseding, seldom more than five, ofte ner less.

105.—Not in all cases. I know of one exception and it is quite possible there may be more. *Eucalyptus Corymbosea* (Bloodwood) in this locality yields light honey of good quality.

106.—I have worked a good quantity of red cedar and cannot see why it should not answer well for hive making provided that it is well seasoned and kept well painted.

107.—Opinions differ, but I intend to keep mine just as long as the frames will hold together. I have some about seven years in use and don't look much the worse, and if I were to look around a little, I could find some nearly double that age.

W. S. & H. J. WILSON, VICTORIA.

99.—Agree with Mr. J. D. Ward.

100 & 101.—Good plan. Will give our share, providing all help.

102.—No harm can come of it and it is worthy of a trial. Surely Mr. Chambers is on the wrong track, for if we have no "trade" we shall have no "objects" or "Association" either. Don't agree with his opening lines on Question 102.

103.—Yes, and do good work when weather is favourable.

105.—Don't think so. Question rather vague, but know that a dark coloured timber does not always produce dark honey. Some dark coloured timber in this district gives light coloured honey, red gum for instance. Would say that colour of timber is no guide to colour of honey.

107.—Have had some for years and intend keeping it. May answer more definitely in another 10 years or so.

J. D. G. CADDEN.

108.—Yes, I have a few, but N.B.K.A. committee too slow and not in touch with beekeepers. In July, 1894, and several times since, I suggested that the Convention be held in Sydney at Easter and only now it is acted upon. Last year the committee fixed upon Goulburn in opposition to a number (a large majority), desiring Sydney, and according to the daily papers about 16 persons only attended and some of these NOT beekeepers, and so far as I can see very little has been done since by the self elected officers and committee. None of the present officers and committee were elected by beekeepers and only a few members N.B.K.A. present. Looking at the prices quoted for honey, 2d per lb, and for queens (?) 2s 6d. each, it is quite time to turn to something else, and I am not inclined to waste two days and spend money to attend Conventions and sell at such ruinous prices. If I do attend for an hour or so I have something to say to interest beekeepers, but what use when they will not assist. No thanks, I am not having any.

J. KERR.

106.—Cedar-wood. An English writer onbees and hives has stated that cedar-wood is the best of woods for hives, as it is light, porous, and durable. He only objects to it on the score of expense. Should there be a tendency to swell or shrink a few coats of white lead could be applied to the outside of the hives which I believe would prevent the tendency if such exists.

F. W. PENBERTHY.

104.—In superseding it is not often there are more than three cells and several days difference in their ages, but if queen is disabled they will raise cell as if queenless. Another sign is when a great number of cells are polished, but without eggs or brood in them. If to swarm there will be plenty of bees, a larger number of cells and nearer the same age, and after capped up, fitted more with plenty of ripe brood.

105.—The sap may, but not the timber.

106.—The only objection I have to it is the price.

107.—I think I shall leave them in as long as they will breed in them.

T. BOLTON, VICTORIA.

104.—I think not from the number alone without regarding other indications.

105.—No. Within my experience the darker woods belong to trees that yield the lighter honey.

106.—Cannot say. Do you mean the true cedar, or cedar-wood?

107.—You can leave it till you begin to be offended by its blackness, and longer as far as its usefulness is concerned.

108.—That ours (Vic.) be held at Bendigo or Ballarat; That none of the well thrashed out elementary tapics of beekeepers be given a place on our programme; That export, Foul Brood Legislation, and other vital subjects be thoroughly dealt with; That we assemble for business and not to play; That the *Drone* who in this week's *Australasian* advocates the benefit of Foul Brood should have his wings clipped by sound argument before he disseminates the germs broadcast.

J. R. H. GAGGIN.

104. Three-fourths of cases of supersedure are brought about by *gradual* failure of the queen's powers, and in such cases but 1 to 3 (or perhaps 4) cells are raised, but should marked or total failures of the queen come on *suddenly* in immediate succession to vigorous laying (which sudden cessation or decrease of laying is generally caused by an injury to the queen) then there would be quite as many or more queen cells built as there would be in ordinary swarming.

105. I do not know.

106. Red cedar is bad in every way except durability for hive making. It is very liable to warp and twist, and in nailing is apt to split or

crack off from its superabundance of knots. As it is a dark, very porous wood, it is also a great heat conductor, hence cedar hives would be hotter in summer and colder in winter than lighter-coloured denser woods. "White beech" is at least as durable, nearly as light to handle, wood dense in texture and light in colour, a positive pleasure to nail (beating American pine in this respect); if decently nailed will not warp, never splits nor shrinks. It also costs a little less than cedar.

AUSTRALIAN YANKEE.

104.—Yes, when they are raising them from swarming they are more numerous than when superseding a queen is the end in view.

105.—No, we get dark honey from some of the lightly coloured timber, and *vice versa*. In my opinion the colour of the timber is no criterion as to the colour of the nectar the blossoms will secrete.

106.—I have never used it, so cannot speak from experience, but would not hesitate to use. Try a few hives first.

107.—About twenty years, or until the cells get so small as to retard the proper developement of the young bees.

108.—I think it would make the conference more interesting if all the papers read were printed, and copies distributed to all present. When a paper is read a great part is forgotten; whereas if each member had a printed copy much more interest would be taken and more questions asked. Therefore more would be got out of each paper when we meet in conference. We want to help each other all we can. Let each subject be sifted so as to find the weight in it. This can only be done by asking and answering questions.

W. S. & H. J. WILSON.

108.—The two main items which should receive special attention from members at the next Convention, are:

1ST.—FOUL BROOD LEGISLATION.

2ND.—EXPORT—HONEY MARKET.

All other questions pale before these, and it behoves beekeepers to do all in their power to get these questions well worked up, and some definite arrangement arrived at. They have been shuffled off to the shelf quite long enough. To this end we would suggest that all the local Associations should draft a Foul Brood Act at their next meeting, and forward same to *A.B.B.* for publication. Also produce and read them at the Convention, where they can be fully discussed, and the good points only retained. By having them published, beekeepers will be prepared beforehand, and able to partake in any discussion which may arise, whereas, when such an important item as Foul Brood is brought forward without notice, for discussion, members as a rule are unprepared for it and consequently it is allowed to fall, with simply passing notice only, while some other trivial question is battled with and argued over for some considerable time. Hence, if the local Associations and individual beekeepers address themselves to the above suggestion, a sound foundation for discussion will be laid.

THE EXPORT & MARKETING OF HONEY, ETC.,

Is the next item which should be threshed out. Several good ideas and suggestions are to be found in past numbers of A. B. B., notably Mr. Russell's. But, let us impress on all beekeepers interested, that before any good can be arrived at in connection with either of the above items, we must resolve to pull together. If we wish for success we must have "Organisation" and "United Action."

J. R. H. GAGGIN.

1. Convention should not be held till all beekeepers can attend, say in July, as has been the rule every previous year. Many beekeepers will be busily engaged in the apiary up to May and later, and cannot possibly get away at Easter time; 2. Mr. Whittell, our most indefatigable of organisers, should be prevailed on to endeavour to procure free passes from the Railway Commissioners for all delegates and thus secure a large attendance; 3. Setting aside all fads or ideas of the few (such as "Foul Brood Bills" and the like), let the Convention adopt the sentiments of the great majority of beekeepers by devoting its main attention to the two following points *viz*:—(*a*) The consideration of and how to remedy the low prices and glutted markets for honey in New South Wales, depending, as they chiefly do, on the blocking of the English market to our honey producers. (*b*) The endeavour to radically change the existing constitution of the so-called *National* Beekeepers Association, in such a way that that Association may become in reality a National Society of the beekeepers of our colony, combined in one strong body from North to South, to advance the position and interests of their important industry. The committee of the Association meeting in Sydney must always of course form the executive (or acting) centre. Let its present officers only extend the privilege of a share in deciding on every important matter to country members, or to affiliated Beekeepers' Associations (on the principle of the "referendum" or some such method) and the membership should go up with abound, its zeal and energy increasing proportionately and naturally, as every member would take a warm interest in an Association which was not controlled by a few City members *as at present*, but in which his vote would be available in all important subjects and would materially help to decide them. In a word the broadening and extension of its aims, working methods and membership by this means, should galvanize this now unrepresentative Association, which is paralysed from want of support and listless from the same cause, into a great power for the good and advancement of all the beekeepers of New South Wales.

QUESTIONS NEXT MONTH.

C. W. Wood

108.—Zinc queen excluders for extracted honey. Are they an advantage or not, considering cost and other disadvantages?

W. S. & H. J. WILSON, VICTORIA.

109.—Is it possible to prevent honey granulating without adulterating? If so, how? We ask this because a certain person markets honey which never granulates, and we are informed that he has a process, which we have reason to suspect.

OFFICIAL CORRESPONDENCE.

We are indebted for the following correspondence to the exertions of R. A. Price, Esq., M.L.A. to whom the beekeepers of N.S.W. are indebted for many valuable services. In reading it over no doubt others will be struck as well as ourselves with the little knowledge of what trees produce good honey by the Forestry Department, who evidently have not yet found out that the box trees produce the best honey, and that honey from apple tree is of a dark and inferior kind:—

Department of Lands,
Sydney, 13th March, 1897.

Sir,—Referring to the petition from bee-keepers and others interested in apiculture in various Districts throughout the Colony, presented by you on the 29th May last, drawing attention to the threatened danger to bee-farming through the ringbarking of trees on Crown lands,—I have the honor by direction of the Secretary for Lands, to forward herewith for your information the substance of a report which has been obtained from the Department of Mines and Agriculture on the question at issue.

I have the honor to be,
Sir,
Your obedient servant,
Wm. HOUSTON,
Under-Secretary:
Per L.A.D.

R. Atkinson Price, Esq., M.P.,
Parliament House.

MOREE.—The wild apple (*Augophera-Intermidia*) are not the only, or the most profitable honey producing trees in the District; yellow box (*Eucalyptus Melidora*) and white box (*E, Odoranta*) are equally valuable to the beekeeper.

DUBBO.—Honey bearing trees are not confined to the Eucalyptus family: acacias, leptosperums, pittosporums, mimosa, and many other of our native trees are valuable honey producers.

COOMA.—Bees have been successfully kept in this District for a considerable time past.

EAST MAITLAND.—Grasses are aminophilous and are therefore not visited by insects. Early in the spring when food is scarce, bees have been seen to visit couch grass (*Cynodon Deeylon*) but all th obtained was a little pollen. Grasses are not honey producers.

SYDNEY.—Cultivated land will not give the profit to the beekeeper as the native flora. If the beekeeper cultivates for honey, wild bees and those of other beekeepers within a radius of three miles will have the advantage of his labours. Bees cannot be fenced out.

TAMWORTH.—If the word "sweetening" is applied to grasses, it is an error. Grasses produce no honey. The cultivation of lucerne and other fodder plants are not the great help to the beekeeper as is generally supposed. Lucerne for fodder purposes is cut before it is in bloom, therefore before the crop is of any use to the bees.

DEATH OF REV. J. AYLING.

It is with the deepest regret we announce the death of the above reverend gentleman, president of the National Beekeepers' Association of N. S. W., which took place during the past month in New Zealand, whither he had gone to recruit his health, and to visit a brother. The rev. gentleman was unanimously chosen President of the N.B.K.A. at the Convention held at Ultimo, in July, 1894, and was again and again re-elected to the same position in 1895 and 1896. His quiet unassuming manner rendered him thoroughly popular and liked by all. He was a beekeeper of many years standing, having at one time as many as 70 hives, and has always taken a deep interest in the industry. He was born in Surrey, in England, in 1825 He arrived in South Australia in 1849. After spending about thirteen years in that colony he removed to Goulburn in New South Wales in 1862. Eight years later, Mr. Ayling went to Port Macquarie. 1873, found the rev. gentleman in Scone, where he remained for twelve years. He again removed to Pitt Town in 1885, taking charge of Pitt Town and Ebenezer, at which latter place stands the oldest complete church edifice in the Southern Hemisphere. Our readers will remember it was he who tied the "knot" at the beekeeper's wedding of Mr. and Mrs. G. Packham, in July last, and in November we gave "A Reminiscence of the Hawkesbury," giving some account of the Ebenezer Presbyterian Church at Pitt Town, and only in our last issue we spoke of Mr. and Mrs. Ayling's "Golden Wedding," of his going to New Zealand, and his improving health, little thinking how soon we should have to record his departure to the "Golden Shore!"

