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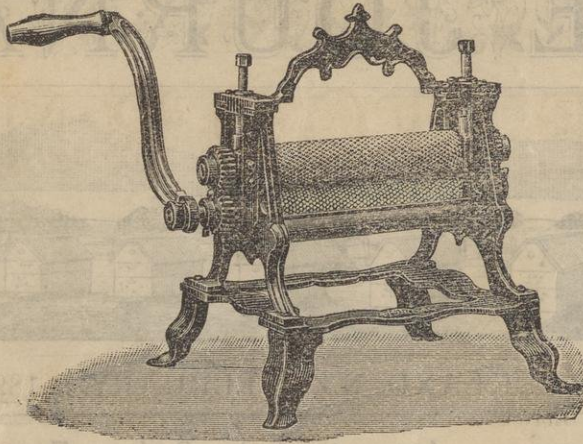
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# THE AUSTRALASIAN

# BEE JOURNAL

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[PUBLISHED MONTHLY.  
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## The Australasian Bee Journal.

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## Editorial.

### SEASONABLE OPERATIONS FOR FEBRUARY.

Up to the middle of last month no improvement had been experienced by our North New Zealand beekeepers with regard to the consistency of the honey being stored. They had not at that time got over their difficulty, and were still unable to extract their honey. The opinion of one extensive beekeeper in the Waikato district was that they could not expect anything like a fair average crop of honey this season. He could hardly estimate what it would turn out, but would not be surprised were they to harvest less than half the usual quantity. It is a very great pity that such should be the case, especially as the demand for bulk honey for export is increasing.

#### CLOSE OF THE SWARMING SEASON.

We generally reckon that with the close of the month of January the swarming season ends, and so it does as a rule, but we are inclined to think that the present season

is an exception, and that in many places in New Zealand the swarming season will extend beyond its usual time, and that means that the honey season will also continue. It is as well, however, to be cautious when taking surplus honey towards the end of this month to see that the bees have ample stores left to serve them. It is better to leave too much than too little, for in the former case it is easy to take away any not required when fixing the bees up for winter, and it is also better and cheaper to have sufficient honey in the hives rather than to be obliged to feed with syrup.

#### REMOVING SECTIONS AT END OF SEASON.

Producers of comb honey are likely to have, unless precautions are taken to prevent it, a number of unfinished sections at the end of the season. Although these can be preserved and held over for the next season, still it is not good management to be obliged to do so. Of course it is not possible to avoid having some partly finished sections after the honey flow is over, especially where comb honey is produced on a large scale, but with judicious management there need not be many. As soon as the honey flow begins to slacken the surplus boxes should be examined, and every finished section removed. The remainder of the unfinished sections should be collected together, and a few of the very strongest of the colonies should be selected on which to place them. In the course of a week or ten days a similar overhaul should take place, and the finished sections again be removed, collecting together and disposing of the unfinished ones as before. In the meantime no new sections should be given to any of the colonies, but should additional room be required after the removal of the sections, some frames of comb or of foundation should be placed in the upper boxes. Such frames of foundation, should they be worked out and stored with honey, will come in very handy for winter food, or they can be held over for the spring. By such a system as that described nearly every section may be made available for market at the end of the season, and the bother and loss of holding half-finished sections over the winter is avoided. Where an extractor is available, should there be any partly filled sections, with the aid of a broken comb basket they may be relieved of the honey before being placed away for winter. Care should be taken, when placing away such sections, that it be done at once—as soon as removed from the hive and before the bee-moth can get a footing in the combs. A good method of packing securely is to leave them in the frames and the boxes taken from the hive, piling them one above the other and pasting some narrow strips of paper round the junction of the boxes. The bottom box of all will need to be made secure by covering the bottom with a thick sheet of brown paper pasted well up over the sides. The top should be secured in a like manner unless a cover be put on and made secure round the joint.

#### OLD V. YOUNG QUEENS.

It should be the aim of the beekeeper to supersede all old queens, that is, those that are past their prime. It should not be forgotten that in a sub-tropical clime like ours queens age much faster than in colder countries. In works on beekeeping published in the Northern Hemisphere we read of queens being looked upon as

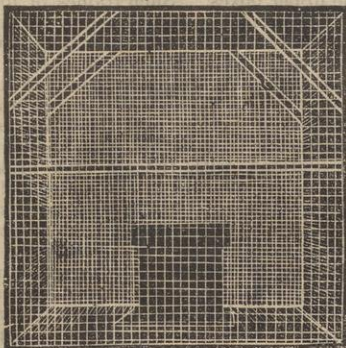
good to the end of their third season, and no doubt this is correct, for in cold climates the queen does not lay for four or five months in the year, but in most parts of Australasia queens lay more or less all the year round, and consequently must exhaust themselves very rapidly. This fact leads us to believe that by the end of the second season a queen has seen the best of her days, and that the beekeeper will be studying his own interests by superseding her at that age. It was long a puzzle to us why colonies from no apparent cause became queenless during the winter, but after thinking over the matter and making notes we came to the conclusion that the queens had become physically weak and died, although such queens would have been considered, with regard to their age, to have been in their prime in colder countries. If this theory is correct, and we believe there is little room for doubt, no queen, except in very special cases, should be allowed to be at the head of a colony after the end of her second season, for though to all appearances she might seem fit to go through the winter, yet should she do so it would be found, in nine cases out of ten, that she would be physically incapable of breeding up to the required strength of the colony during the ensuing spring. The autumn is undoubtedly the best time to supersede old queens by introducing young ones in their places.

#### UNITING.

Towards the end of the month will be a very good time to prepare for uniting weak stocks, such as late swarms or such as may be found queenless, for even when increase is the object it will be found most profitable to winter one strong colony rather than two or three weak ones, for the former will come out of winter quarters in good condition and give large increase in spring, whereas the latter, if they do not succumb, will be in a weak state in the spring and take a good part of it to recover. The instructions for uniting will be given next month.

