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West Maitland, N.S.W.: E. Tipper, July 29, 1903

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THE AUSTRALIAN Bee Bulletin.

A MONTHLY JOURNAL, DEVOTED TO BEE-KEEPING.

Edited and Published by E. TIPPER, West Maitland; Apiary, Willow Tree, N.S.W.
Circulated in all the Australian Colonies, New Zealand, & Cape of Good Hope.

VOL. 12. No. 4

JULY 29, 1903

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RULES & OBJECTS.

1. The careful watching of the interests of the industry.
2. To arrange for combined action in exporting honey to relieve local glut when necessary.

3. To advise members as to suitable localities for establishing apiaries.

4. Any beekeeper can become a member on approval of committee, subscription 2/6 per annum.

5. That every member with more than 50 hives shall be allowed an extra vote for every additional 50 effective hives.

6. No member be eligible for office who has less than 50 effective hives, or his subscription is in arrear.

7. The Association to consist of a central body and district branches affiliated with it.

8. The principal officers be such as will undertake to meet each other in committee at least once in twelve months.

9. The officers shall consist of President, Vice-President, Treasurer and Secretary, and Executive Committee.

10. After the first election of officers, arrangements to be made by the Secretary to call for nominations for office-bearers, and issue ballot papers prior to the next annual meeting.

11. Supply dealers or commission agents cannot become members.

12. Members unable to attend meetings or conventions can authorize or nominate any member they know will be present to vote for them on any subject brought forward. Such vote or votes to be in addition to the member's present own vote.

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R. H. JERVIS,

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JULY 29, 1903.

The Australian Bee Bulletin

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THE AUSTRALIAN BEE BULLETIN

A MONTHLY JOURNAL
Devoted to Beekeeping
Circulated throughout the Commonwealth of Australia — New Zealand & Cape of Good Hope

EDITOR & PUBLISHER.
WEST MAITLAND & WILLOW TREE.



MAITLAND, N.S.W.—JULY 29, 1903.

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

Supply Dealers.

R. K. Allport, Chuter St., North Sydney.
A. Hordern & Sons, Haymarket, Sydney.
The W. T. Falconer Manufacturing Co.,
Jamestown, N.Y., U.S.A.

Queen Raisers.

W. Abram, Beecroft.
Jas. McFarlane, Lyndhurst, Victoria.
R. H. Jervis, Moss Vale, N.S.W.

Honey Tins.

Chown Bros. and Mullholland, Ltd.,
Thomas St., Ultimo, Sydney.

W. L. Davey, Plenty Rd, South Preston
Victoria.

Miscellaneous.

A. Hordern & Sons, Haymarket only,
Sydney.
Allen & Co, 242 Sussex-street, Sydney.
P. J. Moy & Co., 161 Sussex St, Sydney.

The best preventative of swarming—
Plenty of empty combs.

A great part of all the tin put into
cans in America comes from England.

ERRATA.—Page 54, last issue, first
word 40th line, should be "Cyprians,"
not "Carniolans."

Disappearing bees with plenty of
honey.—Is it no pollen in the bush en-
abling them to rear brood?

We would ask our friends, before get-
ting supplies, queens, &c., to note our ad-
vertising pages, and patronise such first.

WORK FOR THE MONTH.—Leave bees
alone as much as possible, beyond seeing
that they have stores. Get new hives
ready, also paint.

For bee or wasp stings in the throat or
mouth—Take a teaspoonful of salt slightly
moistened with water, and swallowed
slowly; the pain and swelling disappear
in a very short time.

To ascertain if tins are leaky, place the
lips firmly against the aperture, draw
into the lungs, and exhale through the
nose all the air possible, by repeated
draughts, which necessarily become
shorter, as the air is pumped out of a
tight receptacle.—*American Beekeeper.*

Spring is a good time to kill ants.
One American beeman pushes a shovel
into their hill and shakes it back and
forth, making a wedge shaped hole into
which he pours a pail or two of hot
water. Save the water washing days
and give them two boilers full a week
until all are done. Turn over every flat

stone and dip and dose it also. Move every hive and clamp too if you wish to make sure.

HINTS.

Handle your bees as little as possible on cold days.

Feed with warm syrup in the evenings, when the bees have ceased flying.

Keep up gentle, stimulative feeding until the honey flow begins.

Supplant all old queens in the spring.

Prepare at once hives for swarms, and sections and frames for supers.

Renew your subscription to the *A. B. Bulletin*. See that your neighbour takes same, and read our advertising pages.

BEE STUDY AND OBSERVATION.

[W. ABRAM—CONTINUED.]

The sphere of variability is another potent factor. Everything has its pendulous points outside of which it cannot reach. Thus the low, the insignificant, has it implanted to raise, elevate, excel—to a certain limit. When that limit is reached there is the downward grade again—the brilliant is apt to throw back again. The term "like produces like" applies as regards kind or species—not individuality. If we succeeded in producing a most distinct and desirable trait in our bees we might run the risk of bringing ruin in its train. But variation acts contra to such resolve. Sometimes most desirable stocks spring from inferior parents, and undesirable stocks from best paternity. Thus, no matter how much we may work in any given direction, variability counteracts our efforts. Have you never noticed how some of the best stocks one season were among the worst the next? That is because some traits suit better one season, some another.

Let us assume a number of seasons, the first bad for honey and for swarming, the second very good for swarming and fair for honey, the third a splendid honey season; and now take say four sets of

stocks, first best honey-gatherers, second best swarmers, third fair gatherers and fair swarmers, fourth neither. In the first season the best gatherers would give most satisfaction, in the second the swarmers would stand best regards increase, in the third season the third set would come out best, thus: In the first season they neither swarmed nor gathered surplus, in the second they swarmed fairly and gathered a fair amount of honey, in the third they swarmed a little and gathered honey well, but kept their stocks well supplied with bees as they did pretty well every season.

The best swarmers, if they swarmed the first season would do so to their detriment, but that would be rectified the second season which just suits them, but would affect their honey-gathering possibilities in the third season, wasting valuable time at swarming and weakening their strength instead of storing honey. The best gatherers would think of honey-gathering only, so to speak, which would be well so long as they don't reduce the number of brood-cells too much, if they do it would mean the lessening in bees, more especially if the flow reaches far into the autumn or winter when the stocks became almost depleted of bees. The fourth set is a miserable lot at any time, starving and pegging out when others thrive.

The matter would stand a little different if the first season was good, the second bad and the third fair, but the difference would not alter results very much.

We have next to consider whether some race of bees possesses more desirable qualities than others. That which has the most good qualities combined is evidently the best.

Another factor is that the fertilisation of queens is not under our control. In any case we would not be much better off on account of bee life—drone included—being so short, we would have no means to ascertain as to which individual would prove most desirable, because in-

dividuality differs so. The progeny of a good queen which met a bad drone would show the traits of one or the other or both parents, therefore be good, fair or bad.

Do you now understand me? Do you think I have observed fairly correct and practical? Or have I overdrawn facts? If I have different opinion to you, my experience differs from yours. If I gauged aright, which trait then, and which race is the most desirable one?

It may be mentioned that our present-day methods enable us to remove and overcome the obstacles and objections raised in my argument; if stocks are too full of honey—it can be taken; if no natural swarms—increase artificially; if too many swarms—unite them; and so on. But if we can do without these extra works is it not better? If the honey-flow continues after room has been given the fast gatherers will fill honey in the empty cells again; the united swarms will think of further swarming; artificial increase may be effected when conditions are not for such purpose. The honey-harvest is the beekeeper's reward for his labour and attention, therefore he wants to get as much as possible, and so long as strength and number of stocks remain fairly balanced all is well, but to get a big crop to the detriment of the bees would be like killing the goose that lays the golden eggs.

(To be continued.)

U. S. A.

D. H. S., Ridgeland, Madison Co., Mississippi, writes:—

For a great many years I have been eager to read anything relating to Australia and her people, and I have a great desire to see that wonderful country and learn if the tales I have read are true. I have read that it was a country of opposites in many ways. That her trees shed their bark instead of their leaves, and that the leaves instead of the flowers are fragrant with perfume. And

then how I would like to see some of your wonderful animals such as the kangaroo, the wallaroo, and the duck-billed platypus, that I have read has four legs, the bill of a duck and lays eggs and suckles its young. I have been sorry for the Australian farmer because of the jack rabbits. I suppose he has found a way to keep them in check before now. And then I have read that you have a species of white ants that eat up everything even to houses, barns and fences, etc.