VICTORIAN NOTES.

R. BEUHNE, TOOBOORAC.

COMBS FROM STARTERS.

Mr. Flood's wrinkle of putting frames with starters upside down on top of brood frames, I practised to some extent six years ago, but soon abandoned it again. There is too much of the look of the cross-eyed man about the combs—about half the cells inclining upwards, the other half downwards. Of course this is in a measure also the case with the reversible Heddon comb, but not nearly to the same extent, as the combs are almost if not quite finished before being reversed.

A better way I find to give two starters in each frame top and bottom bar, the bottom one half an inch wide only, or if wider held by a horizontal wire. The bees will usually drive up half way before starting from the top bar. The comb will thus have the cells all one way, and will be securely attached to the frame, both top and bottom. If economy in foundation is no great object, I put one full sheet in the super, half a sheet next alongside, then a quarter and starters to finish. The bees will work up on the full sheet, across the half and quarter, on to the starters, and then work down. I have, however, given starters up altogether excepting for comb honey, as I have no fancy for drone comb, but like my extracting combs all worker cells, so that I can turn them into brood combs, and help any needy colony with sealed stores from the supers of others. At certain times during the season I dispense with excluding boards, and give the queens the run of the whole hive. I could not do so if there were drone comb in the super.

TIN-KETTLING BEES.

is mentioned in Notes by the Drone. Some years ago I took some trouble to get at the reason for and the origin of this practice. The usual reply in answer to my question was that the bees would abscond unless there was plenty of noise. But few could give a reason why—When one was given it was invariably that the noise was made to prevent the workers hearing the call of the queen, which she gives when intending to lead them away.

"For the rain, it raineth every day."

I can sympathise with the Rev. Mr. Wilson, of Beaconsfield, as I have lived for over 12 years within 20 miles of that locality. I am 100 miles away from it now, and yet I am not happy.

"For the wind, it bloweth every day, and it raineth not."

I have had the condenser going for several weeks for domestic supply, the water available wanting but little in substance to make it pea-soup. The weather is extremely cold, with a frost on the 5th March. I think I am up a little too high—1500 feet, high and dry. This is the second season, still the usual oldest inhabitant informs me it is quite exceptional. I hope so, otherwise I will have to swarm again.

FOUL BROOD.

Is much in evidence in the *A. B. Bulletin*, and I am afraid in bar-frame and box hives also. The discussion will do good by rousing people's interest as to what is foul brood. There are many people keeping bees who don't know it when they see it. I know of near 200 hives succumbed to it since last season, and yet bee moths and ants are blamed for it. Some years ago, passing an old neighbour's place, I was hailed by the owner—"I say, come in for a moment; I think my bees have got this here infernal hen brood." He had been robbing his boxes, several milk dishes full of old comb stood on the kitchen table. Picking up a piece of comb and pointing to some unsealed larvae, he said "There it is, I can see the little devils poking up their heads." Of course the real article was there too. I pointed it out to him, but he promptly classed it as bee bread.

HONEY FROM INFECTED HIVES.

Is, as few will dispute, the principal cause of the spread of foul brood. It is taken to the healthy hive from a diseased hive or tree, or carried there by an interchange of combs, or even fed unknowingly to the bees by the apiarist. It may not cause an outbreak at once, but will do so sooner or later. Towards the end of last season the bees of four colonies had access to some honey from an infected hive. They were then filling up for winter. I marked these hives and entered particulars in my notes. They came out clean in spring and remained so. They swarmed; I hived on the old stand and shifted the parent stocks. The latter thus losing their field bees consumed and used up for brood rearing the most of the old winter stores, and when looking through them to see if the young queens were laying I found foul brood in three out of the four. The swarms were clean and remained so.

Utter destruction of everything was at one time thought the only way of stamping out the disease. Now we can start a colony afresh in their old hive thoroughly cleaned, the same frames with foundation made from their old combs. I should like to go the last step and feed them back the same honey, if there were a way of doing so safely. It may be boiled, and if it contained the bacillus only, no spores, it would be safe. But spores may be present, and will not be destroyed by boiling nor drugs. We have this on the authority of Mr Cowan and Dr Howard. We are also told that no chemical will destroy the germs, which would not also be either noxious or fatal to the bee. With all respect due to the authorities named above I still think it possible for a treatment of infected honey to be discovered which will effectually destroy the germs and yet leave the honey perfectly wholesome for bee food. The germ might perhaps for instance be attacked with an alkali, and the alkali neutralised or precipitated with an acid, or vice versa. With this end in view I induced a friend who was an expert chemist to prepare a number of samples of infected honey. The editor of one of our leading agriculturist papers interested himself in the matter, and the Minister of Agriculture promised to have microscopical examinations made. Unfortunately the samples were accidentally lost between two branches of one department. Being somewhat evil-minded I think they got lost because either the apparatus was lacking, or the brains, or both. As I understand that the N.S.W. Government have obtained the necessary outfit some time ago, I now appeal to the fraternity across the Murray to take up this subject. A resolution by your Association would meet the case, to ask the Government to have tests made with honey containing foul brood germs, as to whether such germs can be destroyed by any chemical, such chemical being afterwards neutralised or removed leaving the honey fit for bee food.

The question may be asked—Is it worth the trouble? I decidedly think it is.

Quantities of low grade honey are often thrown on the market, and may be bought up at a very cheap rate, and could be used for building up colonies or maintaining them in adverse seasons, or might be fed for wax production, at the same time clearing the market of an article which does but injury to the honey business. The experiments might also throw light on the subject of foul brood in other directions.

BACCHUS MARSH B.K.A.

GIDEON HOLLIS, HON. SEC.

The usual monthly meeting of the Bacchus March B.K.A. was held at Hollis' Tea Rooms on Wednesday, March 10th, W Serjeant, Vice President in the chair. It was arranged to write to seven of the daily and weekly papers, besides a lot of individual beekeepers calling attention to the proposed Foul Brood Bill. A draft copy was read and approved of. The peculiar season we are now experiencing was the cause of much speculation as to how was the best way to proceed but all had to confess that it was a puzzle. Next meeting to be held on Wednesday April 7th. The President to read a paper, subject to be chosen by himself.

FOUL BROOD.

W. T. SMITH, VICTORIA,

Dear Sir,—You deserve the thanks of all right thinking beekeepers for the way in which you constantly keep before their notice the necessity of foul brood legislation. With this object in view that little swarm from Bacchus Marsh (per Mr. Beuhne) are protruding their stings in every direction and are endeavouring to stir the drones in that large colony Victoria to a sense of their danger in allowing this fell disease to take such firm footing among our little pets. Although the agitation has been started only a short time our energetic secretary is receiving daily letters from all parts of Victoria, from beekeepers approving of the endeavours of the Association and offering their assistance so that in a short time the Association will be able to do something definite in regard to getting an Act passed. The local M.P., Mr. Staughton, has kindly consented to take the matter in hand and if he can get the support of other country members there will be a fair chance of getting it through the House. By the way notes by the "Drone" in the *Australasian* says in effect that an Act would be of no utility and that if beekeepers were to attend to their bees, keep their queens young and introduce new blood frequently, they would not suffer; he also says foul brood is the professional beekeeper's best friend. I must say "save me from this class of beekeeper," I want nothing to do with them, Mr. Editor. I have been a beekeeper since a boy, got my first lessons from my father, who kept his bees in the old straw skeps, and following his example for a while but threw it up years ago for the modern system of beekeeping and during my experience I have never found foul brood to be a friend of mine but a scourge to professional and amateur alike; it has given me many a heart-burn. What interests do people serve by scattering broadcast such nonsensical ideas—it can be called nothing else—it is, I am sure, not the outcome of practical experience. I sincerely trust that the importance of this subject will so awaken the interest of lukewarm beekeepers who take everything as a matter of course and are led to believe that foul brood will do them more good than harm. I would rather have an apiary in the densest forest surrounded by wild bees than be within ten miles of any careless or slovenly apiarist who treats this subject with indifference. It cannot be denied that the industrious and persevering apiarist is deserving of some protection from the carelessness of his beekeeping neighbours, such protection can only be obtained by the passing of a Foul Brood Act. Moreover, those conducting dairying, by an enactment, are forced to keep their places clean. Farmers must destroy obnoxious weeds, etc. Why should those following the vocation of beekeeping differ in this respect, for are they not more liable to infection than many who are protected. In conclusion Mr. Editor, do not rest, but impress it upon professional and amateur alike the necessity there is of exercising every care in the manipulation of foul brood hives; let cleanliness predominate and when we have that most desirable Act passed, not only here but over all Australia you will have received the thanks of the right thinking beekeeping fraternity.

BEES AS WEATHER PROPHETS.

BY THE DRONE, IN THE *Australasian*.

Bees have a certain prescience as to the seasons; whence they obtain their foreknowledge is, of course, a matter of conjecture, but that they have it may be admitted as an ascertained fact. It is doubtful whether they can predict what the weather will be for any great length of time, but that they expect, and prepare for, good and bad seasons, may also be admitted as ascertained. Taking the experience of the past three seasons, it will be found that they have accurately gauged the state of the weather as to whether it would be suitable to their own purposes well in advance. At the commencement of the 1894-5 season unusual activity was observable in the hives. Swarms were plentiful. and the queens filled every available frame with eggs. Drones were in every hive, and so great a drain were they on the honey supply that drone traps and the merciless uncapping knife had to be freely used by bee-keepers to guard the surplus stores. The bees prophesied an abundant honey flow, and there was one. They retired into winter quarters well supplied with stores after having amply provided for the wants of their owners. How differently did they commence the season 1895-6. No drones were hatched, no queen cells raised. Swarms were at a premium. Queens refused to lay and the bee world was in an agitated condition of apprehension for the future. They resented intrusion and when the hives were opened for inspection they attacked the bee keeper viciously. In every way they showed no honey was to be obtained, and defended the small stores they had most desperately. The observant beekeeper noted these signs with uneasy feelings but hoped the bees might have made a mistake. Not so, however; the season was generally a failure, and the bees once more went into winter quarters, but not with full supplies. They had to be suger-fed and even then apiaries lost heavily from robbing and disease. The season 1896-7 opened better, but not too well Swarms were few in number and the bees did not appear to have forgotten, the previous disastrous season. As the honey flow commenced drones were hatched out plentifully, but in the middle of it without any apparent reason, the bees suddenly killed off their drones. This took place about the first week in January, and was continued for ten days without intermission. Then came the remarkable cold weather of that month, when the honey flow ceased, and the bees had to cluster thickly on their combs to keep warmth in the brood. With the return of seasonable weather the queens filled every available drone cell with an egg; and now we have the curious phenomenon of hives full of drone comb, any number of drones flying, and the queens laying as though it were the commencement of season instead of the close. In many instances queen cells are in course of formation preparatory to swarming. The honey flow up to the present does not warrant these preparations for the future, and yet it appears as though the bees expected a store from somewhere. As to how far into the future bees can peer accurately, so far as weather is concerned, and whence they gain their knoweledge, we cannot yet tell. This year's observations seem to show that their forecast for cold weather, or for rain, is about ten days or a fortnight. The subject is an interesting one, and an observatory hive with daily notes as to its operations, would be the only means of accurately gauging their powers of prognostication. In a changeable season, such as this summer has been, bees would have been a valuable auxiliary to those who forecast the weather for us.