#### ROBBING.

As soon as the honey season is drawing to a close, precautions should be taken against robbing, by reducing the width of the entrances of hives containing the weaker colonies, and also by allowing no opportunity for robber bees to attack hives during manipulation. It often happens that the last extracting is left till the flow of honey has almost ceased, and at this time robbers are a source of great annoyance, unless the operator and the hive he is manipulating is in some way protected from their attacks. Nothing is more convenient in this respect than a bee tent, which will cover both the hive and the operator. The following illustration represents a handy kind of tent for this purpose.



#### MISCELLANEOUS HINTS.

Leave no scraps of comb or honey about to tempt robbers. Thoroughly disinfect all hives and appliances as they are done with for the season and before putting them away. Melt down all odd pieces of comb and wax so as not to encourage the wax moth. Do not be in too great a hurry to send honey to market during the fruit season, as it always fetches a lower price at that time compared with later on, and if possible avoid sending honey to the auction rooms, as such a system is in most cases ruinous to the producer.

## THE PENINSULA BEE CLUB.

REFERRING to the formation of a new Beekeepers' Association at Dunedin, the particulars of which will be found in another column, we deeply regret that circumstances should have arisen to cause a disagreement among the beekeepers in Otago, and we can only hope that a reconciliation will take place within a short time, and before any great harm will have been done. There can be no doubt that the banding together for a legitimate purpose of people with the same interests at heart for their mutual benefit must result in good to all. But should it afterwards be found that their interests are not identical, or that their ideas of the fitness of things do not coincide, it is impossible that they can work together harmoniously, and the result is a split in the camp. With regard to many of the remarks of Mr Morris in his address, they fairly represent what we might expect to be the views of a person who is looking to make a livelihood as an apiarist, and who naturally does not wish to see more people in the business than can make a fair living at it. We have, as our readers are aware, held similar views for some time past, and given expression to them, notwithstanding that it has been much against our interests to do so. It will be remembered that within two or three years after the introduction of modern bee culture into New Zealand, that a tremendous rush into the beekeeping ranks took place, with the result that the production of honey during the years 1883-4 was greatly in excess of the demand, and consequently the price dropped a long way below a remunerative figure, the effect of which is still felt. Though it is a fact that the industry is on a sounder footing at the present time than it has been previously; still it requires all our tact to keep it progressing, and we are firmly of opinion that there will always be a sufficient number of people joining the ranks of beekeepers, without any special effort being made to induce them to do so. We have referred to this matter simply with a view of trying to bring about an amicable understanding between the two associations, and we are sure it will be to the interest of all Otago beekeepers if a reconciliation can be brought about.

#### FORMATION OF THE PENINSULA BEE CLUB AT DUNEDIN.

A MOST enthusiastic meeting of beekeepers and others interested in the industry of honey production was held at the "Creamery," 222, Princes-street, Dunedin, on the evening of 12th December last, the object being the establishment of a Beekeepers' Association.

After some little introductory business, one of the conveners of the meeting—Mr. C. B. Morris—addressed those present as follows:—

We all know why we are gathered here this evening. It is to start the Peninsula Bee Club, but the question may be asked some of us why we should think of starting another society when there is one in Dunedin already. I will tell you what I believe is the reason. On looking through

the rules of the Otago Beekeepers' Association (the society referred to) we find the principal if not the only object of that association is to spread a knowledge of the modern art of beekeeping in Otago. Now it must be admitted that in teaching the general public how to keep bees we are not in any way benefiting those who keep bees as a means of living. The day that sees every man his own beekeeper will also witness the death of the industry and the ruin of hundreds of professional beekeepers. My principal complaint against the majority who keep bees for pleasure is that, not only do we lose them as honey customers, but they supply their friends also, and in some cases, when they have any surplus, throw it on the market in any sort of condition, and are content with any sort of price. It is easy to conceive the ill-effect this must have. People get hold of a bad article, and fancy all honey taken by the new way is equally bad, and the prices of poorer grades of honey are often quoted to those who may wish to sell a better sort. If these beekeepers for pleasure would show a little more consideration for their brothers—the beekeepers for profit—the case would be different, but as matters stand I do not see why our business should be made common property, and when an association starts cramming it down the throats of Tom, Dick, and Harry, yet take no steps to prevent the harm I have spoken of, they are hardly worthy of support, much less can they expect it from the beekeepers for profit. I may be accused of selfishness, and some members of the Otago Beekeepers' Association will tell us that their motives are purely philanthropic, but who the especial objects of their philanthropy are, is not very clear. If they mean clerks, drapers, storekeepers, etc., I think these can get on very well without it. It is true that the British Beekeepers' Association is a philanthropic institution, but in the old country they have a class fortunately unknown in New Zealand. The cottages there are mostly agricultural labourers, men with large families and small wages, who find in their hives another means of making two ends meet. But even in England, with her immense population, we begin to hear murmurings that the thing is getting overdone. But to return to our friends, the Otago Beekeepers' Association, I was the first to suggest its formation, and after reading Rule 19, which runs as follows: 'As soon as and so far as the funds of the Association will allow, the committee shall endeavour to carry out the objects of the Association by means of lectures, demonstrations, meetings, and the circulation of scientific books and periodicals amongst the members, to spread a knowledge of all improvements in and the best possible methods of beekeeping,' consoled myself with the thought that though the Association might be the means of bringing down the price of honey, still it would do much to strengthen the infant industry in New Zealand, but gradually I have been obliged to relinquish the idea as hopeless. It remains to be seen what the Peninsula Bee Club will do in this direction, but there is no doubt that it was the want of a society

willing not only to impart knowledge but to help us in selling our produce and watch over the interests of the industry that has called this club into existence. As regards our Peninsula as a honey district I do not think a better one could be found in any part of the country—warm in winter, early in spring, with fertile soil, and devoted to dairying, the clover has every chance of growing and supplying the bees. To give some idea of what may be done my best colony returned 235lbs. of white honey last year, and yet last season was anything but a good one. In conclusion, I trust that our little club will flourish and be a means of combining pleasure with profit to its members and render assistance to beekeeping all over New Zealand; in doing which it will find a powerful ally in the New Zealand Beekeepers' Association in Auckland. The question of affiliating with that body will be brought up during the evening.