And then again I have always wanted to see the country that gave us the Australian system of voting. Of course Australia got the system from England first, but nevertheless it is a grand system of voting. Before we adopted it we could scarcely ever have an honest election. Men who lacked the courage of their convictions were compelled to vote just as their party bosses dictated. Now it is practically impossible for anyone to know how we vote unless we tell, and nothing but conscience will prevent lying about it then. I have read that some of your people live so far from neighbours that they are really isolated, but that the country is fenced with barbed wire fences, and that now they are being used for telephoning so that the people in the remote regions are in direct communication with the outside world. This whole nation is connected by telephone and telegraph and it won't be long before it will be by wireless telegraphy. How large the world is! I suppose it would take me or this letter either, two months to go to Australia, and yet I could communicate with you in one hour I suppose by telegraph and cable.

We have a beautiful country here, and all true Americans are proud of it; and millions of our brave men are ready and willing at any time to defend our flag. We were once divided among ourselves and a terrible war was fought, and death and desolation was everywhere in this same South where I, a Northern man, am living in peace and harmony among men

who a few years ago would have been enemies. For years a sectional hatred was kept alive by conniving politicians, but that has died out and we are now one people again, one and inseparable. And the people of the south are as ready to fight for our flag now, as they were ready to destroy it forty years ago, as the late war with Spain will show.

Of course you know probably as much about this country as I, undoubtedly much more than I do of Australia, so that it is not necessary for me to say much about it. I was born in the State of Michigan, one of the Northern States and lived there until six years and a half ago when I came down here. The winters of the north were too much for me; the weather there is very changable; my health gave out and I came here where it is warmer. I began to keep bees in the north, and had just got nicely started when I moved down here. I have not paid much attention to them since living here as I have had so much other work to do, I am a carpenter by trade and have worked at that a good deal of the time. But now I think I am settled down on my farm where I shall devote my time to poultry, fruit and bees. I have 15 colonies of bees at present, and I intend to increase to 100 next year. I am using the 8-frame Langstroth hive at present, but expect to transfer to what is known as the Heddon hive, a single or double reversible brood chamber hive with closed end frames, and I shall run for extracted honey, as our honey flow is so uncertain that the bees are not very reliable for comb honey. I can get 12½ cents. to 15 cents. per lb. for comb honey, and 10 cents. per lb. for extracted. We raise lots of peaches and strawberries here. Peaches nett us from 75 to 150 dollars per acre; strawberries nett as high as 250 dollars per acre. We grow lots of asparagus here, netting as high as 100 dollars per acre. Of course cotton is the old stand by here, the same as wheat in the north, but the tendency here is toward diversified farming. Perhaps I

have written enough for this time. I shall be glad to receive a copy of the *Australian Bee Bulletin*, and if you care to answer this I shall be very glad to receive a letter from you, or if you know of anyone who would like to correspond with a Yankee it will give me great pleasure to correspond with him or her, for my wife is interested in Australia also. I first learned of the *Bulletin* by seeing your advertisement in the *Southland Queen*, and as the copy I have is five years old I will not send subscription price until I receive a sample copy, for which I enclose a silver dime. Have you any Oddfellows over there?

[Your coins are not negotiable here, but will keep it as a curiosity. There are thousands of Oddfellows over here.]

COMB-HONEY PRODUCTION.

It has come to be generally believed that a given number of colonies will produce from 50 to 100 per cent more extracted than of comb honey, that of the latter being greater if the honey-flow is abundant and less if it is poor. It is explained that the greater quantity of extracted honey is produced because of the repeated use of extracting-combs, and the resultant saving of the labor of the bees in comb-building and the necessary consumption of honey to produce the wax therefore. A further reason for this disparagement in the production of honey in the two forms, under the orthodox systems of management, is very evident. The extracted-honey producer usually provides a super or additional body, with drawn combs, furnishing storage room for surplus honey, and preventing the crowding of the queen, by making it necessary for the workers to use the cells from which young bees have just emerged for that purpose instead of continuing their use for brood-rearing. These store combs, being provided as needed, there is no interruption of the work of the bees, and consequent loss of honey, but, on the contrary, conditions favouring the rapid increase in the number of worker

bees, which is very important in localities where there is to be expected late summer or fall flows of honey. When the capacity of the hive is restricted to one brood-body till time to put on the super for comb-honey, at which time, by ordinary systems of management, there is not yet sufficient bees in the colony to occupy and work in it, they are said to be slow in commencing work in the supers. But, really, is it any wonder that they will not immediately expand their cluster so as to occupy an additional space, which is more than half the capacity of the brood-chamber? One other reason for the unequal proportion in the quantity of honey produced in the two forms may be mentioned in passing. Some apiarists, in their zeal to obtain a large crop of honey, extract before the bees have sealed it. Such honey is nearly always unripe, and likely to ferment, and is of much less value than it would have been if allowed to remain on the hive till mature. This practice is, therefore, emphatically condemned.

Speaking from personal experience, the hive best adapted to comb-honey production is one that can be built up or storified: one that has a comparatively shallow brood-chamber, somewhat shallower than the Langstroth hive. The comb surface of the brood-body should not be greater than the equivalent of eight Langstroth frames. The space on the upper surface of the brood body should be sufficient to accommodate a super containing 32 one-pound sections. The ten frame Langstroth hive contains too much space in the brood-chamber to obtain the best results, except it be contracted by dummies, and in comb-honey production the use of the latter brings a portion of the sections over the dummies, and too far removed from the heat of the hive to obtain their perfect construction. On the other hand, the eight-frame Langstroth hive does not contain sufficient super surface to meet the requirements of high-pressure beekeeping. And Langstroth frames generally have one or two

inches of nice white honey along the underside of the top-bar, at the end of the white-honey season, which, if it could be placed in the sections, would greatly enhance the profits of the apiarist. Such shallow hive should consist of two brood-bodies, which may be used interchangeably, making what is sometimes called a divisible brood-chamber, and two supers (three would be better), which may be used interchangeably with each other or with the brood-bodies.

With such a hive the building-up of the colony in the spring is easily accomplished by adding a second brood-body, supplied with worker brood-combs, as an upper story to the body in which the colony has wintered, as soon in the spring as it is found to be full of bees, and when the weather conditions are favorable and settled. If the brood-combs in the added body contain some honey it will speedily disappear as food for the rearing of bees; but if the colony is otherwise well provided with honey, no stimulative feeding is necessary. A colony that has wintered well, if treated in this manner, will attain to sufficient strength, and contain an abundance of bees of the right age for the white-clover harvest when it is ready, without feeding, except to provide the necessary food to keep brood-rearing in progress without interruption. No queen-excluder being used, the bees will readily go up and occupy this added section of the brood-chamber, and in a comparatively short time the double hive will be literally full of bees and brood from top to bottom, except the comb-space occupied by the reserve supply of honey for food, of which there should be at least a few pounds, even at the time for commencement of the honey flow, to provide against periods of unfavourable weather or a failure of the flowers to secrete nectar. This reserve supply of food is very important, and it should never be allowed to become exhausted. On rare occasions, when there is an entire failure of the flowers, from which a crop of honey is expected, to secrete nectar, the life of the

colony depends on it. Happily, seasons of entire failure from all sources are rare.

—*Gleanings.*

F. J. BAKER & CO.

Mr. Geo. James, St. Ives, writes:—I feel that I cannot let the statement re the F. J. Baker & Co. incident pass without a few words of protest re the statement in the June issue of the "A.B.B." and also the few lines at bottom of page 25 May issue, which, as Editor, I thought you would rectify in the June issue, but not so, and thus offer this protest, and if you will kindly afford me the space will endeavour to put the matter in a truer light and will commence by saying that this individual called on me April 5th and desired to purchase bees; having none for sale referred him elsewhere. Whilst in conversation he imparted me the information that he was the lucky possessor of six colonies of pure Carniolan bees which he had brought with him from New York. You bet I became interested at once but on further acquaintance I wrote him down as an impostor, as when he called at first he gave me a certain name but after he had lunch I happened to hand him his hat and noticed another name written in ink on the inside lining (which you shall see brought him to his doom). Being a bike rider myself I took a look at the bike he was riding and remarked that it was a fine wheel and he departed. Whilst looking over my copy of the "A.B.K." page 200, I noted an exchange advertisement which corresponded exactly with the wheel I had seen on April 5th, but under another assumed name, and felt fully assured that it was the same man. On May the 4th, I received my April number of the "A.B.B." and saw the glaring ad. of the F. J. Baker & Co., and strange as it may seem, I at once coupled it with my former caller and the bike ad. Next day I called at the address given and the place was closed. On the 5th called again and interviewed a lad of about 15 and got certain information. Before this I had

rang up Mr. James Trahair and got the information that he was away from home. On the 7th I called on the produce reporter for "Sydney Daily Telegraph" and together we again visited the place on the 8th and found same closed. From here I went and seen Mr. Hawke of Sussex-street and he informed me that the editor of the "A.B.B." had made enquiries of the re them Baker Co. From here I at once proceeded to the Detective Office and laid the whole case before Inspector Potter. During that afternoon he sent a detective to my place of business, 265 George-street, and asked if I could give them anything to work on. I then explained to the detective what I had already done, and also gave him a description of the party who had visited me. The next day the detective called on me and stated that he had that morning arrested the party riding away with his mail and the very bike. On being taken to the Water Police Court and charged they then discovered that the bike was wanted, and that is how he came to be charged with that offence. At the second time of calling the detective showed me the letters and samples that he found on the party when arrested, and thanked me very much for the information, and also stated that the name I accidentally seen in his hat was the right name of himself, and desired to know how the detective came to know his right name. Inspector Potter told me that there had been an enquiry from friend Tipper, but up to that time nothing had been done. So that I fail to see how that "block type on" on page 67 applies and must refer you to your letter card to me where you gave me credit, and mentioned that I should become a member of the Bee Farmers' Association. I certainly should have passed the affair over, but I gave a good deal of time and worked hard to have a impostor of that ilk run to earth, and fail to see that there is any egotism about it.