SANDY WASTES & GIPPSLAND HONEY PLANTS.

GIPPSLANDER.

Being in Gippsland 20 years I think I am able to say something about question 86. The poor sandy soil where peppermint and banksia (we call it honeysuckle here) grows is on the low lands and along the sea coast, also on the banks of creeks right up to the mountains. The Peppermint is not a good tree to depend on for honey, as it is very irregular in blooming. Sometimes it blooms for two or three years running, and I have seen it white with blossoms and not a bee on it. That was in a dry season. At other times it is alive with bees, also a small beetle, which if very numerous destroys the bloom in a very few days. The bloom don't last long at any time, and the trees are being cut down in large quantities for making eucalyptus oil. The honeysuckle is better; it blooms every year, and it is a pleasant sight to a beekeeper; sometimes, when everything else fails, to see as many as eight or nine bees on one flower. If one is located near it he need never fear, for he will not want to feed in the winter. Sometimes it yields so much honey that if you take a flower early in the morning you can get your hand covered with drops of nectar by shaking it on the palm. It is just starting to bloom, a month earlier than usual; it lasts from February until June. When it is in bloom one can always tell, for he hears the parrots in thousands. The tree is plentiful in some places, generally on the poorest soil; a small insect also infests it. There is another shrub of the same family blooms in spring, which bears a red flower; it is commonly called bottle brush. It is rich in honey, as can be seen by the number of small ants going up to lick the flower. It grows on the poor, sandy patches. There are several other honey-bearing

plants on the sandy wastes; in fact it is covered with small flowering plants. I can only mention a few, as I do not know the names of others. There is white and red heath, prickly box, which blooms in July, also the silver wattle in August, and several other small shrubs bloom until November. Our experts have spoken against the Gippsland honey gathered from those small plants as being of no use, but Mr. Editor, we had some sections filled with it and no other kind once. We sent it out of the district to get the opinions of different people, and they all wrote praising the flavour. I might mention that it was very dark in colour with a strong aromatic flavour when first gathered, but if kept long the strong flavour disappeared leaving a fine mild aromatic taste. It was when it was first gathered and capped I sent it away. In some places in Gippsland there are thousands of acres of the wild hop or bitter leaf plant—it yields a fine light coloured honey, soon candies, liked very much if sold in sections. Now I am going to tell you about another part of Gippsland. Just take the map of Victoria, find the Tambo river. I will try and describe the country between it and Orbost, Buchan and the lakes entrance (I am only speaking about country that I have seen). After leaving Bruther township on the Tambo towards Orbost it is selected for six miles along the road very nearly to where the junction of the three roads occur. Now you can just fancy while reading that you are in a forest of Eucalypti. You will see red and grey box, a few yellow box, grey and red ironbark, common and yellow stringy bark, white and grey and swamp gum, blue gum and apple trees, lightwood and blackwood, also a kind of hickory scrub blooms in July yieldslots of honey. The ground is also covered with a thick scrub of wild hop, silver wattle, and different other plants, that I canot name. This is all poor country and not a bee-keeper on it. There are hundreds of square miles like it; not even a selector's hut for 20 miles sometimes. It is different from the country I first described, because one has the peppermint, honeysuckle, and small plants, the other is a dense forest that you could not drive through. A few years ago there were thousands of bee trees here, but foul brood raged while it any thing to live on. I am glad to tell you that at present there is no foul brood in North or East Gippsland. I would not advise any one to go on the peppermint country bee-keeping while there is so much forest to occupy. If you or any of your readers want any more information about the country I have described I will be very glad to supply it through your paper, or if you think it would be interesting I would write and tell you about our mountains, or a trip from Stratford to Dargo. I am glad to see your opinion about the L. frame; I think it the best top and bottom.

Your communications on either subject will be very welcome.

UPPER HUNTER P. & A. ASSOCIATION.

The following list of prizes (in the Apicultural Section) have been offered at the above show, to be held on May 19th, 20th & 21st, 1897. Entries close on May 4th.:—

(No restriction to number of exhibits in this section.)

376 Collection of the Best Apicultural Products, in trophy form, to include extracted honey, comb honey, and Beeswax, first prize £2, second £1

(Special prizes, open to all comers; entrance free.)

377 Best Leather-colored Italian Queen and Progeny, bred by exhibitor, in one frame observatory hive. First prize 10s, offered by Mr. C. C. Paul; second, 5s offered by Mr. F. Budden.

378 Best Golden Italian Queen and Progeny, bred by exhibitor, in one frame observatory hive. First prize, 10s offered by Mr. W. Hill; second, 5s offered by Mr. H. J. Clarke.

379 Best 12lbs Extracted Honey in 1lb jars, First prize 15s, second 6s, offered by Messrs. M. Campbell and Co.

380 Best 12 Pickle Bottles Extracted Honey. First prize 15s, second 6s, offered by Mr. J. C. White.

381 Best 12lbs Granulated Honey in 1 or 2 lb jars. First prize, 10s offered by Ven. Archdeacon White; second, 5s offered by Mr. W. P. Hill.

382 Best 12 1lb Sections. First prize, 20s offered by Mrs. Wilson; second, 10s offered by Mr. R. T. Keys.

383 Best 2 Large Frames Comb Honey. L size. First prize, offered by Dr. Grigson; second 5s offered by Mr. J. Hazelwood.

384 Best 3 Frames Comb Honey, half L size. First prize, 10s offered by Mr. A. A. Roberts; second, 5s offered by Mr. D. Grant.

385 Best 12lbs Beeswax. First prize, 10s offered by Dr. Grigson; second, 5s offered by Mr. T. Ellerton.

386 Best 3 Sheets Foundation, made by exhibitor, 5s, offered by B. K. A.

387 Fruit, preserved in Honey, not less than three kinds, 5s offered by Mr. W. H. Lipscomb.

388 Jam, made with Honey, not less than three bottles or jars, 5s, offered by B. K. Association.

389 Cakes, made with Honey, 5s, offered by Mr. Thos. Hewitt.

390 Beverages made with Honey, three bottles, 5s, offered by Mr. N. H. Doyle.

391 Honey Toffee, not less than ½lb, 5s, offered by B. K. Association.

392 Honey Vinegar, 3 bottles, 5s, offered by B. K. Association.

(Open only to Members of the Muswellbrook Bee-keepers Association; entrance free)

393 Best 6lbs Extracted Honey, in 1lb jars. First prize 7s 6d, second, 3s, offered by Mr. R. G. D. Fitz-Gerald.

394 Best 6 Pickle Bottles Extracted Honey. First prize, 7s 6d offered by B. K. Association; second, 2s 6d offered by Mr. W. Hornery.

395 Best 6 1lb Sections. First prize 10s, offered by B. K. Association; second, 5s offered by Mr. W. Campbell.

396 Best Large Frame Comb Honey, L size. First prize 5s, offered by Mr J. C. Luscombe; second 2s 6d, offered by Mr. H. Stubbs.

397 Best 2 Small Frames Comb Honey, half L size. First prize 5s, offered by Mr. J. Soles; second 2s 6d, offered by Mr. T. J. Hayden.

398 Best 3lbs Beeswax. First prize 5s, offered by Mr. E. C. Brecht; second 2s 6d, offered by Mr. J. McKenzie.

EXTRACTING THICK HONEY.

Apis in *New Zealand Farmer*.

"Subscriber" in this issue complains of not being able to extract his honey, although he has in use a 'Cowan's reversible extractor.' I have heard of several other cases of the same nature this season, and it is with a view of assisting them in their difficulty that I deal with the matter separately. It is pretty well known among the majority of New Zealand beekeepers that the bulk of the honey gathered from our native flora is too thick to be thrown out of the combs by the extractor. There are exceptions, notably, on the great Barrier Island, where I believe the bulk of the honey gathered is obtained from the native flora, and most, if not all of it, is taken with the extractor, but the rule is that it cannot be extracted in the usual way. Wherever there is a good quantity of flax growing it may be considered almost a certainty that the extractor will be of very little use in that district. No doubt 'Subscriber's' trouble arises from this source. Even where there is only a little flax growing it will cause a great deal of trouble, for if but a small quantity of flax honey is gathered and mixed with other honeys that would freely extract by themselves, the addition of a little of the former will make it unextractable. Independent of trouble from the above cause a great deal depends upon the seasons. In an average season when we get a fair amount of moisture in the shape of rain at intervals all honey will extract much more freely than during an abnormally dry season like the present. This no doubt is due to a larger proportion of water in the honey, and I am inclined to think that even after the bees have capped the honey there is a considerable difference in this respect in different seasons. I have known it frequently to occur during a hot, dry spell that the bees have sealed the honey immediately after it was gathered, thus showing that it was perfectly ripened when stored. It may be that some of those who have been disappointed this season will find everything work all right another season.

With regard to those so situated that they are likely to encounter this difficulty every season, I would recommend them to adopt the following plan;—'Find out what honey is the chief cause of the difficulty. Suppose it to be flax—then watch for the time of the swelling of the flax flower buds, and before they open, extract every ounce of honey you can. Even in the worst districts early spring honey will usually extract. Then clap on sections for comb honey, and while the flax honey is being stored keep the bees at sections. When all over the extracting combs can again go on. Though a little more trouble this plan is far preferable to that of squeezing the combs through a press as some do. Some may object to this plan on account of increased expense. But there need be very little extra outlay. It is generally advisable in districts where thick honey is met with, to either wire the combs so as to strengthen them to withstand the extra strain upon them when extracting, or to use half story hives and narrow half story frames when the combs will not need wiring. I consider the latter plan the best. Now, if this method were adopted it would only mean having a set of broad frames extra to each hive, and if the deep narrow frames were preferred for extracting by putting on two half stories instead of one, the deep frames could be used as in the ordinary extracting super.

HONEY AS FOOD.

Maitland Mercury.

It is a common expression that honey is a luxury. But honey is really a food in one of the most concentrated forms. True it does not add so much to the growth of the muscle as does beef-steak, but it has other properties, no less necessary to health, and vigorous physical and intellectual action. It gives warmth to the system, arouses nervous energy and gives vigor to the vital functions. To the labourer it gives strength; to the business man, mental force; not like ordinary stimulants, such as spirits, &c. It produces a healthy action, the results of which are pleasing and permanent—a sweet disposition and bright intellect.

The use of honey instead of sugar for almost every kind of cooking is as pleasant for the palate as it is healthy for the stomach. In preparing blackberry, rasp-

berry, or strawberry short cake, it is infinitely superior.

Pure honey should be freely used in every family. Honey eaten on bread is very beneficial to health.

Children would rather eat bread and honey than bread and butter; one pound of honey will reach as far as two pounds of butter, and has, besides, the advantage that it is far more healthy and pleasant-tasted, and always remains good, while butter at times becomes rancid and in some persons produces cramp, eructations, sourness, vomiting and diarrhœa.

Well-purified honey has the quality of preserving for a long time in a fresh state, anything that may be laid in it or mixed with it in a manner far superior to sugar; thus many species of fruit may be preserved by being laid in honey, and by this means retain a pleasant taste and give to the stomach a healthy tone. Few who once try it will again use sugar for preserving fruit.

In fact, honey may replace sugar as an ingredient in the cooking of almost any article of food—and at the same time greatly add to its relish.

Digestion (all-potent in its effects on the mind as well as the body) depends largely on the food. Poor food received into a poor stomach is the cause of many unhappy homes—while good, healthy food, received into a healthy stomach, becomes "an Angel of Peace" to many a household.

CRUMBS.

AUSTRALIAN YANKEE

HIGH-PRICED QUEENS.

Many new beginners think that they must get the high-priced queens to procure a big crop of honey. I consider it a great mistake, unless they want one or two to rear queens from, but to buy queens to stock an apiary with I prefer untested queens, as they are cheap, and a large number of them will prove purely mated, and those whose bees do not show all of the three bands of gold will prove of equal value as regards honey production. When we want a queen to rear queens from, then I say get the best that money can buy—best in every respect, colour, prolificness, honey gatherers, etc.