Mr. Morris's address was received with applause, and it was decided to form an association to be called the 'Peninsula Bee Club.' Two sub-committees were then elected, one to draft rules, etc., and the other to bring up a scheme for establishing a honey depôt in Dunedin. Mr. H. S. Vine was unanimously elected secretary. It was resolved to affiliate the club with the New Zealand Beekeepers' Association, the secretary being instructed to make all necessary arrangements; also, to support the following bee periodicals:—*Australasian Bee Journal*, *Gleanings in Bee Culture*, and *The Review*, and to establish a reference library as soon as funds would permit.

It was decided to hold one or more shows under the auspices of the society during the year, and the offer of Mr. Morris to deliver three lectures on beekeeping at Anderson's Bay, N.E. Harbour, and Portobello, was received with applause.

Mr. I. Hopkins, of Auckland, was unanimously elected a member of the club.

The secretary kindly placed a large room at the rear of his shop at the disposal of the society for a club-room, which was thankfully accepted.

A vote of thanks to the chairman for presiding terminated the proceedings.

## HONEY-POISONING.

IN connection with the above the following from the *New Zealand Herald*, of January 28 last, is interesting:—

"Our Waipiro (Waiapu) correspondent writes as follows on the above subject, which has excited a good deal of interest of late:—'Looking over the AUCKLAND WEEKLY NEWS of the 11th instant, my attention was claimed by an account of an inquest held at Rawhiti Island on certain natives who had died from honey-poisoning, or rather, from the vegetable poison contained in the honey at this season of the year. Such cases are not uncommon in Europe, more especially in Spain, the South of France, and other honey-producing countries, and are by no means unfrequent here (though not generally fatal) among the Maoris. I have met with many instances during the last thirty years. The natives usually, and successfully, treat the sufferers by making them inhale the vapour and smoke of burning flax, and keeping them continually moving. By this means a

heavy comatose sleep and convulsions of an epileptic form, without, however, frothing at the mouth, are usually prevented, and the patient recovers in a more or less debilitated state. I remember once treating some fifteen or twenty natives at Te Wairoa, Hawke's Bay, who were all more or less affected. On my arrival at the *kainga* (Waipawa), some were convulsed, others in a deep, heavy sleep, while a few were suffering from preliminary giddiness, headache, and impaired vision. I regret very much that I entirely forgot whether the pupils of their eyes were dilated or not. It is now about twenty-seven years ago; but I rather think they were not. I treated them with mustard emetics, strong coffee, brandy, ammonia, etc., and they all—men, women and children, pulled through, though some of the elders were very far gone, and did not recover the shock to the system for a considerable time afterwards. Subsequently I made full inquiry into the source of the poisoning, and finally traced it pretty conclusively to the "Rangiora," or Raraukau, as it is called in the Ngatikahungunu and Ngatiporon dialects, which was in flower at the time, and on which bees were feeding greedily. I am not aware whether the rangiora (*Brachyglottis repanda*), is identical with the whauriki of the north; probably it is. It is a low, rather umbrageous tree, bearing a whitish flower in season, with largely serrated leaves, having the peculiarity of being white on the under surface. Cattle and horses will eat it, and it exhibits in them, as in the human subject, all the symptoms of narcotics, acid poisoning. Of course the bees may derive the deleterious ingredient of their honey from other sources than the rangiora, but the natives look upon it as the sole origin. They also treat horses and cattle successfully by fumigation, when affected either with the rangiora poison or that of the 'tutu' (*coriaria ruscifolia*)."

## BEE GOSSIP.

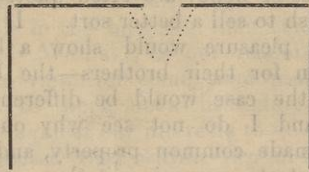
By O. POOLE.

THE EDITOR'S PROGNOSTICATION.—In the 'Seasonable Operations' for September last the Editor prognosticated a favourable honey season from the fact that the season then just closing in the Northern Hemisphere had been an exceptionally good one, and remarked that his previous experience had been that the seasons in Australasia were similar to preceding ones in the Northern Hemisphere. As far as the immediate neighbourhood of Auckland is concerned, the honey harvest so far has been a long way above the average. In one case that came under my notice, a colony situated at Ponsonby collected 73lbs of honey in three weeks, and they must have had to travel a considerable distance in search of nectar, as Ponsonby may almost be said to be within the city. Another colony, a swarm of the present season, in the same neighbourhood, has given its owner 56 sections and has since thrown off a fine swarm. In another case on the other side of Auckland—Parnell—a single colony has yielded ten or a dozen sections, has thrown off one if not two swarms, and is now busily filling up two half-stories with 28 one-pound sections each, most of which are nearly completely sealed over. Now, results like these, obtained in the suburbs of Auckland, miles away from paddocks of white clover and with scarcely any native bush in the neighbourhood, prove, I think, that the season must be an exceptionally good one. Unfortunately the excessive blooming of flax has interfered sadly with extracting in some districts, but with showery weather, of which at present there seems every likelihood, there should yet be time to harvest a crop of clover honey. Those

beekeepers having flax honey should endeavour by all means in their power to find out some means by which they may be able to run it through the extractor. I trust some will be induced to try the American plan of 'steaming' published in last month's *Journal* and inform us of the result.