[Mr. George James deserves every credit for what he did, and we did not omit to give him

credit for it (see page 25 May number), but why he should be offended at our report we cannot comprehend, as we only gave the facts as they occurred to us, and the letter from the Detective Office was not our writing, but the actual report of their officer. We really cannot see what there was to rectify.]

SCOTLAND.

Mr. J. F. Meiklejohn writes:—We here have had a long wearisome winter. Much wet weather as well as frost, snow, and accompanying coldness, and though we are now in what is called charming May, it still is cold and wet and not at all what we would like. Still, withal, there is a great wealth of beautiful flowers in the gardens, and the trees are getting on their summer foliage. The blackbird and thrushes, and other birds are all busy, and apparently very very happy as expressed in song. We will get it fine yet. I have seen a few bees out on the flowers, but they have not had much chance of gathering this season so far. Not like yours is bee business done here. I am glad to learn that you have had such a successful season with your bees, and that you have got such an enormous quantity of honey. I trust you may get a ready and good market for it. You speak of me going into the honey trade, and of the supplies you could send me. Well, I have had a look about. The stores here are not extensive ones and I find the demand for honey is small. I have told you I think that the people have not been educated to eat much of it, the high price preventing that. I also find that those, at least many of them, who keep bees get the storekeepers in some of these small towns to take their honey in exchange for other things they want, and so it comes to this, that the large towns and cities are the places that can only be exploited, and of course I am all at sea, as to how a trade could be opened up there. Still there must be big buyers, but I don't know who they may be. Glasgow must get through a lot, but I am not sure where it comes from.

I think a lot of it must come from America and the West Indies. But I still think that with an energetic agent in London Australian honey should eventually find its place on the market, (but have no middleman). I should like it near enough to have some box honey myself for our own use, but I fear I am too old and lacking in business tact and energy to tackle the matter of driving a trade. Still I hope to learn yet that with united efforts Australians may soon be able to put the thing on the home market and on advantageous terms.

JAMAICA

We clip the following for the *Jamaica Times* of May 2nd;—

The Association is doing its work quietly, but nevertheless doing it well. We have shipped well towards 1,000 barrels of honey, so far since the season opened, and the shipments are being sold off almost as they arrive, at very satisfactory prices. At this time last year we had not shipped more than 150 barrels honey.

Our members should bear in mind that it takes some time for the honey to get into the hands of our Agents in London, fully a month from the time it leaves the wharf in Kingston, and that sales are not made for spot cash, the best terms being 14 days from date of sale, and in the case of private sales sometimes longer. Also, that no account sales can be made out by our Agents until the cash is paid, as until then, they do not know but that some of the honey sold, may be returned as not up to sample. So our members should not be too impatient for returns as they can rest assured that account of sales will be sent them without unnecessary delay when the money gets into the hands of the management.

We are advancing from 1s. to 1s. 6d. per gallon this season, according to quality and have distributed about £1,200 among our members. Last year at this date we had made no advances. We have also

been in a position, through the generous assistance of two of our members, to handle a full line of Bee Supplies from the W. T. Falconer Manufacturing Company, whose goods stand very high indeed in respect to quality of lumber and workmanship. We have also imported and sold over 1,000 honey barrels, and have placed orders for large quantities of goods and barrels so as to be able to supply all demands.

We have been able to reduce the cost of barrels by 1s. which amounts to a saving of a good many pounds to the beekeepers of the Island in shipping this season's crop, and a little later hope to be able to give our members a substantial reduction in other lines of goods.

I want to re-iterate what we have been trying, and with considerable success, to impress on our members, viz., that they must take more pains in preparing their honey for export, and above all to use *new* packages, and *new* barrels, for their honey. The day of the pork, beef and ham barrel as an export package for honey has passed. Our Salesman and Agent have constantly impressed us with the absolute necessity for *new, clean-barrels*, and careful straining or subsiding of the contents, and in their last letter they say "As to the bad casks used, we have repeatedly pointed to you that it is absolutely false economy to use other than new packages. We may point out that the success of Californian honey is largely based on this, as buyers can always depend on perfect packages when they buy from that source. It has always been the defect with Jamaica Honey that not only is the quality uneven, but the packages so rotten that they cannot be transported without danger."

These defects we are trying to overcome, but we must have the earnest co-operation of all our members so that we can put our choice honeys on a level with those of California. We had hoped to have overcome them this season by the help of the new Company, but this enterprise has been delayed by those having

it in charge in England in a most unaccountable way, but now it bids fair to soon get into shape, though too late to help us much this season. Next year we will certainly do better.

PARALYSIS CURED BY STRONG BRINE.

—The queens were bright and active, and the brood looked all healthy; but they were now going down rapidly. I made up my mind to kill or cure them by experiment, and this is what I did: I went to the pork-barrel and took out a dish of strong brine. I went to one hive, opened it, took off the cloth on top, took a wisp of fine grass, dipped it in the brine, and sprayed them all over the top of the racks quite freely, then the entrance of the hive, and all the sick bees in front several feet around, and closed top again. Then I repeated the same operation with the other, and watched the result. In three or four days I saw a marked difference with both colonies. There were not half as many sick bees, so in four or five days from the first spraying I repeated the operation, and in two weeks after the first spraying there was not a sick bee to be found in either colony, and it has never returned.—A. H. Guernsey, in *Gleanings*.

THE TASTE OF HONEY.—All honeies have more or less both flavour and aroma. The aroma may be lost through exposure, but not, however, by heat. If we take a sample of honey with a scent of onion and cover it with Muslin, the scent will almost wholly disappear. Aromatic herbs give a distinct flavour, as well as aroma: for instance, the famous Narbonne owes its distinctive flavour to rosemary. Wild thyme, eucalyptus, orange blossom, too, give very special flavours, samples of which I have had for many years in screw-capped or corked jars. Crops known to produce choice honey, if grown on good soil, with a subsoil affording good drainage, will give excellent samples, providing the weather favours the secretion of nectar.—*Exchange*.

See that your neighbouring beekeeper takes the "A.B.B."

OUR FORESTRY PROBLEM.

(W. S. CAMPBELL, in *N.S.W. Agricultural Gazette*)

This is the title of a thoughtful and important article, published in the *World's Work*, by the well-known authority in England on Forestry matters, Dr. W. Schleich, Professor of Forestry, Cooper's Hill, and as the forestry problem is a matter of the utmost importance to New South Wales, although one but little considered, if considered at all, by our settlers, I take the opportunity of the *Agricultural Gazette* to invite attention to some extracts from Dr. Schleich's article.

I may say that considerable attention has lately been devoted to the need for the preservation of existing forests, and for the making of new ones, not only in Europe and Asia, but also in Africa, and particularly so in the United States and other parts of America.

Except in but rare instances our settlers, that is, the farmers, pastoralists, and others, appear to have the most remarkable prejudice to the existence of a single live tree, about their farms or runs. Everything possible is swept away, no consideration for the comfort of stock is made, and it is really lamentable to see the suffering inflicted on animals during the heat of summer by the denudation of timber. There would be no difficulty in finding hundreds of examples of this want of thought by anyone interested in such matters.

The western portion of our State needs a watchful eye, and unless a check be put upon injudicious clearing, I do not hesitate to affirm a calamity is most probable.

Fortunately for the state, or for many portions of it, chiefly along the coast, several of our most valuable Eucalyptus or gum trees grow speedily, and soon re-establish themselves when cleared land is left to itself again; and no doubt when a judicious system of cutting matured timber, and perhaps by occasional thin-

ings, is carried out, the outlook for our forests will be more hopeful than it is at present.