ARE QUEENS INJURED IN SHIPPING?

I have not known but one instance of a queen being injured in the post, that was some four years ago. A friend of mine, living about seventy miles away, having all black bees, thought he would like to try a few Italians, so he wrote asking me if I would sell him an Italian Queen. I sent him a large young queen, one that I had tested for queen rearing qualities. When she arrived he wrote saying that she was an ancient-looking dame. Well I heard no more from him for two years when he wrote accusing me of having sent him an old queen for his money (he only paid me 5/- for her). He said that he introduced her safely to a strong colony, but that she only laid a few eggs and the colony dwindled down to a mere nucleus. He then introduced her to another strong colony with like result, when he finally pinched off her head, and decided that he would not try the Italian bee any more. Now as this was one of my very best queens in all respects, I cannot but blame the handling in the mail bag for her thus sudden failure, as she was not twelve months old. I have some of her descendants in my yard yet. The progeny of one of her daughters in one season gathered something like 600 pounds of extracted honey, and it was not a very good season at that. When you get a queen from a noted breeder and she does not always come up to the standard of egg laying that you might expect, do not always blame the breeder, as the mailbags may be guilty of injuring her.

W. S. P., Armidale.—This is a grand season for honey. The yellow box started to bloom in November, and honey commenced to flow and has continued ever since Numbers of box are in full bloom now; and stringy bark is just starting.

BEES.

From Lubbock's "Bees, Ants and Wasps."
(Continued.)

In recording the results I marked down successively the order in which the bee went to the different coloured glasses. For instance, in the first journey from the nest, as recorded below, the bee lit first on the blue, which accordingly I marked 1; when the blue was removed, she flew about a little and then lit on the white; when the white was removed, she settled on the green; and so on successively on the orange, yellow, plain, and red. I repeated the experiment a hundred times, using two different hives —one in Kent and one in Middlesex— and spreading the observations over some time, so as to experiment with different bees, and under varied circumstances. Adding the numbers together, it of course follows that the greater the preference shown for each colour the lower will be the number standing against it.

The following table gives the first day's observations *in extenso*:—

Journeys.	Blue	Green	Plain Glass	Or'ge	Red	white	Yellow.
1	1	3	6	4	7	2	5
2	5	4	7	6	1	2	3
3	1	4	7	6	5	3	2
4	2	4	6	7	5	1	3
5	1	4	7	2	6	5	3
6	1	2	3	6	5	4	7
7	2	1	4	7	3	5	6
8	3	4	6	2	7	5	1
9	5	1	7	4	6	3	2
10	1	6	7	5	3	2	4
11	4	6	5	2	7	3	1
	26	39	65	51	55	35	37

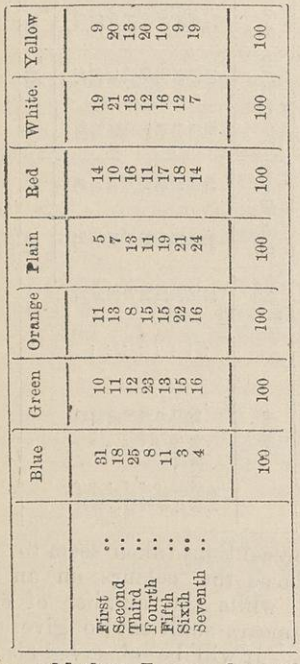
In the next series of experiments the bees had been trained for three weeks to come to a particular spot on a large lawn, by placing from time to time honey on a piece of plain glass. This naturally gave the plain glass an advantage; nevertheless, as will be seen, the blue still retained its pre-eminence. It seems hardly necessary to give the observations in detail. The following table shows the general result:—

Series	No. of Exp.	Blue	Green	Or'ge	Plain	Red	White	Yel'w
1st	11	26	39	51	65	55	35	37
2nd, May 30	15	38	57	59	72	66	58	70
3rd, July 2	16	44	76	82	73	53	53	67
4th, „ 4	15	43	61	64	80	66	50	56
5th, „ 5	10	36	47	39	40	40	36	42
6th, „ 6	2	2	8	9	10	14	6	7
7th, „ 20	11	33	39	50	47	49	41	49
8th, „ 23	10	31	46	48	52	37	35	31
9th, „ 25	10	22	54	38	52	33	35	46
	100	275	427	440	491	413	349	405

The precautions taken seem to me to have placed the colours on an equal footing; while the number of experiments appears sufficient to give a fair average. It will be observed also that the different series agree well among themselves. The difference between the numbers is certainly striking. Adding together 1, 2, 3, 4, 5, 6, and 7, we get 28 as the total number given by each journey, 100 journeys therefore give, as the table shows, a total of 2,800, which divided by 7, would of course, if no preference were shown, give 400 for each colour. The numbers given however, are—for the blue only 275, for the white 349, yellow 405, red 413, green 427, orange 440, and plain glass as many as 491.

Another mode of testing the result is to take the per-centage in which the bees went respectively to each colour first, second, third, and so on. It will be observed for instance, that out of a hundred rounds the bees took blue as one of the first three in 74 cases, and one of the

last four only in 26 cases; while on the contrary, they selected the plain as one of the first three only in 25 cases, and one of the last four in 75 cases.



I may add that I was by no means prepared for this result.

I may very likely be asked, if blue is the favourite colour of bees, and if bees have had so much to do with the origin of flowers, how is it that there are so few blue ones? I believe the explanation to be that all blue flowers have descended from ancestors in which the flowers were green; or to speak more precisely, in which the leaves immediately surround the stamens and pistil were green; and that they have passed through stages of white or yellow, and generally red, before becoming blue. That all flowers were originally green and inconspicuous, as those of so many plants are still, has, I think, been shown by recent researches especially those of Darwin, Muller, and Hildebrand.

But what are the considerations which seems to justify us in concluding that blue flowers were formerly yellow or white? Let us consider some of the orders in which blue flowers occur with others of different colours.

For instance, in the Ranunculaceæ, those with simple open flowers, such as the buttercups and Thalictrums are generally yellow or white. The blue delphiniums, and aconites are highly specialised, abnormal forms, and doubtless therefore of more recent origin. Among the Caryophyllaceæ the red and purplish species are amongst those with highly specialised flowers, such as *Dianthus* and *Saponaria*, while the simple open flowers which more nearly represent the ancestral type, such as *Stellaria*, *Cerastium*, &c are yellow and white.

Take again the Primulaceæ. The open-flowered, honeyless species, such as *Lysimachia* and *Trientalis*, are generally white or yellow; while red, purple, and blue occur principally in the highly specialised species with tubular flowers. The genus *Anagallis* here, however, certainly forms an exception.

Among the violets we find some yellow some blue species, and Muller considers that the yellow is the original colour. *Viola biflora*, a small, comparatively little specialised fly-flower, is yellow; while the large, long-spurred *V. calcarata*, specially adapted to humble-bees, is blue. In *V. tricolor*, again, the smaller varieties are whitish yellow; the larger and more highly developed, blue. *Myosotis versicolor* we know is first yellow and then blue; and, according to Muller, one variety of *V. tricolor alpestris* is yellow when it first opens, and gradually becomes more and more blue. In this case the individual flower repeats the phases which in past times the ancestors have passed through.

The flowers of one species of Lantana last three days, and, as Fritz Muller first pointed out, are on the first day yellow, on the second orange, and on the third day purple.

The only other family I will mention is that of the Gentians. Here, also, while the well-known deep blue species

have long tubular flowers specially adapted to bees and butterflies, the yellow *Gentiana lutea* has a simple open flower with exposed honey.

Muller and Hildebrand have also pointed out that the blue flowers, which, according to this view, are descended from white or yellow ancestors, passing in many cases through a red stage, frequently vary, as if the colours had not had time to fix themselves, and by atavism assume their original colour. Thus *Aquilegia vulgaris, Ajuga Genevensis, Polygala vulgaris, P. comosa, Salvia pratensis, Myosotis alpestris*, and many other blue flowers, are often reddish or white; *Viola calcarata* is normally blue, but occasionally yellow. On the other hand, flowers which are normally white or yellow, rarely, I might almost say never vary to blue. Moreover, though it is true that there are comparatively few blue flowers, still, if we consider only those in which the honey is concealed, and which are, as we know, specially suited to and frequented by bees and butterflies, we find a larger proportion. Thus, of 150 flowers with concealed honey observed by Muller in the Swiss Alps, 68 were white or yellow, 52 more or less red, and 30 blue or violet.

However this may be, it seems to me that the preceding experiments show conclusively that bees do prefer one colour to another, and that blue is distinctly their favourite.

THE HONEY BEE.

(By Richard Helms, Biologist, Bureau of Agriculture, Western Australia.)

From the *Journal of the Bureau of Agriculture.*

(Continued.)

The foeces, in consequence, cannot be discharged in the ordinary way and are retained in it until the last moult. A number of the segments are provided with breathing orifices or *spiracles*, which lead to ramifying tubes, called *tracheae*, extending through the body. A nerve cord runs through the whole length of the body, forming at every segment knots (*ganglia*), whence nerve-threads branch in all directions. The organ of circulation is extremely simple. It consists of a long tube, called the heart in insects, extending along the back, wherein the white blood is forced along. The food of the larvae is supplied by the nurses, and for the first three days consists of a highly nitrogenous substance, probably secreted from glands in the head, which are particularly active in young bees. On the third day this food is replaced by a mixture of honey and pollen dissolved in water. After the fifth day all feeding ceases and its cradle is covered with a thin layer of wax and pollen. This process is known as sealing the cells. When sealed up, the larva stretches itself length ways in the cell, keeping the head towards the bottom. In this position it probably first finishes the balance of the food left, and then passes through one of the most interesting processes of its life history. In consequence of the absence of a dual opening the indigestible parts of the food, mainly consisting of husks of the pollen grains, have accumulated in the intestine. This waste matter has to be got rid of without spoiling the inner walls of the cell. The simple structure of the bag like intestine assists in the process, for the inner membrane is now vomited forth together with its contents. The outer skin of the larva is cast at the same time, and being continuous with the lining of the intestine which, as will be understood is now inverted, forms a close lining to the cell. The refuse left in the intestine is thus buried at the bottom of the cell. This is the last moult of the larva, which is an internal as well as an external one. The foregoing applies in its entirety only to the development of the worker larvae. The queens and drones develop in a slightly different manner. The queen larvae are reared in specially constructed cells, called queen or royal cells, and are fed throughout with the nitrogenous sub-

stance given to the worker larvae during the first three days. Moreover, this food, known as royal jelly, is supplied in such profusion that it is never completely used up by the larva which floats half buried upon it. The cradles for such favourite larvae are elongated, ovate in shape, and both roomy and strongly built. They have room for any amount of surplus food and allow for the full development of the sexual organs of the larvae. Their strength is necessary to permit the bees to crowd them without doing injury. Up to the fifth day the development of the royal larva progresses at the same rate as that of the worker, but afterwards much more rapidly. The drone larvae are reared in hexagonal cells, which are wider and slightly longer than those of the worker larvae. For about four and a half days they receive the rich nitrogenous and entirely assimilable food, and a day and a half honey and pollen food. The development of the sexual organs evidently depends principally upon the supply of the nitrogenous food substance. The larvae of the workers are fed upon it for three days, those of drones for four and a half days, and royal larvae for five days, or the whole of the time of this phase of life. After the larvae have passed through the last moult they turn round and face the sealed end of the cell. In this position they remain during the following two transformations.