\* \* \* \* \*

GETTING BEES OUT OF SUPERS.—Many of our American friends last season recommended that the bees should be made to quit the top box or super before its removal from the parent hive, thus doing away with the bother of taking each frame of comb or section out separately and brushing the bees off. One way of attaining this object was by means of the 'Reece Bee Escape,' consisting of a flat piece of wood, the same size as the top of hive, with a round hole 2in. in diameter bored in the centre. In this hole is placed a cone of wire cloth about 2½ins. in depth (some advise the use of two cones, one inside the other). This piece of wood



is placed on top of a hive body or half story, and placed between the bottom box and the super to be removed, and the bees in the super, missing the queen, quickly make their way to the bottom box and the cones of wire make it next to impossible for them to return. Of course the top box should be first of all well smoked to drive as many bees down as possible. Mr J. A. Green stated, in the November number of *Gleanings*, that he usually put on these bee-escapes in the forenoon and removed the honey the same afternoon, or else put them on in the evening and left them all night.

\* \* \* \* \*

CARBOLISED CLOTH.—This invention of the late Rev. Geo. Rayner is strongly recommended by many prominent English beekeepers in preference to smoke for subduing bees when removing supers (the recipe for mixing the acid I gave some time ago in the pages of this *Journal*). A writer in the *British Bee Journal* lately maintained that 'nothing is so effective as the carbolised cloth in the removal of sections and that the smoker is nowhere beside it.' His method of removing sections by means of the cloth may be interesting to many beekeepers, and I subjoin it.

We will suppose, for example, that a hive is 'tiered up' with three racks of sections, the top one of which is finished, and we wish to remove the same, and also insert an empty one under the other two. On a fine mid day we provide ourselves with three carbolised cloths and a cold chisel or screw-driver. Taking off the roof of the hive we turn up the edge of the quilt and roll it back, while so doing we drag one of the carbolised cloths—which has two pieces of tape tacked on each of the two top corners, into which we have hitched our thumbs—over the space uncovered. The bees have thus never been exposed and know nothing whatever about the attack until the subjugator is at work on them; they immediately run out of the top rack and commence to gorge from the uncapped sections underneath. Now insert the end of the screw-driver and pry the rack up

until it is loose, wait a few seconds, and then quickly lift it off, standing it upon its edge with the carbolised cloth towards the wind, if there is any. At once lay one of the other cloths upon the next rack, and then pry the lower one from the frames; do this gradually, and notice that you are not lifting any of the frames with the rack, as if so, the bees will instantly become irritated. Where the movement of the rack moves any of the frames, a finger should be pressed firmly upon the offending frame, and the rack raised at the same time; this will loosen the attachments. When so loosened allow a few seconds to elapse and then lift the two racks bodily, rest them on the ground or on a table near, and quickly place the empty rack on top of frames, and replace the two just removed; remove carbolised cloth, substituting the quilts for same. The job is done in three minutes, and hive covered up even before the bees in lower part, or body box, are even aware of the change. We advise having three cloths; the third one will be found to be exceedingly handy to drive any bees down that may have come up on top of frames before placing on empty rack. We must now turn our attention to the rack of sections which were first removed, and which we advised to be placed with the carbolised cloth towards the wind. To many this caution seems of little use, but we find this one of the most important 'tips' of the whole. Upon taking off a rack of sections, no matter how carefully done, a certain number of bees will be sure to be left in it; these, upon being separated from the hive, will commence to attack the cappings of the honey cells, gnawing little holes through, and so marring their appearance entirely. Now if we place the rack with the carbolised cloth towards the wind a current of air passes through it, and then through the spaces between the sections, carrying with it the vapour of carbolic acid, so driving out most of the bees or keeping those which do remain in continually on the move. Bear in mind that wherever a cluster of bees congregate between the sections after removal from hive just at the point of congregation will the cappings be damaged. Now remove each of the sections into a clean rack or tray, brushing the few remaining bees off with a single feather from the wing of some large bird; this will be found much less irritating to the bees than either a brush or the whole wing of a bird, and it is also more easily handled.

\* \* \* \* \*

PENNYROYAL A HONEY-PRODUCING PLANT.—

I had no idea until very lately of the great value of pennyroyal as a honey-producing plant. Round here there are several large paddocks completely covered with it; it is also growing by the roadside and in many odd corners. It is covered with bees from early morning till late in the evening, and as I am told it remains in bloom for something like six weeks the bees must get quite a quantity of honey from it. I should imagine it would be a capital plant to sow in waste places. In cultivated paddocks it is a terrible nuisance and difficult to eradicate.

\* \* \* \* \*

CUTTING OPEN QUEEN CELLS TO SEE WHEN THEY WILL HATCH.—

Mr. Doolittle states that a queen will hatch just as perfectly from a cell having one side gone if the same is placed in a cell-protector as she would had the cell been whole; and that frequently when he was uncertain when a queen would hatch from a given cell, he has opened it at the side near the base, looked at the immature queen, and put the cell back again; and that many times for curiosity and experiment he has opened a cell to that extent that he could turn the queen out in his hand, look her over, and place her back again, and when care was used he has never known one to fail of hatching a perfect queen afterwards. The advantages of this plan

are that after looking inside of a queen-cell several times, or turning the embryo queen out in your hands, anyone can tell to within a quarter of a day when they will hatch. 'Many times,' says Mr. Doolittle, 'we have waited for days for the hatching of a cell which finally never hatched at all on account of the larvæ dying from some cause or other.'

\* \* \* \* \*

BEE STINGS A CURE FOR RHEUMATISM.—The testimony of Dr. P. C. Gress, M.D., in *Gleanings* for December last, as to the efficacy of bee stings as a cure for rheumatism must be a convincing proof to everyone but the most sceptical of the value of the remedy. I trust the editor will reprint the Doctor's article in question in the *Journal*. Personally I have myself been cured of rheumatism by bee stings, and I know of several cases in which other persons have been similarly benefited. I have often recommended this remedy to persons suffering from rheumatism, but the recommendation has not generally been received with favour, the patient rather preferring to endure the pains of rheumatism than submit to the temporary inconvenience of bee stings.

\* \* \* \* \*

Dr. Terc, of Vienna, Austria, has also been experimenting in the same direction. He has applied the remedy in 175 cases, and has inflicted many thousand stings, and now keeps a colony of bees on his premises to be employed in this work.