Dr. Schleich's article refers chiefly to Great Britain and Ireland, but a deal of the information given by him is of importance to us in Australia, as showing the enormous and increasing requirements of timber by various countries, and consequently the possibilities in the future for a satisfactory export trade; but at the same time we should keep in view the evil effects of wholesale denudation and the necessity for care in the selection of timber trees to be cut.

IMPORTANCE OF THE FORESTRY PROBLEM.

For the purpose of demonstrating this, it will be necessary to indicate shortly the quantity of timber required by the country. In a paper I read before the Society of Arts, on 27th February, 1901, I gave detailed information regarding the outlook of the world's timber supply. This information I shall not repeat here, but limit myself to giving a few of the main points. In the first place it must be stated, that although the average forest area per head of population in Europe amounts to 2 acres, the imports of timber show already an excess over the exports, amounting to 2,620,000 tons a year. That deficiency comes chiefly from Canada and the United States of America, and smaller quantities from Australia, India, (nearly all teak timber), the countries round the Gulf of Mexico, the west coast of Africa, and a few other places.

It is well-known that the supplies from outside Europe at the present rate cannot be relied on beyond a limited number of years, since the United States, as time goes on, will require all the timber which Canada can export under the system hitherto followed in the latter country, where reckless cutting and disastrous forest fires are still the order of the day. Russia, with Finland, Sweden, Norway, and Austria-Hungary, which have so far supplied the rest of Europe, will not be able to maintain the exports of the past,

owing partly to the gradual exhaustion of their surplus stocks and partly to their increasing home requirements, due to the growth of their population and the development of industries. On the other hand, the requirements of the chief importing countries (excepting France) are rapidly increasing. The imports of the United Kingdom have grown from 3,400,000 tons in 1864 to 10,000,000 tons in 1899, or at the average rate of 189,000 tons a year. The imports of the latter year were valued at £25,000,000. The average annual value increment of the imports, during the years 1890-94, amounted to £382,000, and during the period 1895-99, to £771,000. There has been somewhat of a check during the South African war, but signs are already discernible that the imports will resume their gradual rise.

Looking now at Germany, which takes the second place amongst European importing countries, we find that her net imports of timber up to 1864 amounted to an average of 13,000 tons a year. In 1899 they had risen to 4,600,000 tons, or an average annual increase of 131,000 tons. The value of the imports in 1899 came to £14,820,000.

The Belgian net imports of timber amount now to 1,020,000 tons, valued at more than £4,000,000. They have increased during the last thirty-five years on an average at the rate of 22,000 tons a year.

The net imports of France have remained practically stationary during the same period; they amounted to about 1,230,000 tons a year, or a little more than the quantity now imported into the small kingdom of Belgium.

Of the total area of Great Britain and Ireland, 4 per cent. are under forest; Germany, 26 per cent.; Belgium, 17 per cent.; France, 18 per cent.

Pondering over all these figures, one is almost inclined to say that the requirements of timber are an index to the industrial development of a country.

Other European countries which import timber are Denmark, Italy, Spain, Holland, Switzerland (rapidly on the increase), Portugal, Bulgaria, Greece, and Servia; Roumania exports moderate quantities.

The price per ton of timber next demands attention. It fell from 1870 onwards, until about the year 1888, in consequence of the enormous development of the means of transport, especially by water. From 1888 to 1894 prices remained stationary, but since then a slow but steady rise has taken place amounting to about 18 per cent. during the five years 1894-99. Fluctuations in the price will, of course, occur, but I have no doubt whatever that on the whole it will continue to rise in the same degree as supplies have to be brought from localities further and further removed from the world's great highway—the ocean. This holds good especially in the case of Russia, the most important source of supply in Europe. Matters have now come to such a pass in that country that the Government has taken measures to ensure a permanent supply for home consumption by restricting and regulating cuttings. The head of the Prussian forest department informed me a year ago that a remarkable change has of late taken place in the western provinces of Russia. German timber merchants, who go there to buy up and work out forests, used to send all the timber to Germany; now they transport already considerable quantities into the interior of Russia, because there they obtain better prices than in Germany. To sum up, it may be said that the quantity of timber required in Europe is rapidly increasing, so that the deficiency of the supply must advance correspondingly, making it more and more problematic whence the material especially the coniferous timber, is to come in the future.

EFFECTS OF A SHORTAGE IN THE TIMBER SUPPLY ON THE UNITED KINGDOM.

It is all very well to say that we can pay for the timber we need, but that will

not meet the case. When the supplies from outside fall off, the rise in prices may become prohibitive, and the effects of an insufficiency of material would be disastrous. Of the 10,000,000 tons a year imported lately into this country, 8,700,000 tons were coniferous timbers, which form the very staff of life of our building trade and mining operations. A deficiency of supply in this material would be a real calamity for the population of these islands. Let us not deceive ourselves by imagining that in such an emergency iron and steel can be substituted for timber. That this is a fallacy has been proved by past experience. While the population of the United Kingdom has increased by about 20 per cent. during the last twenty years, the imports of timber have increased during the same period by about 45 per cent.—in other words, every inhabitant uses now considerably more timber than twenty years ago. At the same time, nobody can say that extraordinary efforts have not been made of late years to substitute iron and steel for timber. As a matter of fact, the latter is an absolute necessity to civilised peoples. Engineers have not even succeeded in superseding the wooden railway sleepers by steel sleepers. Mr. Hawkshaw, in his presidential address to the Institute of Civil Engineers, the other day, dwelt particularly on this subject, saying, "Engineers could not do without timber, nor, indeed, without much timber. For the last thirty years they had heard it said in that room that steel would shortly be adopted in place of wood for sleepers; but although we could make our own steel, but had to import our timber sleepers, this has not come to pass," &c. The same experience has been gained in France and in the United States of America, the home of the great iron and steel trust. As to the effects of a shortage of the timber supply on the mining industry, it would be too terrible to contemplate, as it would practically bring mining to a standstill and throw hundreds of thousands of

workmen out of employment; and the same may be said of the building trade.

THE PRESENT STATE OF AFFAIRS IN THIS COUNTRY.

The United Kingdom of Great Britain and Ireland has an area of 78,000,000 acres (in round figures), of which about 3,000,000 acres are classed as under wood, equal to not quite 4 per cent. of the area. This makes about one-fourteenth of an acre of woodland per head of population—an area capable of yielding only a fraction of the timber required by the nation. Hence we find that the imports amount to at least five times the amount produced in the country. An examination of the agricultural returns of Great Britain and of those of Ireland show that there are extensive areas of waste land which yield either no return or a very small one. Again, there are other areas entered as mountain land, used as rough grazing. These lands may be apporportioned as follows:—

England, waste land including inland water, 4,050,000; mountain and heath land, 1,985,000; total area in acres, 6,035,000.

Wales, waste land including inland water, 690,000; mountain and heath land, 1,055,000; total area in acres, 1,745,000.

Scotland, waste land including inland water, 4,250,000; mountain and heath land, 9,410,000; total area in acres, 13,660,000.

Isle of Man and Channel Islands, waste land, including inland water, 45,000; mountain and heath land, 18,000; total area in acres, 63,000.

Ireland, waste land, including inland water, 5,235,000; total area in acres, 5,235,000.

Total—Waste land, including inland water, 14,270,000; mountain and heath land, 12,468,000; total area in acres, 26,738,000.

I am not in a position, at this moment, to say what the area of inland water may

amount to, but, for argument's sake, let us assume that there are of

Actual waste land	12,000,000 acres
Mountain and heath land	12,000,000 acres
O: a total of	24,000,000 acres

This area is extensive enough to set people considering whether that land could not be used in a more profitable manner than at present. The question is, however, not so simple as it would appear at first sight, because nearly the whole of this land is private property, and most of it is utilised as shooting-grounds. The latter, however, after all is said do not, even in Scotland, yield more than 1s 6d per acre all round while the rest give much smaller returns—down to perhaps 3d. an acre, and in many cases not even that.

f TEMPERATURE OF THE HIVE.

Controversies about bees hibernating in the hive in winter arise from time to time. Beekeepers occasionally meet with instances of bees wintering safely in snow banks the skep or box surrounded by snow for four or five months—and the beekeeper thinks that the bees must have been hibernating. Many beekeepers have doubts about bees wintering alive in snow and declare that bees do not hibernate. It is never safe to be too certain about anything, but I think we can safely declare that bees do hibernate. There never was a bee, either worker or queen, that continued active throughout the winter in a hive in a temperate climate unless there were inactive hibernating bees to protect it from the cold. The condition of hibernating animals in winter, when in the dormant state, have been carefully observed and are as follows:—A low temperature; the temperature of the animals slightly above their surroundings; loss of irritability and motion; a greatly diminished respiration and a corresponding decrease of circulation. These are the conditions; and the bees on the outside of clusters in winter are, in every particular, in the

same condition as animals hibernating from cold. A bee may be frozen in ice for weeks, and still not be dead, but the bee is not hibernating, while the bee at the freezing temperature in air for over a day, if not dead, must be hibernating. A portion of the bees in a colony must hibernate and remain motionless if the other portion are to continue active during the winter. In a colony, the proportion of bees hibernating to the active bees varies with the climate and also with the size of the clusters. The larger the clusters, the smaller, in proportion, will be the number of hibernating bees.