The Pupa

The pupa is the third, but a quiescent stage in the life history of the bee. The name signifies little girl, doll or puppet. Other names given to the third stage of insects are nymph and chrysalis. The first of these means bride, and is frequently applied when no leathery covering occurs; whilst the second was originally given to the pupae of butterflies and moths in allusion to the golden sheaths and glittering spangles many of them are covered with; chrysas meaning gold in Greek. As soon as the larva has turned round it begins to spin a loose cocoon, which, when finished, will cover it a little more than half way down. The queen larva completes this cocoon in about a day, the worker larva in two, and that of the drone in three. The spinning of the cocoon is very exhausting, and a rest is required by the larvae in consequence. This period of rest varies with the different larvae. That of the queen takes about two days, whilst the worker larvae takes three, and those of the drones about four. After that the development proceeds rapidly, ond within a day the limbs and different appendages appear outlined on the semi-transparent body of the pupa. At this stage the name bride (*nymph*) is certainly not inappropriate. The gentle figure, veiled to its waist in a gossamer, suggests such a comparison. The further development proceeds very quickly considering the extraordinary anatomical and physiological changes now taking place. In a marvellously short space of time the full-grown limbless maggot is transformed into a highly organised flying insect. This is more particularly astounding with the pupa of the queen; which, in three days, arrives at maturity, in less than half the time needed by that of the worker or drone, each of which take seven days.

The Imago.

The perfect insect, the fourth stage of its life history, is called imago, from being a portrait or image of its parents. During the process of maturing whilst in pupal stage, in addition to the other members, a pair of strong jaws have gradually made their appearance. The bee, when fully formed, is anxious to leave the cell and escape confinement. The jaws are the first organs to be brought into play. With these they cut a circular furrow through the capping and then push the lid away with the head and crawl out. At first the wings are folded close over the back, and the hairs of the body are also lying down. When they rise up and the veins of the wings have filled with air the bee has reached its full size. It does not grow after emerging from the cell, all its growing is done when in the larval stage.

The queen, however, gets considerably bigger after she has been fertilised, this being caused by the development of the ovaries, which expand the abdominal segments. The three kinds of bees acquire their full power of motion almost immediately after leaving the cell, and are soon ready to assume the functions assigned to them by Nature. From the time the egg is laid a queen matures in sixteen, a worker in twenty one, and a drone in twenty four days. This is the nominal time and hardly ever varies with the queen and rarely with the drone, because whenever these are reared plenty of workers are always found in the hive to produce the necessary warmth. The development of the workers may, however, occasionally be retared in a weak colony during cool weather.

THE SOLAR EXTRACTOR.

JAMES BENNETT, VICTORIA.

If a solar extractor is wanted for the purpose of rendering spare, broken, or diseased combs and any other wax bits that accumulate in an apiary, I know of nothing better than the Doolittle extractor, the essential feature of which, apart from the glass for heating, and a vessel for catching the melted wax, consists of a sheet of plain iron for supporting the combs instead of the piece of wire cloth as previously used. A machine of this sort large enough to hold 8 or 10 Langstroth frames placed singly on the iron sheet, will do an immense amount of good work during our long summer and the attention required is very trifling.

It has, however, one, or perhaps I may say two, very serious drawbacks. First, any honey passing through it is blackened and spoilt; secondly, unless great care is exercised the honey on its passage over the heated sheet iron is scorched and acquires a burnt flavour and so is doubly spoilt. As I use my Solar chiefly for rendering cappings which contain a large amount of honey even after they have been well drained, I found this blackening and scorching a source of considerable loss, so I experimented considerably to see whether I could avoid it.

The first point I noticed in my experiments was, that at the end of summer, when the heat was only just sufficient to melt the wax, the honey that went through came out much lighter in colour than during the heat of summer. The second point that I noticed was that the blackening of the honey was caused chiefly by the *gravy* which runs out of the propolis after the wax and honey have run away. After several attempts to utilise the information obtained, I took away the sheet iron support and replaced it with *wooden slats* each slat being an inch wide and spaced half an inch apart from its neighbour. This was an immense stride in advance; the honey coming out now without any burnt flavour whatever and only very slightly darker than the same class of honey taken from the honey extractor. The reason I think is not far to seek, the honey has no hot plate to travel over, but drops down below as soon as it begins to run, and the *gravy* does not run out of the propolis for the reason that the propolis does not accumulate to any great extent but drops below with the honey and wax.

Although the propolis does not remain behind to any great extent however, a little of it remains and under some conditions it will accumulate if not cleared off, when of course the *gravy* business is repeated with the same blackening results as before. In order therefore to make the machine Absolutely Perfect (with capitals) I took away the slats and replaced them with *wire netting* of five eighths of an inch mesh. I think this gives a little better results than the slats, but I am sorry to relate that the absolutely perfect (even without capitals) did not come off. A little propolis still adheres to the wire netting, rendering cleaning off occasionally necessary, while worse still the netting is more difficult to clean than the slats were. However, although I have not attained absolute perfection I have been so far successful that all the honey

that has passed through the solar this season, amounting probably to three cwt. or even more, has so nearly approached ordinary extracted in quality that I have mixed all together and the bulk has not suffered to any appreciable extent. If a sample of Solar honey and a sample of extracted in glass are placed side by side, the solar is seen to be a little darker than the other, but the difference is very trifling, and the difference in flavour is not perceptible.

It will be noticed that I have endeavoured to get the honey in good condition and have totally neglected the condition of the wax and it may be objected that while the quantity of the honey has been improved the quality of the wax as it is left by the extractor has suffered in a corresponding degree. That is true; but if we can get our honey in one vessel and our wax in another we can easily purify the latter no matter how crude and dirty it may be.

I have not given any details for makthe Solar, as I use it, as I think it is not necessary. Anyone interested who will keep in mind the *old style* of solar with a screen of wire cloth or perforated zinc for the combs to rest on will have a good idea of it. The wire cloth is to be taken away and wire netting of ⅝ inch mesh or slats as narrow as possible and spaced ½ inch apart, substituted. To use it raise one end as with the Doolittle and place the cappings at the top end, leaving two or three inches of the bottom end empty, so that the honey and wax as they run down below may have a clean uninterrupted course. The point to be aimed at is to get the honey, wax, and propolis down below as quickly as possible, and in a semi-melted condition. A solar built in this manner is *not* suitable for melting old combs, but if a sheet of iron two or three inches shorter than the extractor is placed on the wire netting it becomes virtually a Doolittle once more. I would have preferred to experiment another season before publishing results, but question 103 led me to think that a report of what I had done to date might possibly be of interest.

CAPPINGS.

From American and other Bee Journals.

It seems from the evidence of a writer in the *American Bee Journel*, that if you give a hive all full sheets of worker foundation, they will raise drones from it by making the complete cells larger at the outer end.

C. Blondin, in *L'Apiculture*, reports good success from starters made from sheets of plain wax. To make the sheets he dips a pane of glass into melted wax and then into cold water. The wax cuts itself by contracting at the edges, and is easily removed.

Hunting Wild Bees.—Andrew Cotton in *A. B. J.*—In giving my experience in hunting wild bees, I will say the worst bother that I have ever experienced in locating them was in finding them where I least expected—in a log or stump, or even some bush, where they had settled and continued to stay. In my first experience of hunting wild bees I have been fooled many a time by cutting a tree too soon, that is before the swarm had really taken possession of the tree as they will often work very strongly in a tree for several days before the swarm goes into it. They will never go in until they have the hollow thoroughly cleaned out. A green hand at this may lose lots of good trees by being a day or two too soon, and for the benefit of anyone who may be interested, I will tell how you can easily know whether the swarm is in the tree or whether the bees are merely preparing it. When bees are cleaning out to go into a tree, you will always find a few bees flying up and down the body of the tree, as if they were looking for a hole, which proceeding stops as soon as a swarm goes in. Another way to tell is by the actions of the bees at work. The nearer they get to the completion of their work, the more bees seem to be at work; and, it is easy when once learned, to tell by these actions whether they are carrying in honey or not. They act much like bees playing when they are cleaning out a tree, instead of shooting straight in and out of the hole when carrying in honey.

Mr. E. B. Jones, in *A. B. J.*—Four years ago, on opening a colony of bees about swarming time, I noticed some very small, inferior looking drones. At first I wondered at it, for I was very sure that that colony had no drone comb in it; yet the presence of drones aroused my curiosity, and I examined the combs to see if I was mistaken. But no; there was not even a drone cell that I could find. I concluded that they must have come from some other colony, but I did not understand why they were no larger than workers. Again, last year I filled several hives with full sheets of foundation, wired in, and transferred colonies from box hives into them, *a la* Heddon. There was a moderate honey flow at the time. In about a week I put on the supers, and about a week after that I looked through the brood chamber, and two of the colonies had appropriated a piece of foundation about three inches square in the corner of one frame upon which to build drone cells. They did not change the size of the cells at the base, but inclined them from the centre so as to make the cells larger at the outer end. Every impression on the foundation had a cell erected from it, except possibly a few where the inclined flared cells met the perfect worker cells. These inclined and flared cells had larvæ in them that hatched out drones. I feared that they might spoil more of my intended nice worker combs, so I gave them a full frame each of drone comb; they accepted it, and as soon as the brood hatched from the inclined and flared cells they worked them over into worker cells.

REARING QUEENS IN UPPER STORIES.—Dr. Miller: To go back a little—in fact back a good many years—two years that I lived in Chicago and keep bees 65 miles away. One time when I was leaving home for about two weeks I piled up a number of combs over the hives, in that way to be taken care of by the bees. When I got home most of these were a solid mass of worms. I had only a small hole for the bees to go up, and the bees just kept it comfortable for the moths. I thought I would have the bees take care of the combs this time, whether they would or not, so I put a frame of brood in the upper story. I knew that the bees would not fail to go back and forth and look over the whole ground then, and I left them standing in that way, and if they wanted to put any honey in there for extracting, all right; and possibly two months later I looked in the upper story and I was surprised to find that there was several frames of brood there; there was a leak in the upper story, and they had reared a young queen, and there was a separate colony up there, no queen excluder or anything. I left it there until late in season, and I had my two colonies. Well that is the beginning, so far as I know, of any record made of that plan of rearing queens. Then afterward, I accidently found queens rearing when I had put a story of frames over a story of empty frames with one of brood and a cloth between. Now, with a queen excluder they will sometimes rear as well as above and sometimes they won't. I lately read of a man who found they wouldn't rear queens with one excluder, but they did if he used two. Sometimes they rear cells all right, and sometimes they won't. When one is working for extracted honey, I am not sure but what it is a good plan. If you want to rear queens and be sure, you had better take some other way.

SAVE THE BEESWAX.—*Iowa Homestead* says:—If care is taken to look out for all scraps of wax, cappings and pieces of combs that for any reason are rejected it will make a pretty piece of wax in the course of the year. If a solar wax extractor is used, of course it can only be used when the sun is shining and the weather warm, making it impossible to render any wax except in hot weather. But there may be more leisure for it now, and on one account cold weather is desirable. In melting up old, black combs, the cocoons in them absorb a large amount of wax which is lost. To prevent such

absorption, soak the combs thoroughly in water, so that the cocoons already filled with water can take up no wax. But you'll find it a hard matter to soak the combs full of water unless they are broken up fine, and if the combs are not made brittle with cold, it will be impossible to break them up. So it will be seen that cold weather is to an extent needed if you want to melt up old combs. After the combs are broken up fine, they may be saved till hot weather for the solar extractor, or they may be melted up at once, of course after soaking. One good way to melt combs in winter is easily accomplished with only the ordinary appliances to hand in every household. Take an old dripping-pan—of course, an entirely new one will do as well—split open one corner clear to the bottom, and you have one of the best wax extractors. Lay in the material from which the wax is to be extracted, and put the pan in the oven of the cook-stove, with the door left open, and the split corner of the pan projecting out. Put something under the inside of the pan, so as to raise it up, then as the wax melts it will run out of the split corner of the pan. To catch the dropping wax set any vessel convenient, and it may be well to have in this vessel a little water so the wax will not stick to the bottom.