\* \* \* \* \*

PROPOSED NOVEL PACKAGES FOR HONEY.—'A Hallamshire Beekeeper' suggests in the *Canadian Bee Journal* that small packages of extracted honey should be put up for sale in sausage-skins. He says the skins are the membrane stripped off the intestines of pigs, sheep, and bullocks, etc. They are very thin and light, much more so than the thinnest writing paper, and when properly prepared there is nothing offensive about them. He states that confectioners are selling them filled with candy and made to look like sausages, and that honey could be very well filled in them too, when they could be tied up into 'links' and sold either liquid or in a candied state, even in cent packages. The writer frankly states that he has never seen honey put up in the way proposed, but continues:

I have seen tons of candy done that way which is put in hot, so if sugar candy, why not honey, if need be? It seems to me calculated to be of service, 1st, for samples; 2nd, to educate the young generation to eat honey; 3rd, a very cheap and simple mode of making up small packages.

The editor of the *Canadian Bee Journal*, commenting on the proposal, says:

It is certainly an experiment worthy a trial, and we shall try our hands at it. We would also like others to experiment in the same direction and report results, not only in putting up the honey but in the placing it on the market. The great drawback to the scheme, in our minds, is the thought of having honey put up in a sausage casing, but if our English friends, who are usually very fastidious, will buy candy put up in the way mentioned by H.B.K. surely it is worth the trial. Of a verity it would solve the 5 cent package system for extracted honey.



I commend the above to the consideration of Mr Mulvany. In my opinion any plan by which honey can be put up cheaply and thereby be made more popular is worthy of consideration. It will, however, be rather a novel idea to retail honey by the foot or yard, and it will sound rather comical to hear a person asking for honey sausages. But, joking aside, it might be an excellent plan for putting up very small quantities of honey that would granulate rapidly to be sold as confectionery for children, to take the place of many of the doubtful sweetmeats with which they now regale themselves.

\* \* \* \*

SAPOLIO FOR REMOVING PROPOLIS.—Dr A. W. Tufts states that the above well-known soap is a capital agent for removing propolis from the hands or anything else with which it may come in contact, and that it will not injure the most delicate fabrics, or the skin either. I have tried the above and found it the best thing I have yet come across for removing propolis from the hands, and can quite endorse the doctor's opinion.

## Occasional Notes.

No. 15.

### BEES' WAX.

By T. J. MULVANY.

It would be interesting, if one had access to correct statistics, to ascertain what may be about the whole quantity of wax now consumed yearly, what countries are the chief importers, and from what sources they obtain their supplies. The trade is certainly carried on to a large extent in most parts of Africa. All travellers in that country make frequent mention of it. Sir Samuel Baker when he first visited Abyssinia remarked:—

The principal trade of Gallabat, which is the market place for all commerce between Abyssinia and the Egyptian provinces, is in cotton, coffee, *bees' wax*, and hides. . . . I now met an Italian merchant, with whom I became subsequently intimately acquainted, Signior Angelo Bolonesi; he had arrived from Khartoum to purchase coffee and *bees' wax*.

And of Khartoum itself he says:—

It is the general emporium for the trade of the Soudan, from which the productions of the country are transported to Lower Egypt, *i.e.*, ivory, hides, senna, gum arabic, and *bees' wax* . . . and the *bees' wax* is the produce of the only industrious creatures in that detestable country.

Richardson mentions wax among the chief articles of export from the northern Soudan, via Ghadames in the desert of Sahara, and notes that amongst the commissions which he promised to execute for the Arab Sheikh of Bournon, in case he should return from Tripoli to Moursuk, were "instructing in the Arab language for preparing indigo, and *bees' wax*, and for tanning leather."

Du Chaillu, speaking of the districts about the Rembo Ngouai river, on the west coast of equatorial Africa, says, "Ebony, barwood, India-rubber, palm-oil, *bees' wax*, and ivory, are the natural products of this region." At the Moondah

river, in the Shekiani country, "it used to afford a good deal of India-rubber, and the barwood trade is very brisk; also it produces a little *bees' wax*, and a trifle of ebony and ivory. The Cape Lopez region, he says, "produces small quantities of ivory, ebony, *wax*, etc." and after describing what stores he took with him when going inland to Goombi, he remarks, "This is an African explorer's outfit. For this I hoped to get not only friendly treatment, but ebony, ivory, *wax*, and perhaps India-rubber."

Livingstone, besides the remarks already quoted about the Portuguese trade in wax on the western coast, makes many other references to what he saw of that business in his first great journey across the continent, after leaving Loanda. Amongst these are the following:—

As the strangers had woolly hair I gave up the idea of meeting anything more European than the half caste Portuguese engaged in trading for slaves, ivory, and *bees' wax*. . . . We met many parties of native traders (near Cassange) each carrying pieces of cloth and salt, with a few beads, to barter for *bees' wax*. . . . I was trying to persuade my men to move on to the same bank in spite of these people, when a young half-caste Portuguese sergeant of militia, Cyprian di'Arbrea, who had come across the Quango in search of *bees' wax*, made his appearance, and gave the same advice. . . . They (the Amabonda) are rich in cattle, and their country produces much *bees' wax*, which is carefully collected and brought to the Portuguese, with whom they have always been on good terms.

. . . . As we came along the path we daily met long lines of carriers bearing large square masses of *bees' wax*, each about a hundred pounds weight, and numbers of elephants' tusks, the property of Angolase merchants. Many natives were proceeding to the coast also, on their own account, carrying *bees' wax*, ivory, and sweet oil. . . . On the eastern side of the Guango we passed on to the residences of some Ambakistos who had crossed the river in order to secure the first chance of trade in wax.

Passing down the Zambesi river he observes that although bees abound there, "the wax of these parts forms no article of trade, as it does in Loanda," and adds the remark, already quoted, as to the trade in the latter place having been specially developed by the demand of the churches in Brazil. Further he says:—

The reports brought by my other party from Loanda of the value of wax induced some of my present companions to bring small quantities of it to Tete, but not being properly prepared, it was so dark coloured that no one would purchase it. I afterwards saw a little at Kilimane, which had been procured from the natives somewhere in this region.