The Rev. Mr. Raynor noticed that colonies with bees raised late in the fall did not winter well, and several beekeepers after him noticed some defect in bees raised late in the season. It is just possible, however, that young bees do not hibernate well (as a rule young animals do not), and that a preponderance of young bees in winter is a disadvantage, as a preponderance of old bees in spring is a disadvantage.

Bees are bad conductors of heat, but they are good absorbers and radiators of heat, and if they had no means of preventing radiation they could not keep their heat within their clusters. Tyndall discovered in his researches on heat, that air mixed with aqueous vapour intercepted the passage of heat rays to a marvellous extent. Air saturated with aqueous vapour is a hundred times more resistant to the passage of heat-rays than dry air. The active bees in the cluster give off aqueous vapour and carbonic acid gas freely, as products of respiration or combustion; the bees make use of these products to preserve their heat and they condense the aqueous vapour to furnish them with water to raise brood.

The warm, moist air from the active bees rises to the top of the cluster, but the bees do not allow the aqueous vapour or heat to escape. The cold bees in the top of the cluster condense the aqueous vapour and get warmed by the condensation. A pound of water in vapour

gives back its thousand units of heat when it returns to water. The wet bees carry back the condensed vapour into the cluster and the so-called latent heat of the vapour is absorbed by the bees. Langstroth always found the bees wet in their winter clusters, and he thought it an evil, but when we come to see what the bees are doing we find that the water is a necessity and that bees could not raise brood without it.

Bees place their honey for winter stores above their clusters as the active bees in the cluster can readily get out and in at the top, but by no possible efforts could they make their way through the closely packed lethargic bees at the bottom of the cluster. When the active bees relieve the hibernating bees the active bees pour out in numbers and surround the torpid bees, and by transferring their heat to the cold bees enable them to move into the cluster.

Some preparation by the bees, filling themselves with honey, is necessary when going into the dormant state and some properties in the cluster favourable to hibernation must exist to keep the dormant bees alive. If all the bees in the cluster become torpid from want of food the bees will soon die, but if there is food for all, and a portion of the bees form a heat centre in the cluster, and keep giving off their products of respiration, the whole cluster of bees will keep alive and survive the winter. The heat given off by the active bees cannot reach the dormant bees at the bottom of the cluster, but the respiratory products can reach all the bees in the cluster and prevent their loss by radiation—as the odours of flowers protect the flowers from loss of heat. When bees condense their aqueous vapour in the cluster the remaining respiratory product (carbonic acid gas), must descend, being much heavier than air, and it also prevents radiation and will protect the bees at the bottom of the cluster from loss of heat.

Queenless colonies sometimes winter with but little loss of bees, and in spring

may be strong in numbers. If a queen with sealed brood be given to colonies in this condition they have been known to make strong stocks in summer. Should a queen, however, be given without sealed brood or young bees the queen would be of no use to the old bees, even should they accept her, which would be exceedingly doubtful. It is therefore evident that it is the brood raised in winter that is the important factor in building up colonies in the spring and that a colony raising no brood in the winter will gradually die out in spring.

The bees will always raise brood in season and out of season, if their means will allow, in efforts to make the birth-rate as high as possible above the death-rate. They know something about the decline of empires. They built their empires before man appeared, and for aught we know to the contrary, will continue building empires after man has disappeared. The bees and flowers were among the first to come and they will be among the last to go.

The so-called spring dwindling in colonies is owing to the bees not being able to raise brood, hence, to beekeepers the importance of knowing how to assist the bees in keeping up their population. The bees have no difficulty in keeping up their population in summer, the great difficulty is in winter and spring.

To raise brood in clusters the brood raising area in the clusters requires to be protected by a wall of packed bees, and the wall has to be thicker as the temperature is lower. If we assume that in winter a two inch wall of bees is necessary to surround a brood-raising area, then a four-inch cluster will raise no brood. A six-inch cluster will give brood area of four inches and four clusters sixteen inches. A twelve-inch cluster will take the bees of four six-inch clusters and will have only half the radiating area of the four clusters, but it will have sixty-four inches of brood raising area; four times more than all the six inch clusters, and sixteen times more than

one six-inch cluster. Raising brood takes no heat from the bees. Wherever non-living matter, throughout nature, is being changed into living matter, heat is eliminated. When active growth is taking place in the chick in the egg heat is given off, and the incubator has only to prevent the too great loss of heat given off. When an insect larva commences to eat it commences to give off heat, and the more larvæ the bees can keep going in their cluster—the more nutrition and growth is going on in the cluster. A cluster fifteen inches in diameter equals in volume nine five-inch clusters, but the brood raising area or the heat generating area, is over thirteen times greater in the large cluster than it is in all the small clusters combined. The advantages of the large cluster must be apparent and they are founded upon facts not easily controverted.—A. W. Smyth, M.D., Donemana, in *Irish Bee Journal*.

HER ROYAL HIGHNESS QUEEN BEE.

[BY MR. H. BYRON MOORE.]

It is very interesting to know all about flowers and insects and birds, and to study their habits. You can learn a great deal from them, and you can learn what a wise and wonderful Creator there is, who has planned and worked out all these marvellous things in nature. The honey making flowers that find food for bees and other insects are very interesting to study. But, mind, there are savage plants, the same as there are savage animals, that cruelly prey upon the weak forms of life around them. These are called Droseras, or sun dews, or, as some are called, Venus' fly trap. They attract flies with a sweet sticky syrup, and when the insect goes to feed, surround it with hairy claws, and close on it, like an octopus, then suck out its blood, and if you hold up the stem to the light you will see the red blood being sucked up into the system of the plant. These plants are called carnivorous, because they live on the blood

of insects. The honey plants give their delicious food to the bees without being cruel to them, and they collect and store it for our use. So now I am going to tell you something about the honey-producing flowers, and the bees that collect it, and all about their wonderful industry and cleverness.

Many, many years ago a little bee made a profound bow to her Queen, and said:—

"May it please your Majesty"—this is the way all Kings and Queens are addressed by their subjects when they want to say anything to them. The attendant of Her Royal Highness Queen Bee therefore bowed down before her, and said:

"May it please your Majesty, the world is very beautiful just now. The sun is pouring her bright warmth over the Spring growth, the buds are opening into lovely blossoms, perfume fills the air, and honey in plenty is in the bosoms of the flowers, just waiting to be gathered."

This was a long time ago, when bees were first invented, and the earth was very young. It was beautiful then, but it is still more beautiful now, for the bees have made it so, as you will learn presently. It was so very long ago, that if the memories of all the people you know were put end on to one another, they would not reach that long long ago I am speaking of. Well, all the Queen's servants, and her heralds, and her guards, and her honey gatherers, and her bee bread-carriers, and her wax-makers, and her drones (for there are always idle people everywhere) came out to look at the beautiful world, and they flew round and round until they were tired, and then settled on the bough of a tree, all surrounding their Queen, and took a rest. Now how many subjects do you think she had? I am sure you will never guess. There were thirty to forty thousand. As many as you have persons in a large town.

Then the Queen found them a place, where they could build their houses and store honey, and bring up their children. For the Spring had brought out the flow-

ers, the world was decked with blossoms, the honey harvest was waiting to be gathered, and there was no time to be lost.

Well, she found a nice sheltered spot in a hollow tree, with only a little hole to get in at, so that robber birds and opossums, could not steal their honey.

So Her Majesty flew to the place in the hollow tree, surrounded by her attendants and guards and heralds, and the food-bearers, and the house-builders, and the honey-gatherers, and all the bee bread-carriers, and the wax-makers and the drones—who were talking so loud you could scarcely hear yourself hum—somehow idle people always talk most and make the greatest fuss and do the least work—and they all followed their Queen to their new home, and she ordered it to be called Beetown. Then she called her chief builder before her, and told him to begin and build the town.

Now, the bee is a very clever builder. Each little house or cell is made of wax, which the bees make, and they have found out that a six-sided or hexagon house fits one against the other, so that there are no waste corners, and they make the most of their wax, which is hard work for them to prepare. Then when they put on another story, the point where three cells meet is put in the centre of the ceiling of the cell underneath, so it makes the building very strong. The walls are made of two thin pieces of wax; nothing can be more perfect. The cells for the drone bees have to be made a little larger than for the workers, so they build four of the former to five of the latter, and fit them in most beautifully.