J. A. B., Via Cumnock, Feb. 9—I received your letter re name of the bee killer I sent. I had heard of the dragon fly but I had no idea that what I sent to you were the same. We have had very hot weather here lately, some of my unfinished combs that were full of honey as far as finished broke down with the heat, although the hives had double roofs on. I never see much bee news or in fact any at all from this district in your *B. B.* although there are a good few beekeepers about. I wonder Mr. Packham of Molong and Mr. Black of Cumnock and Mr. Barber of Rocky Ponds, don't send you a few lines now and again.

J.A.B., "Fernside," Dilga, N.S.W.—I am sending you under separate cover a winged insect which eats bees. I found a lot of them with bees in their legs. They suck the inside out of the bee and drop the remainder; they do the same with blow flies. They can fly very quickly, in fact, so quickly that you cannot watch them, but you can follow the buzz as they have a very loud buzz. I killed a lot to-day with a bush, some were too quick for me so I loaded some cartridges with about a dram of powder and a good charge of Liverpool salt and shot them with that, but I suppose all I have killed will not be missed as they seem to be everywhere about here. I have never heard other beekeepers speak of them and I would like to know if you have any down there, and whether you have ever seen any, and if you could advise a quick and sure method of getting rid of them. You might publish an account of them in your paper, so that all your readers could see, some may have them in their apiaries and not notice them. I have also found out that the large red hornets kill bees, but there are not many of them here. We also have a bird, "The Australian Bee Eater" here. I have shot several but could not find any bees in them. No wonder the bees are not increasing much here. I have not had one swarm this season and have not extracted any honey yet. The white box and grey box are in bud and I think they will bloom in a month or two. The timber is all rung for a mile round my apiary, but the mountains are only a mile away with lots of stringy bark and box on them, plenty of green timber then as far as you like to travel. I would like to be down among you people near the coast where you get tons and tons of honey. I would try not to sell it in the summer though. I see the market is glutted now; why not keep it till winter. No more at present. Please let me know the name of the insect.

The sample to hand is a bee-eater or dragon-fly. They breed mostOy in still water. A whip is a good thing to kill them with. Am sorry to hear of your non-success. You want to know about the different trees in your neighbourhood whether thep bloom every year, or every second or third year, and the last year they bloomed. These are matters about which the public know eally nothing, and beekeepers very little.

VICTORIA.

AMATEUR.

Dear Sir,—Your valuable little paper is always welcome, and I get a lot of useful hints from it, but I can't get my case met exactly. I will give you my experience and perhaps some of your readers will give me advice. I had two hives at the beginning of the season and have now eight, which I take to be rather too great an increase. I have extracted about 84lbs. of honey. Some of the frames had to be put into the solar extractor, the combs being all built into one another. All the new swarms mentioned further on have their hives about three parts full of honey, and plenty of brood hatching out.

Of the two parent hives one was very strong and the other not very strong, having an old queen. On the second or third week in September, the strong hive swarmed (a very strong swarm issued). A week after another swarm issued (this very strong too.) I hived it and left it to move to its proper place in the evening, but when we went to carry it to its place we found that the bees had all levanted. We found them five days after out on a small bush about 50 yards from the fence. Hived them again and they stayed and have done very well. They had been somewhat reduced during the 5 days, as the weather was cold. Two days after the issue of this swarm, in fact while they were out in the bush, another swarm issued, hived on full sheet foundation. They stayed alright. This gives me five hives and I thought all the swarming for the year was over. This first strong warms filled their hive in less than a fortnight. I put a super on; they filled that and I put another super on. Then came cold weather and a lull. At the end of January they had the second super nearly full. I took the full one off, and let the other down and put a queen excluder on. On the 3rd inst., that is five months after they had issued from the parent hive, they swarmed. Two swarms came out at the same time, at least when I saw them they were all in the air, and had all apparently issued from the one hive, as this was the only hive in commotion. They settled on different trees and I hived them separately on full sheets. In the evening we took them to their proper places. Next day one of these swarms left its hive, and went back to the tree where it had swarmed before. I hived them again, and gave them six combs from which I had just extracted the honey, and two frames of brood just hatching and honey. They settled down then. This makes seven swarms. Another swarm issued from this hive, which made three swarms from it within five days. The last lot which came out settled on two trees, but I hived one lot in a hive with two frames of brood combs, two of combs from which I had just extracted the honey, the rest starters. On opening this hive to-day I find plenty of brood hatching out, but three parts of the new comb built is drone comb, and there are any number of drones in the hive, very large ones too—they seem to me to be extra large. I forget to mention that still another small lot came out of the same hive and settled on a tree near. I was full up of swarming by this time so I let them hang till evening when I gave the tree a shake and they all went back to the hive again. Next morning about nine we just caught sight of a small lot sailing away over the house. This was the last seen of them. Will you tell me me if I have done what I ought to do or otherwise. I would also like to know the best way to handle the supers for extracting, I mean how to get the bees off the frames. Also can you keep frames of honey for feeding in winter? Will they candy in the combs? If they do candy would it hurt the bees to feed them with it. I would feel obliged if you will take the trouble to read this and give me a little advice.

[We take it you have small 8-framed hives. You have not given supers when needed. Possibly you have a bee that swarms a good deal. You should have looked through them more than you have, killed a good many queen cells and swarmed them artificially. That is, ut

the new swarm on old stand, removing the old hive to a new stand. A little practical experience will enable you to overcome the swarming difficulty. The bee escape is very useful for taking honey in supers off. You put one below the super over night. Next morning you will not find a bee in the super, and can take the honey straight away without a sting. That it candies depends on the kind of honey, some being more liable to candy than others. The best plan to keep it is in the hives. Your sub. is paid to June, '96.]

STRAY "BULLETINS."

For some reason or other quite a number of complaints reached us of the non-receipt of the January number. The same thing happened some two years ago. We forwarded the following letter to the Postmaster General:—

(COPY.)

March 8, 1897.

The Hon Postmaster General,
Sydney.

Hon Sir,—Under separate cover I am sending you a number of complaints from subscribers to the *Australian Bee Bulletin* of non-receipt of copies that should have reached them. The *A B.B.* is posted at West Maitland about the 28th of each month and every systematic care taken that each subscriber's copy is posted. We have inquired at West Maitland P. O., but they can give no clue to the cause of non-delivery. The same annoyance occurred about this time two years, and I concluded the cause was the number of advertising pamphlets at that time going through the post, their delivery being accounted of little value by the P. O. officials, and the *A. Bee Bulletin*, being perhaps similar in size, getting similar treatment. If you would kindly cause some enquiry to be made myself as well as the many subscribers to the *A.* B. B. would feel very grateful. I am, Hon. Sir,

Yours very obediently,
E. TIPPER,
A. Bee Bulletin

N. B. Immediately on receipt of complaint I forwarded fresh copies to each complainant.

Postal and Electric Telegraph Department,
General Post Office,
Sydney, 17th March, 1897.

Sir,—With reference to your two contributions, dated respectively the 8th and the 11th instant, enclosing letters from subscribers to your paper complaining of non-receipt of their copies, I have the honor to inform you that inquiry has been made in the matter, but there is no reason to suppose that the papers have gone astray in the Post Office. The Postmaster at West Maitland reports that the greatest care is always exercised in dealing with the papers, and that on the last two occasions two officials specially sorted them, and two others checked them as they were being placed in their respective bags for despatch. He further points out that he has had no complaints from other sources in this respect, although from one establishment alone over 80,000 papers are posted monthly. It is thought that it would be a good plan if you had a list of your subscribers prepared, and had the papers checked with this list after they were wrapped up and about to be posted.

I have the honor to be, sir,
Your obedient servant,
JAMES DALGARNO,
Acting Deputy Postmaster General.

E. Tipper, Esq.

March 22, 1897.

JAS. DALGARNO, ESQ.,
Acting Deputy Postmaster General.

Dear Sir,—Many thanks for yours of the 17th inst. Also for the trouble Mr Johnson, the West Maitland Postmaster has gone to. I believe every care has been taken both by him and the staff under him, and I attribute no blame whatever to him. The reference he makes about getting no complaints from another establishment do not apply—a daily newspaper, published regularly every day, and a monthly publication in book form like the A.B.B. When I published the *Greta and Branxton Gazette* I had no complaints whatever against the same post office. I still assert the cause I believe of the irregularity is the number of advertising book publications that are sent out at special times—notably at beginning of year—the address being taken say from electoral rolls, and many of the persons addressed to dead or non-existent. This causes the carelessness from which the A.B.B. subscribers have suffered I may mention the Government has spent some thousands of pounds in fostering the bee industry, and it does seem hard the authorised periodical of the industry throughout the colonies should suffer through quack, electoral and other advertising.

Apologising for troubling you so much,
I am, yours obediently,
E. TIPPER,
A. B. BULLETIN.

G. H. A., Inverell, Feb. 22nd.—We have had a fair season so far with bees still harvesting a little honey. I have averaged 150 lbs per hive on spring count. White box is budding fairly well and is bursting into bloom on the high grounds. It remains to be seen whether it will secrete much nectar.

PORT MACQUARIE.

The following are the Apicultural awards at the P. M. & H. D. A. & H. Societys' Show, held Wednesday and Thursday, March 10th 11th:—

BEE EXHIBITS.

Judges—Messrs H. St John, R Woodlands. Steward—A E Pountney.

The increase of entries under this section shows that the industry has taken a firm hold in the district. Some excellent honey was shown, and the collection of bees, honey, wax &c., shown for the Special Prize made an attractive feature in the Hall.

5lbs Beeswax, R Davidson 1. 5 entries.

3lbs strained honey, H Suters 1. 12 entries.

5lbs honey in comb, G Harriot 1. 4 entries.

6lbs beeswax in one block (R Woodlands special), R Davidson 1. 5 entries.

5 1lb selections comb honey (Ellis' special), H Suters 1. 2 entries.

Exhibit bee keeping applianes, Mrs J Branch 1. 1 entry.

Collection bee exhibits, comprising honey (extracted and comd), wax, bees in observation hive and queens, Mrs J Branch 1. 2 entries.

WEST'S SPIRAL WIRE QUEEN CELL PROTECTOR AND CAGE.

Mr. T. Bolton, of Dunkeld, Victoria has called our attention to the following extract in the *Canadian Bee Journal* by N. D. West, and which he says he throughly endorses:—The general objects of the queen-cell protectors and queen-cages are, first, to protect individual queen-cells and young queens against being destroyed by bees, in such a way as to provide for forming a safe and effective queen-nursery in any hive; secondly, to facilitate handling, carrying, shipping, and introducing queen-bees, and especially the introduction of substitute queen cells or new queens into any hive with safety; and, finally, to discourage or prevent the swarming of bees and to facilitate the introduction of swarms into new hives. The long cages are the *best bee escape* in use.

If a queen-cell is introduced to a colony of bees immediately after it has been deprived of its queen, without any precaution, the cell will be destroyed at once: but the bees never destroy a queen-cell at the point where the queen helps herself out when she hatches. So use the "spiral wire queen-cell protector" and introduce safely at any time. It is the *best* and most *convenient* way.

QUEEN CELLS FOR THE PROTECTORS.

Go to the hive that has your cells ready to be cut (I prefer cutting only a day or two before hatching, also prefer swarming cells and get them from our best strains that cast our early swarms, cutting the cells five or six days after they swarm,) and with a penknife blade, thin and sharp, made a little warm by holding it against the barrel of the bee-smoker, cut out all the cells you desire to save. Keep them right end up all the while, and be very careful not to jar, nor expose them to the sun or cold very much. Trim off the bits of comb from the cells and place them in the protectors.

Hold the small end of the protector between the thumb and first and second fingers of the left hand; hold the queen cell by the large end in the right hand in the same way, then put the cell into the protector; and as soon as the fingers of your right hand touch the protector, by pushing slightly the protector will shorten up so as to fix the point of the cell just through the small end of the protector. Let loose with your right hand, and the coil will spring back and cover the butt end of the cell; then slip the tin cover in between the wire coil just above the butt end of the cell where the wire is wound close, then the cell is ready for introduction.