In his second expedition in this part of the country (in 1858-64), when proceeding up the Kongene branch of the Zambesi delta, he mentions that canoes came off to the ship, and that "a few brought honey and *bees' wax*, which are found in quantities in the mangrove forests."

Nowhere have I found any account given of the manner in which the natives in the interior of Africa and in other uncivilized countries contrive to separate the honey-combs from the honey, and to prepare the wax in a marketable condition. Livingstone speaks, as we have seen, of the wax being conveyed from the interior to the coast "in large square masses of 100lbs. each," and we all know that it is not an easy matter, even with convenient appliances, to convert the material of

honeycombs into such blocks of clean marketable wax. That it must be prepared with some care is evident from the fact of his people not being able to dispose of the badly-prepared wax at Tete, and from the desire of the Arab Sheikh at Bournon to obtain from Richardson full "instructions in the Arabic language for preparing bees'-wax." It is not, however, very clear whether the large blocks of wax referred to by Livingstone, were prepared in that manner by the natives, or perhaps obtained from them in the interior in small quantities, and re-melted by the traders before being conveyed to the coast in the way described.

India and China are now amongst the most important of wax-producing countries, and were probably amongst the earliest. It is stated that Alexander, when he invaded India by its north-west frontier (in the fourth century before the Christian era) imposed a tribute partly payable in wax. As to modern times, Nolan, in his "History of the British Empire in India" (1859) gives a list of exports of India, quoted from Stocqueler, in which both *wax* and *wild honey* figure; and in a Parliamentary return of the imports into Great Britain and Ireland in 1856, from places within the limits of the East India Company's charter, there is an item of 12,761 cwt. of "unbleached wax." In Vol. i., p. 408, he says:—

Wax is a valuable article of Indian foreign trade. From China the best description is obtained, but India is rich in this product, which is also of excellent quality. About 300,000lbs. of bees'-wax are annually shipped from Madras.

He also mentions that in the treaty concluded between Great Britain and the Kingdom of Siam, in 1856, bees'-wax is amongst the articles which shall be free of import duty into Siam, but subject to an inland or transit duty of one-fifteenth.

Colonel Meadows Taylor, a good authority about the natives of Southern India, describes the Belduis, in their aboriginal condition in the forests of Travancore and Mysore, as "subsisting upon fruits, roots, and the like, and collecting *honey and bees'-wax*, and other produce, to exchange for such articles of clothing and such necessaries as were indispensable."

In the Malay Archipelago also, Wallace, whose work I have already so often quoted, found an active trade in bees'-wax. Both in Borneo and Timor the natives are induced to venture upon attacking the nests of the formidable *Apis dorsata* in the manner so well described by him, more for the sake of the valuable wax which they can so readily sell to the traders, than for the honey and bee larvæ, of which they are, however, very fond. As to Borneo he remarks:—

Almost all the people, however, were away on some excursion after edible birds' nests or bees'-wax, and there only remained two or three old men and women with a lot of children.

And at Macassar (Celebes Island)—

Fortunately for me I was in one of the emporiums of the native trade of the archipelago. Rattans from Borneo, sandal-wood and bees'-wax from Flores and Timor, tripang from the Gulf of Carpentaria, cajuputi-oil from Boura, wild nutmegs and mussoi-bark from New Guinea, are all to be found in the stores of the Chinese and other merchants of Macassar.

Recent explorers of New Guinea, both English and German, speak of bees, honey and wax seen in that country in a manner which proves that some race of bees have now established themselves in the interior (probably the ordinary German or black bee, which may have been introduced there since Wallace's time, 1854-62), so that another large territory is now added to those which may be reckoned among the sources of the wax of commerce. The continent of Australia and the islands of New Zealand are now also well supplied with bees, both those kept in a domestic state and those which have spread themselves through the bush and count as "wild-bees." These countries could therefore supply a large quantity of wax, but there does not appear to be much done in the way of utilizing the wax of the wild-bees. In New Zealand at least, gum-digging seems to have more attractions for the natives than bee-hunting and wax melting, and it is an occupation which would not remunerate European settlers with the present standard rates of labour. The wax to be obtained from these countries will therefore be almost exclusively the product of regularly established apiaries.

The modern improvements in apiculture tend towards a considerable reduction of the *proportion* of wax to honey in the produce of apiaries. Not only are the same frames of comb used over and over again in the working for extracted honey—the source of superfluous wax being thus confined chiefly to the uncapping of the sealed honey—but a large portion of the wax so obtained being required for conversion into comb foundation, is no longer available for the market. On the other hand, the actual quantity of honey produced by the so-called domesticated bees, under the same improved system of working, is so enormously increased that the actual quantity of wax obtainable in that way must still be considerable (probably between one and two per cent. of the production of extracted honey), and will no doubt be increasing. It would appear, however, that the great bulk of the wax of commerce is at present, and is likely to be for a long time, obtained from the nests of the wild-bees in comparatively uncultivated regions.

(To be continued.)

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## Correspondence.

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### INTRODUCING QUEENS.

TO THE EDITOR OF THE AUSTRALASIAN BEE JOURNAL.

SIR,—I got the queens all right and in good trim. I introduced my own all right and assisted Mr. Lindsay to introduce his, but unfortunately he lost two. It was, however, due to our own fault, as we can see now. The queens I got from you last year did well, and my blacks are far behind them this year. I was just needing a change.

1. When taking a young queen out of a nucleus, does it do to give them a few eggs from your choice queen to raise one for themselves?

2. Which is the best work on queen rearing?

Kindly reply through the *Journal*.

JOHN ALLEN

Oamaru, 23rd December, 1889.