They build a different house for a queen. It is a palace in its way, and is quite a separate building, somewhat like an acorn in shape. There are three kinds of bees in the town. The Queen, of which there is, of course, only one. The workers, of which there are many thousands; and the drones, of which there are a few hundreds.

Now the Queen said to her head builder, "Hurry up all the builders, and get on with the town, for the sun is shining and the flowers are blooming, and we have no time to waste."

So out flew the working bees into the beautiful world and gathered honey and pollen, and make bees bread and wax and honey, and hurried back with it to build the town, and store it with food.

Then the Queen's attendants fed her and stroked down her beautiful dress, and bowed down before her as dutiful subjects should, and the head builder said:

"May it please your Majesty, a lot of houses are now ready—whole streets of them."

So the Queen put a tiny little egg in each, and the workers put pollen and honey made into a sort of jelly into each house, so that when the egg was hatched there should be food ready for the little baby bee, which at first is like a grub or caterpillar. The little baby grows very quickly, and then feeling cold she spins a little silk web round herself, which is called a cocoon.

To be continued.

QUEEN REARING

Mr. Alley claims that the best queens can be reared by giving eggs or larvae to rightly "conditioned" nurse-bees which, with or without the help of other colonies, nurses and care for this brood so given, that the best of long-lived queens are produced. This point is also covered by "Scientific Queen-Rearing," in that it provides for these same nurse-bees, *rightly conditioned* to produce perfect success in their manipulation of the little larvae given them to mature into the best of long-lived queens; and does the same with less effort on the part of the apiarist than is necessary where the bees to build the cells must be sought out, "scientifically treated," confined in a box for a certain length of time, etc.

Then it exactly fills the bill of Mr. Riker, in that it provides for a laying

mother being present at just the time when bees rear only queens which give those long-lived workers which hold out during the *whole* honey harvest, that enables the apiarist to secure the full results of the honey-flow, and which could not be obtained by queens giving bees with shortened lives.

In short, the plan given in "Scientific Queen-Rearing" combines the large hives with rousing colonies under the "swarming or superseding impulse," which "manufacture a large amount of electricity, heat or vitality," of Dr. Gallup; the "conditioned" nurse-bees, wanting a queen of Mr. Alley; the rearing of queens when the "mother is present," of Mr. Riker; the selecting of those of the "proper age" for queen-rearing without interference of "older bees," of Messrs. Pratt and Simpson; and the "temperature and humidity," through plenty of nurse-bees and food in abundance, (from feeders when the same was not coming from the fields), of Mr. A. C. Miller; and is perfectly adapted to the wants of any bee-keeper, from the one having only two or three colonies, up to the one numbering his colonies by the hundreds of thousands. And there need be no limit as to size of colony used, in the large direction. Dr. Gallup's biggest colony can be used just as successfully as can one fully occupying a 10-frame hive, or one just ready to swarm in a two-story 8 frame hive. Just slip in a queen-excluding division-board, so as to enclose from three to five frames of young brood in the warmest part of the hive, thus shutting the queen away from them, and you are ready to proceed at once in rearing queens of the highest grade possible to obtain under any of the conditions named by any of the plans or theories advocated by any one during the past five years; and those which will be just as long-lived and give just as long-lived workers.—*American Bee Journal*.

In Cuba extracted honey is 13 cents per lb.

DAMP MATS

After a continuous heavy storm of rain it is as well to raise the covers of the hives and examine the mats to ascertain if any rain has drifted in. If so, the damp mats should be at once removed and dry ones substituted. This operation may be performed without any unnecessary disturbance of the bees. There should always be a number of dry spare mats kept on hand for this purpose, in case they may be required; should any covers be faulty they should be at once repaired. Dampness in the hive should always be avoided, as it is most injurious to the health of the bees. It has the effect of souring their food, and so causing dysentery; it also causes the combs to become mouldy, which when observed, should be at once removed. Hives kept on low-lying or swampy ground, or under the shelter of evergreen trees, where the rays of the sun cannot reach them are very liable to become damp and mouldy inside; consequently such situations should be shunned, and, in case of hives becoming damp inside, it will be better to shift the bees and combs into clean dry hives, keeping the entrances enlarged to five or six inches to allow of freer ventilation.—*Apis in New Zealand Bee Farmer*.—

Pickled brood is not to be particularly feared. The disease will linger in a hive for some time. It does not spread from colony to colony, but will occasionally break out from season to season in the same hive. Shaking the bees on frames of foundation will effect a cure.—*Exchange*.

An Essex man writing in the *Beekeeper's Record*, says:—"The prices of honey here are very good, sections fetching 1s each, and run between that figure and 10d. This, I think, is very satisfactory, and I am pleased to say I find everyone determined to keep the figure up."

See that your neighbouring beekeeper takes the A.B.B.

Building Worker Comb.

"When any colony is so weak that it has no desire to swarm, during or preceding the swarming season or honey-flow, such a colony will invariably build worker comb (so that worker brood may be reared until the colony comes into a prosperous condition), providing they do not have sufficient comb already built. Taking advantage of this fact I use all colonies which are too weak to store honey to advantage at the beginning of the honey-flow, treating them thus: Their combs are generally all taken away from them; but sometimes I leave one comb partly filled with brood, and always one of honey, giving the combs of brood to other colonies so that they will be still stronger for the honey harvest."

"These are stored away to hive new swarms on, if they are perfect worker combs; if not, then they are treated the same as I am about to tell you how to treat those only partly filled, after you have cut the drone comb out."

"When the colony is fixed with its frame of honey, or this frame of honey and one having some brood in it, I next put in one, two, and sometimes three frames with starters in them, just in accord with the size of the colony after I have taken the combs away."

"But that wasn't what I wanted to know. I do not want to have full combs built, but frames partly filled, finished out with worker comb. However, I am glad you touched on this matter, for now I know how to get full combs built, should I wish to do this instead of purchasing foundation."

"I said what I did as a preparing of the way for the other, for the method is the same with the one as with the other; only where frames partly filled with comb are to be built out, the comb of brood is not left in the hive."

"Why don't you leave it now as well as with the building of full frames?"

"Because, where the bees are to fill the frame with comb from the starter,

there will be no place for the queen to lay till they build the cells, only as she so lays in the remaining cells in the comb only partially filled with brood; and as she had all the room she needed before the combs were taken away from her colony, this sudden stopping of her laying would be an injury to her. But where partly filled frames are given she will have all the room she needs after the brood is taken, as well as before."

"I see the point now. Is the frame of honey as necessary with these partly filled frames as before?"

"Yes. In all cases I see that each of these colonies thus building comb has a frame well filled with honey; for should storms or cloudy windy weather come on at this time they would build no comb of any amount, and might starve; while with the frame of honey they will go right on converting that honey into comb, storm or no storm."

"How soon will they fill out the frames with comb?"

"If the right number of frames is given to suit the size of the little colony they will fill them very quickly, especially when honey is coming in from the fields, and each comb will be filled with brood as fast as built."

"How long will they continue to build all worker comb?"

"If not too strong they will generally build comb of the worker size of cell until the bees begin to emerge from the eggs first laid in the newly built combs by the queen; but as soon as many bees emerge they will change to the drone size of cells: or if the little colony is quite strong in bees they may change the size of cells sooner than this."

"How do you tell about this?"

"As soon as the first frames given them are filled with comb I look to see how many bees they have; and if they are still well stocked with bees, or in a shape where I may expect that they may change the size of cell before they reach the bottoms of the frames, should I spread those apart which they already have and

insert other empty or partly filled frames, I take out the combs they already have built, and thus put them in the same condition they were in when I started."

"Will they still work just as well?"

"No, not quite. They will not build combs quite as freely this time as they did before, unless there can be some young bees emerging; so, if I can conveniently, I give them a comb containing mostly honey and a little brood (if they have such a comb it is left with them, which is more often the case than otherwise) from some other colony, when they are ready to work the same as before. In this way a colony can be kept building worker comb all summer, or till the bees are nearly used up from old age, the colony becoming so small as to be unable to build comb to any advantage under any circumstances. But if just the right amount of brood is left, or given them, so they stay in about the same condition, they will build worker comb all summer by the apiarist supplying honey or feed when none is coming from the fields."

"But suppose you do not find them very strong on your examination—what then?"

"If not so strong but that I think they will still continue to build worker comb, instead of taking the brood away I spread the frames of comb (now built) apart and insert one or more frames between them, when these will generally be filled with worker comb before enough young bees emerge for them to change the size of cell."

"I think I understand now, and so will be going."

"Hold on a minute. Don't be in too big a hurry."

"Why? What is the trouble?"

"There is one thing I do not think you take into consideration as fully as you should."

"What is that?"