QUEEN-CELL; HOW INTRODUCED.

After inclosing each cell in a protector and applying its cover, go to as many hives as you have queen-cells, kill the old queen in each hive, hang a protector inclosed cell on the upper part of a comb by pushing the spur of the cell-protector through the comb and then close the hive. Owing to the protector and its cover, the bees can not destroy the cell as they never attack the lower end of a cell, and this is the only part exposed. The queen will hatch out in two or three days, and run down on the comb, and in about

eight days more will begin to lay. I prefer this way of requeening a yard of bees, especially in swarming season. The objects are, to requeen cheaply with the best queens and to discourage swarming.

If you have any doubt as to a queen-cells hatching, then introduce two cells at the same time, caging one of the cells. If both cells hatch queens, you can use the caged queen else where. If only one in the cage hatches, let her out of the cage and all is well, if let out soon enough.

CAPPINGS.

From American and other Bee Journals.

Gleanings says of 100,000 beekeepers in America only about 12,000 take any bee paper.

The *Southland Queen* says hot smoke from a smoker was the best remedy for bee stings.

H. R. Rauchfuss, says eight or ten acres of alfalfa or lucerne bloom per colony are required for bees to do their best work.

Mr. G. A. Snell feeds his bees at night time by raising the fronts of the hives two or three inches higher than the rear, pouring warm feed in at the entrance. The hives must be sealed fast to the bottom, so as no food can leak out and be lost.

R. M. Reynolds, writes to *Gleanings*, that he tried wood stays ⅛ in. square, instead of wiring frames, but had not found them satisfactory, as, as soon as the bees were at leisure they were pretty certain to cut more or less of the comb away from the wood stays, and then do the same with the wood stays.

Someone at the late North American B. K. A. Conference, recommended bisulphate of carbon for killing moths in comb honey. C. Davenport writes to *Gleanings* against it. He says it has the peculiar property of making the honey thinner, so that honey in unsealed cells that could not be shaken out by hand, will, subsequent treatment with it, run or dip quite readily.

Dr. W. M. Stell in *Southland Queen*, gives illustrations of results of bee stings, several where loss of eyesight resulted. We have come across people who were very brave in going among bees without a veil. For ourselves we feel the effects of a sting very little, just knock the sting off and it is forgotten. But we have seen a chicken on one occasion and a duckling on another, stung in the eye—res ult, total loss of sight, and so, as we should miss our eyesight very much we always wear a veil when working with the bees.

At a recent Wisconsin Convention, Mr France related an experience of one bee-keeper who shipped several barrels of prime extracted honey. The honey was reported in a leaky condition, and would have to be transfered into other barrels. The bee-keeper knowing that the honey was shipped in good condition took the train for the city, called at the commission house, made enquiry for extracted honey, as though he were wishing to buy. He was shown his honey in the original and all in good order. He made himself known, and the result was that the commision house paid him for his honey, and also his railroad fare both ways.

Dr. Miller, says :—When a colony has filled all its room with brood and can utilize more room, it should have that room promptly given, and with 8-frame hives, I would give the room by adding another story under, filled with combs if possible, and possibly it might be well to put one of the frames of brood in the lower story. But I woudn't make the mistake of putting a frame below so so long as any room remained for brood above. It will do no harm, however to give the lower story time in advance of its being needed, but it wouldn't do to give an empty story above to waste the heat of the colony.

F. Greiner proved by careful experiment, that bees gather pollen and honey when five days old. He says, "On the 4th of June he took four nice, clean combs, all of regulation size, and gave them to as many different colonies, placing them in the centre of their re

tive brood nests. On the 25th of June they were collected and placed in a previously and especially prepared hive, with wire screen bottom, separating the whole from the populous colony, quilts and cushions were removed, and after wrapping them up they were left to be examined again on the 28th. At that time he found quite a number of bees had gathered, forming a regular cluster within the opening and fly hole about two inches from the bottom board for the entrance. The bees in this colony were now just three days old, and not one came out, not even peeped out that afternoon, but when three to five days old, there was a sudden commotion at the hive, and the bees were seen flying forth apparently in play. One bee was found to have a tiny lot of pollen, and there was quite a number with rather more pollen. By July 1st the little experimental colony sent out its workers as regularly as any colony in the yard, bringing both honey and pollen. No bee was at this time quite six days old. On examining the colony in the evening no honey was found that was so thin that it would drop from the comb when held in a horizontal position.

Geo. Williams, writes to the *A. B. J.* — I have just received, and read with care "Foul Brood" by Wm. R. Howard, M.D., and leaving out his quotation from Wm. McEvoy, I must confess that I *do not* know as much about foul brood now as I did before I read it. Is there no bee-keeper who has studied the foul brood question that can write a treatise on it and frame his ideas in language that can be understood by the common or average bee keeper? When one of these M. D's gets to writing, he thinks he is wrting for the benefit of other M. D.s, or wishes to air his scientific knowledge by using such scientific terms that the average reader is lost as to his meaning, and his writings are of no use to the bee-fraternity at large. Here is an illustration, taken from page 14 of the book in question: "For rotten brood to produce foul brood it would be necessary for putrefactive bacteria to become strictly pathogenic, those forms of fission-fungi, non-spore-producing bacteria and micrococci to change into spore-producing bacilli, and there would be a time in their organism that they would possess all of these characteristics at once." Oh, dear, what a string of scientific words. But where is the bee-keeper who is not an M. D. that can get any more meaning out of it than to hear geese squaking?" An M. D., or any other "D" using such Latin terms, expecting the average bee-keeper to understand it, should have a viscid sinapism applied to his spinal column until the epidermis or integument became rubific and almost epispactic or ephemeral, or until formication was produced, and until he became so hypochondriacal that he would need no hypnotics. And that neurasthenia would be so great that while in this comatose he would be cleansed from all ascarides without having to deglutite an anthelminthic; and that it may affect the cerebellum and cause asthenia or cachexy that he would be incapacitated from masticating or deglutiting any electuary without a deobstruent. Yes, by all means let us have a work on foul brood that is not full of goose language to us that are not M.D.'s

Introducing Queens with tobacco Smoke.—By Dr. E. Gallup, in *A. B. J.*, I have recieved five letters requesting me to be more comprehensive in my plan of introducing queen with tobacco smoke, etc. I received a queen Oct. 20, just at night, too late to hunt up the queen where I was to introduce her, and I had to be away the following afternoon, and robber-bees would be on hand if I introduced in the forenoon. I am pestered constantly with black bees from somewhere, either in a tree or some building. They are evidently in a starving condition judging by their action. When I go out with the smoker they are on the watch for a chance for mischief, and when I open a hive they are ready to pounce in. So I cut out a strip of board the length of the width of

the hive, and two inches wide, then cut out ¾ of an inch from one side the length of the entrance; tack on a strip of wire-netting, so that when this ventilating strip was placed over the entrance the wire would come down tight on the bottom-board, so that bees could neither get in or out of the hive. With a gimlet I bored a hole in each end of the strip for the nails, so I could quickly fasten it over the entrance I cut out this notch in the strip ¾, so it would be larger and deeper, and then the bees could not choke up the entrance and smother. A wider ventilating strip for a powerful colony, so that one could cut out one or two inches to cover with the wire screen might be advisable, but the colony that I was operating on wasonly in medium strength. I went to town for tobacco stems in the evening but the cigar factory was closed. But in front of the hatch I picked up a pocketful of cigar stubs. Now I was ready for business. Early in the morning I picked an old queen out of the hive without disturbing the bees but a mere trifle; closed hive, and tacked on the ventilator, and only had three bees on the outside. Previous to this and before daylight, I had taken the queen out of the shipping cage and placed her in alittle round wire cage. I cut up some cigar-stubs quite fine, and rolled them in a piece of cotton-cloth ready for lighting. I had my teacup of honey and a spoon on hand ready to drop the queen in when wanted. I placed the old queen in the shipping-cage, with five or six of the workers that came with the new queen (as I was to give her to a neighbour); lighted the tobacco, placed it in the smoker, and when I had it well going I puffed about four good puffs in through the screen at the entrance in four different places, so as to have the smoke thoroughly penetrate between each comb. I waited about one minute took the queen out of my pocket, dropped her into the teacup of honey, by holding the mouth of the cage close to the honey, then suddenly jarring with the other hand so as to have her drop into the honey without a chance to fly. I rolled her over, removed the cover of the hive, and droppe thquee f and spoonful of honey into the centre o the hive, replaced the cover, and placed a large blanket over the hive so as to make all dark, and so the robbers could not congregate on the outside of the ventilator. The whole performance from the time I opened the hive to find the queen and introduce the new one, did not occupy over 15 minutes. You must remember that cigar-stubs are very strong, therefore we must use only in proportion to the strength of the tobacco. I usually use tobacco stems. Then we have to smoke a little longer. All the bees must be stupefied. It is not necessary to smoke the queen. I roll her in the honey to prevent her from flying. Before I left home in the afternoon I removed the blanket and the ventilator at the entrance of the hive, and the bees went to work as though nothing had happened. And I am inclined to think that the bees do not even discover that their queen has been changed, while they were on their drunk, for the fumigation makes them act very much like a drunken man, and the change made so quickly that they have no chance to discover the the loss of their former queen. But this I do know, that I never have never lost a queen by introducing with tobacco smoke, and by this last performance I have solved the problem, so that I can beat the robbers every time. In extremely hot weather it might be advisable to place screening over a part or all of the top of the hive. Always use a little common sense, and then you are all right.

CORRESPONDENCE.

Mrs J. H., Scone, March 21—I very often have to manage the bees myself, as my husband is sometimes away when they swarm. This is the best honey season we have had since we have had bees, and they are still bringing in a good supply from the box tree, although somewhat late.

D. G., Muswellbrook.—Things apicultural are flourishing here. White box just coming out, so we have honey here for all the winter. Hoping your bees are doing as well.

Mr. E. S. Swindhurst is taking over the *Australian Agriculturist*, which he has been editing for several years past. It is an excelient agricultural paper and we wish him every success.

Mr. A. A. Roberts, Muswellbrook, reports having taken 3000 lbs of honey this season and leaving 500lbs in the hives, the best yield he ever had there. There is a light flow now on. He says: "I think it can stop there if we cannot get more than 2d a lb for it."

A.S.B., Molong—It is fearfully dry here, but strange to say my bees are still getting a considerable amount of honey. My hives are quite full, but I am afraid to take it as the future does not promise well. With success to the A.B.B.

F. W. P., Elsmore.—I think we should try elsewhere for a honey market for our honey. Find out what other countries import honey. In fact we don't know anything about our market. See last season, beekeepers had the first innings, the adulterers second and got big prices. White box is in bud; I think it will bloom about March. Yellow box is coming in bud for next spring.

A married man named Gehan, residing at Lake Lonsdale, near Stawell, has met with a fearful death. While out bee hunting he climbed a large tree, and cut a big limb which contained honey. This limb in falling struck a smaller bough, which re-bounded and pinned Gehan in the fork of the tree. His two companions could not extricate him, he being 40 ft. from the ground. He was left in the tree all Friday night. On Saturday morning the limb had to be cut into small pieces to get the deceased out. His body was terribly mangled.

J. O'G., Grafton, Feb. 20th.—Just a few lines to let you know I am still among the beekeeping fraternity. Have had a very fair season, though most of the trees did not blossom so well this year as last. However the bloodwood came in lately to make up. It is rather a strong tasted honey, especially in sections. It seems to me a lot of the flavour is in the wax; it is very like that of bitter almonds or peach leaves. Have you noticed a great deal of this flavour goes off on exposing the honey to the air? It is undoubtedly volatile. I am glad to see you devote more attention to the prices of honey in last *A. B. B.*

J.S., Spring Vale, Dubbo, March 15. I will do what I can in trying various bee men to subscribe to the A.B.B. I have distributed several copies round our neighbourhood with a view of securing subscribers. No doubt when these bad seasons end it will be more prosperous with beekeepers, for it is one bad season after another up this part of the country. They seem to be getting worse each year. We have extracted about 120 tins from 150 colonies, which is very poor for this locality. At the present time there are plenty of flowers; ironbark is in bloom, but does not contain much honey. Trusting it will be more prosperous to all in seasons to come.