[We are sorry you should have been so unfortunate in introducing your queens, but we are glad to hear a good report of the Italian queens supplied you last year. In reply to your queries—

1. It is not advisable to raise queens except in full colonies. It would be a very bad practice, except under exceptional circumstances, to give a nucleus colony eggs for the purpose named.

2. Taking all things into consideration, we consider Aley's system of queen rearing to be the best, the substance of which is given in the *Australasian Bee Manual*, and is the plan we ourselves adopt. Aley's *Queen Rearing* can be obtained at this office for 6s. 10d. post free.]

## BEEKEEPING IN NEW SOUTH WALES.

TO THE EDITOR OF THE AUSTRALASIAN BEE JOURNAL.

SIR,—Just a few lines from this part of the globe to let you know how we are getting on. The season is a good one, and consequently, at the present time the bees have a good supply of honey. The large gum trees along the banks of the river have been in flower, and have proved of great advantage to beekeepers. The bees have also been gathering extensively from horehound and lucerne. I sowed some buckwheat as an experiment, which is now a mass of blossom, and in the morning it is booming with bees. I am glad to say I have got rid of the foul-brood nuisance. I think if due precautions were observed in keeping the hives thoroughly dry in the winter, we would not hear so many complaints about the ravages of this disease. Everything points to the honey yield this year being a good one, although honey will be scarce, as there was such mortality among the bees during the winter. There is already a fair demand for it.

The honey-poisoning cases in New Zealand have attracted attention over here. It seems somewhat strange to me, as one would think the bees would not interfere with poisonous flowers. I have been connected with bees one way and another for the last twenty-five years, but I have never heard of a case of poisoned honey, or ill effects from eating it. I have felled trees in the bush, many miles from any habitation or cultivated fields, but never found the honey to be detrimental to health. It will be interesting to read the report from the analytical chemist, as the case wants thoroughly sifting, so that the public may be made fully acquainted with the facts, and not garbled statements, in connection with this unfortunate affair.

Wishing you every success,

I am, yours sincerely,

W. SHAW.

Denison-street, Mudgee, N.S.W., January 22, 1890.

## Reports.

### FROM OAMARU.

BEES are a complete failure here this year. I believe I shall have to feed instead of getting some surplus honey. My bees at home have not swarmed yet, and those in my country apiary all swarmed and I amalgamated the swarms. By equalising them I think they will be able to pull through the winter with what stores they may get from the thistles, the only thing left to us as forage. There is neither grass nor clover owing to dry wintry wind and with especially cold weather at nights. The few showers we have had have been of little benefit, owing to the frequency of hot winds. I am, however, glad to see that in other districts bees are doing very well.

JOHN ALLEN.

Oamaru, January 21, 1890.

## Extracts from Foreign Journals, etc.

### THE VENTILATION OF HIVES IN WINTER.

AIR which has been breathed is changed in the following particulars:

1. Whatever the temperature of the external air is, that which has just been breathed is nearly as hot as the blood.

2. However dry the external air may be that which has just been breathed is quite or nearly saturated with watery vapour.

3. Air which has just been breathed has its carbonic acid increased by more than one hundred times, and it has its oxygen decreased by about one third. It has added to it animal organic matter of a very injurious nature.

We so often read and hear of the impurities of breathed air that it has become an old story. A few simple experiments will perhaps assist in fixing in the mind some of the changes which take place in its composition.

If we breathe upon a looking-glass at the ordinary temperature, we shall see the vapour of our breath condensed on its surface. In very severe weather the vapour of the breath of the bees is frozen into hoar-frost on the inner walls of the hives, and on a cool spring morning we often see the condensed vapour of their breath trickling down the alighting board.

I have here a gem jar, holding about three pints, and having a mouth about 2½ inches in diameter. I let this piece of lighted candle down to the bottom of the jar, and you see it continues to burn as briskly as ever. I now breathe through a tube into the jar, delivering the breath near the bottom, so as to not blow out the flame. You see the flame soon becomes dim and goes out. Flame dies out when the proportion of oxygen is reduced to 18½ parts in every 100 parts of air instead of 21 parts, the normal quantity.

In this bottle I have lime water, which you see is quite clear. I now blow air from the lungs through the lime water by means of a tube, and you notice the water becomes milky in appearance. The milkiness shows that the carbonic acid of the breath has united with the lime in the water, forming chalk, and the formation of so much chalk shows that the carbonic acid must have been present in excessive quantity; because had I blown air into the lime water from a bee-smoker, no perceptible change would have taken place.

But it may be said that these experiments have been made with the human breath. Have we any evidence that the breath of bees is so impure that it is injurious to bee-life? The maximum amount of impurity admissible in an apartment occupied by people is 6 parts to 10,000 parts of air. Mr. Cheshire has ascertained that for bees not more than 5 parts of impurity in 10,000 are admissible, and to keep the air in this state of purity he finds that all the air in the hive must be changed every half hour, assuming the bees be so dormant that they consume less than one pound of stores per month, and that the air contained in the hive does not exceed half a cubic foot. Mr. Cheshire's statements might be confirmed by those of other authorities and by facts observed by practical bee-keepers. As our time is limited, I shall not discuss any further the necessity for hive ventilation, but shall proceed at once to consider the means by which it may be best accomplished.

We have already seen that a lighted candle will continue to burn in the jar when its mouth is open full size. I now insert a perforated cork so as to reduce the opening to a diameter of about one inch, and again introduce the lighted candle, the jar being in an inclined position; but you see the flame soon dies out. After emptying the jar I again introduce the lighted candle, and at the same time I insert a piece of cardboard into the mouth of the jar, dividing the opening horizontally. You see as a result that, instead of going out, the candle continues to burn. I remove the cardboard, and at once the flame becomes sickly; I insert it again and it brightens up, and these changes can be repeated as often as I choose to take out and put in the cardboard.

If while the cardboard is in place I cause a little smoke to rise close to the lower edge of the opening, you will see that it is drawn into the jar by an ingoing current of air. By holding the hand above the cardboard, the warm out-going current is distinctly felt.