"You should always keep this in mind, whenever you find these colonies building drone comb: The combs they then have, all except the one mostly filled with honey,

are to be taken away so that they may feel their need of worker brood again, when they will build cells of the worker size the same as they did on the start."

"Thank you for this part. I should hardly have known what to do when they commenced to build drone comb had you not stopped me to tell me this. And now, in parting, how many combs have you ever had built in this way?"

"I have had hundreds of frames built full of worker comb in this way; hundreds completed as you are proposing to do, and hundreds and thousands 'patched,' where I had cut out small pieces of drone comb which had gotten in in one way or another. If you ever have a mutilated comb you wish to have fixed so it will be a surprise to you, just give it to one of these little prepared colonies, and see what nice work they can do at 'patching' with all worker comb. This last is an item the bee world does not seem to take in fully, and it is something which gives me the most pleasure of the whole, especially where, through mice in winter, or otherwise, comb has been destroyed in spots where said comb was in *wired* frames."—Doolittle in *Gleanings*.

FORMALIN OR FORMALDEHYDE.

My experience has been practical, and what I don't know about it might fill a volume, but I'll try not to go that far.

In the first place, so far as the laymen go, the two words mean the same. Formaldehyde bears the same relation to formalin that ammonia does to aqua-ammonia. Ammonia is a gas, and aqua-ammonia is water charged with the gas of varying strengths up to 26 per cent., after which the water will absorb no more.

Formalin is water charged with the gas—formaldehyde—usually to about 40 per cent. Commercially, all we ever have to do with is formalin, so we might as well drop the longer word.

It was discovered not many years ago by German chemists, and has been largely used as a germicide. It has a peculiarly

sharp odour, and produces a stinging sensation in the nose some time after smelling it. To some it is more offensive than ammonia, and would better be approached with caution on first acquaintance. It is as harmless as ammonia, however, and is good for catarrh.

As it is an absolute preventive of mold and fermentation, it has been largely used for that purpose. A few drops in a quart of milk will keep it sweet for days, or in paste will preserve it indefinitely. (Try this.)

Being so good a preservative, the milkmen, brewers, and others, have gotten "onto" it, and here is where the abuse of a good thing has come in. It has been found extremely dangerous, if not deadly, when taken into some stomachs, and is now condemned as a preservative of foods by various health departments.

It renders gelatine or glue insoluble in hot water, and is an antiseptic toughener of the skin. The German soldiers are made to bathe their feet in a weak solution of it, and to drop a little in their shoes to toughen them and prevent sweating.

As a germicide I believe it is now considered pre-eminent by the best authorities. Sheets saturated with it are now used almost universally for disinfection after contagious diseases, and it is regarded as sure death to all germs of disease.

I have had no experience with foul brood, and hope I will not have, but if I should have, I think I'd atomise it with formalin for a venture, anyway.

It may be bought of any druggist, and costs about as much as ammonia.—Ralph D. Cleveland, in A.B.J.

phosis evolving another type or species, exhibiting different powers and habits. Thus the harmless *bacillus coli* of our digestive system is believed by some authorities to be capable of developing into the typhoid microbe, and at least we know the latter's disease producing properties are accentuated by its association with the former. In *Nature* an interesting illustration is given of an analogous case. There is a disease of bees called "foul brood," and this was ascertained to be due to the work of the *bacillus alvei*. From Liège comes the news that this germ is only the *B. mesentericus vulgaris* masquerading under another guise. This last is ordinarily harmless. The potato bacillus thus shifted to new surroundings develops foul brood in bees.—Dr. Andrew Wilson in *Daily Chronicle*.

Some three or four years ago, Mr. Fowls had quite an experience with a horse that was nearly stung to death, and that he himself escaped very narrowly. He had tied the "old mare," as he said, back of the yard near the fence. On the other side of this fence there was a couple of nuclei which he had forgotten all about. During the night the horse in some way broke through the fence and upset one of the hives. In the early morning Mr. Fowls heard a peculiar racket. Suspecting what the trouble was, he dressed and rushed out to the horse, bare-footed and bareheaded. My, oh my! how the bees pitched at him! He returned, however, in inglorious defeat. Remembering that that seemed cowardly, and that the poor horse was tied with a rope, he rushed back, this time in spite of the bees and stings, and untied the rope. But the mischief had been done. Almost screaming with pain he called for hot water, which was applied to his face and hands, to his great relief. In the meantime the horse had run from the yard, and was rearing and throwing itself in fearful agony. The neighbours rushed to her assistance. Doctors were called. Some advised cold water, and some called

CAPPINGS.

From American and other Bee Journals.

It is highly probable that certain microbes, through an alteration of their environment, may undergo a metamor-

for water with soda. But Mr. Fowls insisted on cloths wrung out of *boiling* water. The horse was held down at her head while the cloths were applied. He had some fears, he said, that the cloths *might* cook the skin, but they did not. The time required in wringing and swinging them in the open air probably reduced the temperature so that they would not do that. Hot cloths were applied all over the animal except the head. He never thought of applying them there also; because in order to hold the animal down on the ground, it was necessary for some one to sit on the head. Now mark this: The only places that swelled at all on the horse were on the head, where the hot cloths had not been applied. The eyes of the poor beast were swollen shut. The lips were so badly swollen that the mouth looked like that of a rhinoceros. The ears were fearfully puffed up. So badly swollen was the nose, that *actually*, Mr. Fowls said, the poor animal could not get her mouth in a common water-pail.—*Gleanings*.

DEHORNING CALVES.—A Farmer (writing to "Hoard's Dairyman") explains his method of dehorning calves with caustic potash. It is simple enough, and worth remembering and practising:—"I dehorn all my calves when two to eight days old. I do it as follows:—Get a can of potash or concentrated lye; put it in a glass fruit jar or other air-tight place, so it will not evaporate. When the calf is from one to eight days old, put two or three pieces of potash the size of a large bean in a cup, and add a teaspoonful of water, not enough to dissolve quite all of the potash, so I know it is strong as can be; let it stand an hour, and stir it once or twice; then with a small swab wet the horn buttons well, and the calf will have no horns and has not been injured. "Care must be exercised not to put the potash on the calf's ear or in its eye or on your fingers, for it will burn where it hits. My herd consists on an average of 100 head all dehorned in this way. It costs nothing, does no damage, and is a success

in every way; and I am fully satisfied is the best way to dehorn cattle."

A lining of damp paper put inside a vessel into which melted wax is to be poured will prevent the wax from coming in contact with the vessel, hence there will be no dish to clean up afterwards. Strange as it may seem, the paper will also peel off readily from the cake of wax. Neither will the cake crack while cooling, as it is not stuck fast to the walls of the dish.—*Jamaica Times*.

A Honey Knife will cut more smoothly if it is kept standing in a dish of water. If left out in the air the honey upon the knife dries down to a certain extent, something like so must paste, and makes the knife stick. If put into water, the water dissolves off the honey and leaves the knife clean and smooth. In the summer when the honey is fresh and thin, or direct from the hive, there may not be so much gained by keeping the knife in water, but when the honey is cold and stiff it makes a big difference. The water in which the knife is kept may be used in making vinegar.—*Jamaica Times*.

A German writer says that a farmer of his place had seven acres of phacelia; after the first cut of red clover had been fed, the phacelia was cut while the second week in bloom. The cows ate it with eagerness, and could hardly get enough. I think the above testimony ought to be sufficient to encourage all those to a trial who would like to have a bee-plant that might be grown in quantity to fill out a gap in the honey-flow, while its value as feed (green or hay) would pay the farmer for his trouble and expense, apart from its value as a honey-yielding plant.

Phacelia begins to bloom about six weeks after sowing, and care should be taken not to sow it too thick.—*A. Bee Journal*.

Dr. C. C. Miller says, speaking of phacelia: "But no one has told us yet about its value as a forage plant." A Mr. Karger, of Schreibendorf, writes: Mr. L., a practical farmer, sowed about the middle of May, phacelia on a piece of

ground that had been in potatoes the previous year. Notwithstanding the cold and wet weather it grew luxuriantly, and reached an average height of 32 inches. While the phacelia was in bloom, although Mr. L. fed it to cattle that had been getting grass and green clover, yet they ate it voraciously. He also noted an increase of milk in quantity and quality.—*A. Bee Journal*.

In the United States there are 707,261 beekeeping farms, containing 4,109,620 colonies or swarms of bees. They produced 61,196,160 pounds of honey and 1,765,315 pounds of wax. Valuation of bees, \$10,186,513; of honey and wax, \$6,664,904.

Shaking the combs is the way most of us get the bees off, or the most of them, but Dr. Miller tells us how to "pound" them off. "The comb is held by the corner with one hand, while the other hand pounds sharply on the hand that holds the comb. By this manner of pounding nearly every bee may be removed by a few strokes, unless the comb be too heavy."—*Beekeeper's Review*.