A. H. Harden, February 22nd,'97.:—I I see in your questions this month you are asking for opinions of introducing Australian honey into England. I received a letter from a relative in Yorkshire and he told me he had tasted some Australian honey which had been sent direct to a friend in Leeds and he said he had never tasted nicer honey, so Mr Editor, I was quite pleased to have such a good report of it, so I don't see why it should not get a good market if good pure honey is sent, as we would be able to supply it cheaper than the home markets, especially if local representatives could be found to introduce it. I myself intend sending a sample home to friends and ask them for their opinion. Wishing every success to your valuable little journal

L. W. P., Shaw, Feduary 23rd.—I only made a start here this spring commencing with swarms which added to what I brought here and their increase

gives me a total of 33 hives which I hope to get into good wintering condition. In the early part of the year there was a nice flow from clover followed by blackberry and wild rasberry both of which grow here in great profusion and this was again followed by a little blossom from different gum trees, but during the last month or more the bees have only been able to obtain enough for breeding purposes.

C.W.W., Kilkerran, S.A., Jan. 23rd —Herewith please find subscription for current year. I wish I had had your journal before this year, but I had neither seen or heard of it. This is the worst season for honey we have ever had. The drought has ruined all the crops, and has greatly retarded the blossoming of the eucalypti and other honey bearing plants; those that do blossom seem to have little honey. The hives are strong, however, with plenty of pollen stored, and as the ti-tree is now beginning to bloom I hope to have a little honey to extract. We have no diseases here, and chiefly black bees; no bee moth either. I should like to Italianise, but am afraid of introducing moth or some disease. Our bees work most of the year here, as there are few or no frosts, not perhaps one in two years; only on cold wet days in winter do they cease, so we have no bother wintering.

Your fears about introducing disease with Italians are needless. You would find it would pay you well.

J. K.—re Spider Plant, I would not recommend it as a bee plant as it secretes nectar or honey only during the dark hours of night or morning when it is visited at such times by nocturnal insects such as moths, &c. It is not to be compared to Simpson Honey Plant (*Figurst*) or Motherwork nor Catnip. The three last are excellent and yield honey all day long for many weeks and the bees seem exceedingly fond of their flowers. Catnip is an herb and is used in America for seasoning purposes. The two former would I believe rank as weeds but would be exceedingly useful to bees and beekeepers if introduced where worthless weeds are allowed to reign supreme.

W. S. and H. J. Wilson, Victoria.—Just a word of correction re question 87. You ask if any have tried *Formic Acid* as a cure for Foul Brood. We replied, "Yes, but no good." We certainly have not tried *Prussic Acid*, nor do we intend to. Suppose this is only a misprint, but it does not answer the question. Just another line re Foul Brood. We trust that beekeepers will roll in their suggestions as soon as possible, so that they can be talked over before the Convention, and something definite arrived at before it takes place.

A. J. Brown, Leaford Apiary, writes: I had an unusual experience lately, and although I have raised thousands of queens, I had never met with the same previously. After putting out into nucleui about 25 grafted queen cells, I went to examine at the proper time to see if all had hatched. With the exception of one, they had. This one I let remain another two days thinking all would be well. Upon examination I found it still unhatched and I with my knife cut the end off, when to my surprise there was the queen, fully developed, and ready to hatch, but she was the wrong way on. Her head was towards the bottom and her stern towards the top of cell. That she did not turn in the cell I am certain; she was too large and but for my aid would never have been hatched. She is now sovereign of a hive and doing well. I have also another queen with a history; she was mated twice. I saw her, on two afternoons, following, return to the nucleus with the well known sign of mating on each occasion quite visible.

W.S.P., Armidale:—I used to think 30 lbs of honey ample stores for bees to winter on but last autumn I left half my colonies with 100 lbs each, with the result that they started breeding earlier and increased faster, than any previous season. During the winter I kept moth marbles in all the hives, and this season at each extracting, I have placed two in

each hive, and also sprinkled sulphur at theentrance. I have had Foul Brood for a number of years but when I opened the hives last spring, although Foul Brood was present in many hives, the bees were very lively (last year I went in for goldens) so I determined to make an effort to get rid of it. After extracting all the honey, I cut out all comb that had contained brood, and removed all pollen cells, and put all combs into hive bodies and place them in a thin chaff bag, weighted it with stones, and immersed in running water for two days, on removing shake out the water, scrape any dirt off and hang up to dry; put all parts of the hives in water for two days. I have treated mine thus and got rid of Foul Brood.

Mr. G. Packham, Quickbourne, Molong.—Dear Friend Tipper, I am afraid you have long since concluded that I have some new attraction, as I have neglected the A.B.B. so long. Well friend Tipper, the truth is I have not had any good bee news to write about. I have read with pleasure the accounts in the A.B.B. of great honey crops in many parts of the country, but regret that I cannot rejoice with those that have done well, as my bees have done nothing. Out of about 70 I got two swarms this season, and have not yet extracted a ton of honey. This is the worst season I have experienced for 10 years. It makes one feel sick to see the terrible effect that the drought is playing on the buds, just before they should open out and scent the air with their sweet perfume and supply food for the poor bees and poorer beekeeper and his family, with the nectar which is so much needed they become shrivelled and fall from the tree, and may be scooped up in cart loads. we have not had a drop of rain here since the 10th of January, and the greater part of the time Old Sol has been dealing out all the fire that his face of brass seems to be able to administer, with the result that there is not a particle of any kind of herbage to rest the eye upon. Strong winds and dust is the order of the day: the land is as devoid of grass as a frog is of feathers, and the outlook for stock is very gloomy indeed. Unless rain soon comes, stock, if not hand fed, must perish in thousands in this district.

[Cheer up, friend Packham, you may have a good season next.]

We have received the following from the Bacchus Marsh B.K. Association :—Dear Sir,—We would like through the medium of your paper to call the attention of beekeepers to the prevalence of Foul Brood in Victoria. The beekeepers of this district being very much troubled with this disease have come to the conclusion that a Foul Brood Act is the one and only way out of the difficulty. This being so we would ask the co-operation of all Victorian beekeepers in our endeavour to secure such an Act. It has been suggested that so as it will not be any expense to the Government that the Act could be enforced by local bodies. We suggest that the beekeepers in all parts of Victoria interview the Members of Parliament for their district and ask them to give their support to the proposed Foul Brood Bill when it comes before the House. We would like to have as widely known as possible the intention of bringing such a measure before Parliament so as to give all beekeepers a chance to express their views on the subject. *Beekeepers Combine*! Fruit growers have succeeded in getting an Act passed to protect their orchards from insect pests bred by careless neighbours. Canada has shown what can be done in this direction, as since they have had a Foul Brood Act the country has become practically free from the disease. We would request beekeepers who have this subject at heart to give us their hearty support. The Secretary of the Bacchus Marsh Beekeepers Assocation would be glad to recieve communication from any beekeeper on the subject.

We beg to subscribe,
Yours faithfully,
President, W. T. Smith,
G. Hollis, Hon. Sec.

Clipping Queens' Wings—Increase by Dividing.—Dr. E. Gallup says in *A. B. J.*—One should be on hand to watch for clipped queens, just as much as you do to watch for swarms. In all my experience of years with natural swarming, I never had but two swarms leave without clustering first, and in both of these cases they were kept in the hive long after they would have swarmed on account of bad weather. I practice artificial swarming, or dividing, and like it. I rear my queens in advance, then take the old queen out of a strong, populous colony, together with two frames of sealed and hatching brood, and place them in an empty hive, adjust a division-board, and set the hive on a new stand. Now the old bees will go back, but we have young bees and hatching brood that will stop with the old queen; all bees less than six or eight days old stay where they are placed, and under such forced conditions young bees will commence gathering honey, pollen and water at six or eight days old. The queen is kept busy filling the cells where the young hatch, and in two, three, or four days, depending upon the weather and honey yield, I move those two combs apart and place in a frame of comb foundation between the two full combs. As soon (or a little before) as this is well drawn out and filled with eggs, I place in two more frames of foundation, always alternating between two full combs, and in that method of precedure, if the weather is right, it takes but a short time to build up a strong colony. I have supposed that there is sealed honey in the upper part of each comb that I started with; if not, and I have not a spare comb of honey to place in with the two frames of brood, then I must feed, especially if the weather turns bad. Now in the old colony I place two frames of foundation in the place of the two combs taken out, and never both together, always one full comb between the two or more foundation combs. My reason for this is, the bees cannot cluster on the foundation heavy enough to make it stretch, sag, or draw any of the cells out of shape, and I never had to use wired foundation. Now introduce a laying queen to the old colony, and they are all right. I have not weakened that perceptibly, but what it can go right on with storing honey, and with a young queen and right management swarming is at an end for that colony for the season. Our young queens must be reared on right and natural principles. I have been corresponding with queen-breeders to see how early they can furnish queens. Providing I can get them early enough from a reliable breeeer—one that makes a business of queen breeding—I should prefer to purchase instead of rearing them myself. One reason is on account of not having the time to properly attend to it, and another is on account of being surrounded with wild bees. And right here I will answer another question: I do not propose to rear queens for sale, for both the above reasons. The plan recommended by some to make artificial increase is to make an equal division of the combs, set the half containing the old queen on a new stand, and allow those on the old stand to rear a queen, fill out both hives with foundation at once, etc. Any one that practices that plan, if he is a close observer, will find that he is all wrong. He is almost sure to get unprolific and short-lived queens on account of the bees being in a hurry to replace their queen. They start from a larvæ too far advanced as a worker. Then, again, filling up with foundation outside of the main cluster of bees is wrong. I would on no condition fill a hive with foundation to hive a natural swarm on. Insert a frame of brood consisting of unsealed larvæ and eggs, and one frame of foundation on each side or not. Let them partly fill the hive with comb, and then alternate with foundation. The queen does not go outside of the cluster to deposit her eggs. See?

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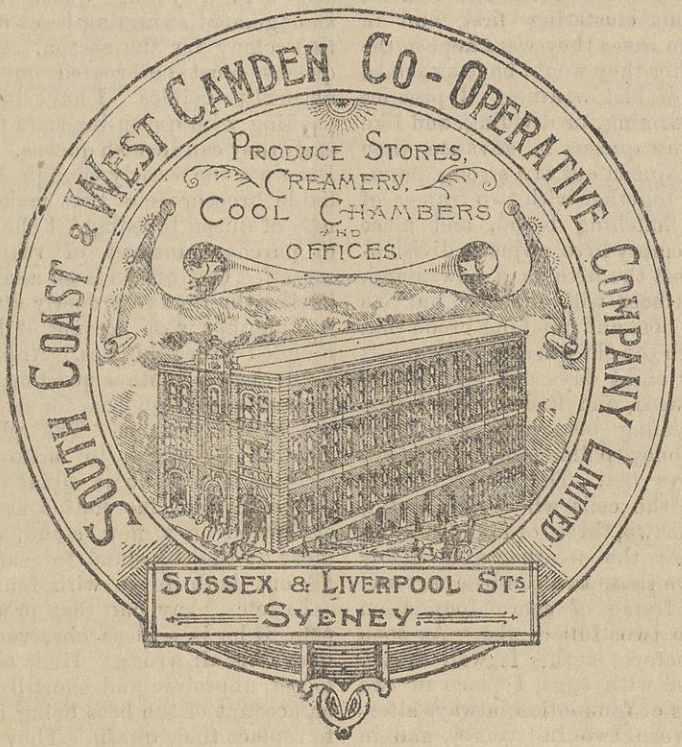

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