Professor F. C. Harrison, bacteriologist, at the Ontario Agricultural College, has been disinfecting combs and hives with the vapour of formalin with great success.

Pieces of comb had been taken containing wax and comb several years old, dead brood, capped brood, and cells of honey into which had been put brood foul brood germs. These were placed in a box the size of an ordinary hive, the lower entrance in the box having been plugged, leaving only sufficient room for the entrance of a rubber hose coming from the disinfecting apparatus, similar to that for disinfecting plants, etc. The formalin gas apparatus was as follows:—An alcohol lamp, and upon it a reservoir with a 40 per cent solution of formalin. When the alcohol lamp was lighted the gas was soon generated. At the top of the box a one-half inch opening had been left; out of this the atmosphere passed as the box filled with formalin gas. When the box was full the gas

would pass out of the upper orifice, detected by the odor. The apparatus was then withdrawn, both openings plugged, and the comb left under the influence of the gas for one hour, after which exposure no growth was obtained, four tests in all having been made. The honey-cells known to be affected gave no growth. The pressure obtained in generating the gas might in a measure account for the results. This cure would be practical in a large apiary. Other appliances used in disinfecting would answer."—*Beekeeper's Review*.

One hundred colonies is the limit in number that can be profitably kept in an ordinary location, one year with another.—*Exchange*.

A queen breeder cannot do a successful business on a small scale. He must have hundreds of queen cells growing all of the time, and hundreds of laying queens on hand ready to use in filling orders.—*Henry Alley*.

CORRESPONDENCE.

J. W. G., Logan River, Q.—Am pleased to report bees doing very well for the time of year, and what is better, honey is a good price (3d.) If we could only depend on the price keeping up, then the bee business would boom.

J. T., Maryvale, Q.—I have done away with my bees some time ago on account of the great scarcity of timber. I find it a very hard job to keep bees enough to keep my family in honey. I may remove to a better district.

E. B., Eden, June 1.—I receive the A.B.B. regularly, and I am well pleased with it; there is a lot of information in it. I have 40 hives, and they have gone into winter fairly strong and plenty of food. I hope to have a better show next year if all goes well.

J. R., Otago, N.Z.—As a new beginner I would like to ask you three questions. There are very few bees in this district, and only black, and they have been introduced to my knowledge for the past 30 years. 1. Would you advise me to introduce fresh blood, and what kind. 2. Does the old queen always leave the hive with the first swarm? 3. Can you hear her piping before the first swarm comes out?

[1. By all means get an Italian queen in the spring. Look at our list of advertisers. 2. Most always. 3. Don't depend on the piping. Look out for queen cells. The old queen generally goes out with swarm as soon as the first queen-cell is capped.]

A. S., Jindera, June 29.—The bees did not do too well last season about here. I averaged about 60lb. per hive. Last spring I lost 25 hives out of 50; they disappeared. There were few swarms about last swarming. The coming season does not look too promising about here. Yellow box has burst into bloom about two months ago, and will last just about as long as winter. By all appearance there is a great quantity of honey in it as well, and no chance for the bees to get it. The main honey we get here is from yellow box and red gum, and a little apple. Yellow box generally comes out in November, red gum in December, apple in March. The honey from box seems the best.

A. S. B., Molong, June 29.—As regards bee news, I think I can safely mark it down as nil on the good side. The bees have passed through a terrible time, the like of which I never saw before. There were no swarms, and practically no signs of a desire to swarm. They came through last winter almost without loss. A few hives have since gradually succumbed, and I expect a fair number to follow. The prospects for the spring are naturally very poor, as the trees have had such a dressing. The bees evidently have been very short of natural pollen this season, so they attacked the refuse at the flour mill, and I would not wonder at them doing the disappearing trick, for the least moisture made the stuff sticky, and they were trapped in thousands.

Then at the lemonade factories, where the proprietor will neither make a little place bee proof for the syrup, nor allow anyone else to do it, they are killed in swarms. However, there is every appearance of a change, and it is to be hoped that it will be so. Hoping you are doing well.

P. V., Brushy Hill, June 25.—Last season was with me a complete failure, but I am hoping for better times now seasons have changed. Bees are working every fine day now on white box, and on fine ironbarks, which have nearly always bloomed in winter, but about Scone and Aberdeen they come into bloom about the end of October and last till January, yet my apiary is only about seven miles, as the crow flies from either place.

J. D., Newry, Vic., June 22.—As the bees do not do well in this locality I am intending to dispose of them as soon as possible. I think very highly of your journal, and think it very instructive and interesting. I will recommend it to any one keeping bees that I am acquainted with.

— Mesa Grande, California, May 21.—We are very anxious to obtain information concerning bee pastures of Australia, as we are very anxious to make a change to your section. I send you 10c. our money; will you please send me a couple of copies of your paper, and what information at your command.

H. B., Pambula. — We would be much obliged if you would inform us on the following questions:—1. The cheapest place to get foundation wax made up, weed process and price. The cost of weed process machine. The cheapest place for red wood. 2. Would oregon pine do for $\frac{1}{2}$ supers, or gable covers, or what kind? 3. Would, or does any of timber merchants rabbit or cut the lengths for boxes, or dovetail? 4. Is F. J. Baker a reliable agent? 5. The best kind of tins—60lbs. 6. The best method of nailing frames, so to keep them square.

1. Try A. Hordern & Sons. 2. Will some of our subscribers reply to this. 3. Any timber merchant on a large scale will do this. 4. It was a fraudulent advertisement. 5. Try Chown

Bros., Mulholland & Co. See advt. 6. Supply dealers will supply you with a board with buttons made for the purpose.

F. L., McLaren Vale, S.A.—Last season we expected to be a very good one here, but it turned out very poor. I doubt whether H. S., Goulburn, N.S.W., on page 12 of April number, will have any honey left after the winter is over if the kids go for it as he describes.

J. B. B., Cameron's Creek, June 6th—We have had 7 inches of rain. The river rose over its banks, carrying away fences and carrying tons of sand and mud over the flats, which in many places has done good to the farm land. The last flood we had was in 1892, but it was 2ft. higher in 1892. I had a treat shifting my bees. I was in hopes that I could leave them on their own stand, as it was a nice little snug corner, so I was tempted to leave them. The time came at last, during the dreary hour of night—it was 9 o'clock at night when we had to go out and tackle to shift 53 hives, some of them weighing about 2cwt., all full of honey. I shall never forget that night. The wind blew strong, the rain was pouring down; we worked hard for 2½ hours, finishing at half-past eleven o'clock, the water rising fast among the hives, but we managed to save them all. They are high above flood mark now.

P.P., East Beverley, W.A., May 25—My bees are not doing much good this year. It has been too hot and dry; have had no rain to do much good, and water very scarce and no pollen, so I have lost a lot of my bees. I hope to be able to make them up again. I hope you are having a good season your way and plenty of honey. We get 18s. for 60lb. tins, and 10s. per dozen 2lb. tins. We always sell our honey every year without any trouble.

P. J. Moy & Co., 161 Sussex Street, Sydney, write—There have been fair supplies of honey coming to hand, but there has not been any glut. We believe we handle the bulk of the honey consigned for sale to this market, and our opinion is that there is just about suffi-

cient for requirements coming forward for the demand. During the past week we have sold about 3 tons at 3d lb. and the lowest price obtained for inferior honey was 2½d lb. Prices range here from 2½d to 3½d according to quality.

G. W. H., Port Macquarie.—Last year's honey crop here was very poor. I only extracted 20 tins from 27 hives, and sold same at 14/6 clear per tin. I let my bees go into winter very strong. I heard a very good fairy tale about a neighbouring beekeeper's bees the other day, although he vouches for the truth of it. He had one queenless hive, and he got a queen from a friend and introduced her. The next day she came out and went into the next hive, and the following day swarmed with all the bees and went back to her original home. I cannot myself vouch for the correctness of this, but that is how I heard it as the truth. I have heard some snake stories, but this is the first bee story yet. I have no bee news worth while to tell you this year, as I have not had much time to give them proper attention, but I hope next year to have a better season and better news.

J. F. D., Bellingen, July 9.—We are in a much better state up here than things appeared to be at the convention in regard to bee matters. When I got back the hives were all full as they could hold, and have had two extractions since, and now there is a little honey coming in, also a little pollen; the hives full and wintering well, and every prospect of a forward spring. According to circulars from commission men, there is another glut. My shipments very often seem of late to strike that sort of thing. Last glut we had my honey arrived in time for it, but I suppose it does not do to growl too much, for the western districts are off just now. When they come again we coastal bee men may think ourselves lucky if we get 2d. for prime, and when it gets below that let us keep it for a scarcity, for we all know history repeats itself, and like Egypt of old, when the fat years come the lean ones will follow.

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