A friend informs me that in one of the mining districts a horizontal tunnel was run into a mountain side. After going some distance, the air became so warm and foul that work had to be suspended. A trench one foot deep and one foot wide was cut in the bottom of the tunnel, and was covered with plank. A current of fresh air set in through this channel and drove out the warm impure air from the tunnel.

A difference in the temperature of two bodies causes a difference in their density, and a difference of density causes currents, if the bodies of air are free to change places, just as certainly as oil rises to the surface of water. How is it then that currents did not take place in the tunnel until the channel was made in its bottom? The reason seems to be that the friction between the ingoing and outgoing currents counteracted their force, and there was no ventilation except by slow diffusion; but when the covered passage was made at the bottom, the retarding effect of one current on the other was removed, and ventilation took place. In the case of the jar the piece of cardboard separated the currents, and ventilation took place there also. I shall show presently that hives fail to be well ventilated for the same reason when there is only a single entrance and that a narrow horizontal one at the bottom.

We have now learnt something about air that has been breathed. We have learnt that a candle will not continue to burn in a jar unless a constant supply of fresh air is kept up; we have learnt that two currents of air in opposite directions will not readily pass each other through a small opening; and we have learnt that they may be made to pass each other by inserting a partition to keep the currents from interfering with each other.

I have here an eight-frame Langstroth hive, covered by a solid board, and having a rim two inches deep. The top, body, rim, and bottom board are all clamped together with Vandusen clamps, all the joints being made air-tight with rubber packing. You see the entrance was originally the full length of the front of the hive and half an inch deep; but for the purpose of these experiments I have reduced it to four inches in length. This we shall call entrance No. 1. I have a similar entrance directly below it, cut out of the lower edge of the rim. This is entrance No. 2. I have another of the same size cut out of the lower edge of the rim. This is No. 3; and I have an opening No. 4, running vertically from the middle of No. 1; the size is three inches by five-eighths. You observe I keep these numerous entrances closed by slides when not in use. I now suspend in the hive a two-quart tin pail of hot water, the pail being coated with blacking on the outside to make the heat radiate more readily. To make the currents of air from the hive easily seen, I shall mix the air in the hive with smoke. I open entrances No. 1 and 3, and you see quite a volume of smoke escaping from No. 1; I close No. 3 and open No. 2, and the volume of smoke continues to come from No. 1. By means of a strip of smoking cotton velvet it can be shown that a strong current of air sets into the hive through No. 2. After a little I again close No. 2 and open No. 3, and we still get a dense smoke from No. 1; I suddenly close No. 3, and No. 1 ceases to act, open it again and away goes the smoke. This is like the case of the candle going out in the jar with the reduced opening. No. 3 being still closed, I insert a piece of tin into No. 1, dividing it horizontally, just as we inserted the cardboard into the mouth of the jar, and just as occurred in that case, the current sets outwards above the partition and inwards below it. This is more clearly shown when I open the vertical opening No. 4, all the other openings being closed. You now see the smoke pouring out of the upper part of No. 4, while at the same time a strong current is rushing in at the lower part. This is plainly seen when we test the current with the smoking velvet. Open No. 3 and the whole of No. 4 is filled with outgoing smoke; close it again and at once the outgoing smoke is confined to the upper part of the opening.

In ventilating buildings it is found that, in order to get a quantity of air into an apartment, it is necessary to get an equal quantity out, and *vice versa*. Our experiments teach us that the same rule holds good in regard to ventilation of hives.

If we had a covered passage from No. 2 to near the back of the hive, like the trench in the tunnel, the air thus introduced would sweep the hive from back to front on its way to the place of exit at No. 1.

But the same object is much more easily obtained by keeping No. 3 open.

I assume that no argument is necessary to show the advantage of having a rim to raise the combs above the bottom board. If it is placed between the hive and the bottom board, the Vandusen clamps do away with the objection to loose bottom-boards, and the cost per hive is less than six cents. Having a rim we learn from these experiments that good lower ventilation is most easily obtained by leaving the ordinary flyhole open above the rim, while at the same time we have an opening in the lower edge of the rim at the back of the hive.

The greatest obstacle to free ventilation of hives by a single opening is the friction of the currents around the edges of the openings, and the friction between the outgoing and incoming currents. In our experiments we have seen that the friction between the currents themselves is much greater than it is between the currents and a partition separating them.

Since the currents are retarded in proportion to the length of the lines by which they are bounded, the best form for a single opening is that which has the shortest border for a given area and at the same time the shortest horizontal section, because, as we have seen, the friction between the currents is along a horizontal line. A horizontal flyhole the full width of a Langstroth hive, say 12 inches long and half an inch deep, gives an opening 6 square inches in area with a border 25 inches in length and a line of friction between the currents 12 inches long. A square opening of the same capacity has less than 2½ inches for friction between the currents. A circular opening of the same area has less than 8¾ inches for friction about its circumference, and about 2¾ inches for friction between the currents, and a vertical opening of the same capacity, say 6 inches high and 1 inch wide, has 14 inches for border friction, and only 1 inch for friction between the currents, on account of its height and the small amount of friction between the currents. This form of opening is more efficient for ventilation than any of the others. Leaving dead bees and the debris of the hive entirely out of question, the worst possible form of single opening for lower ventilation is the one which is most convenient as an entrance for the bees, viz., a narrow horizontal entrance at the level of the bottom board. Some of the most intelligent and observing beekeepers have found this to be the case, and are now making their entrances deeper. A few years ago Dr. Tinker made his entrances half an inch deep, the hives being sealed at the top. Now he finds that to secure the best results in outside wintering, he must have the entrance 1¼ inch deep by 8¾ inches long.

But all are not agreed that it is the best way to have hives hermetically sealed at the top and ventilated below only. Probably a large majority of beekeepers either favour direct upward ventilation—that is, air admitted at the entrance and passed out at an opening for the purpose somewhere in the top—or more slowly passed off through what are often improperly called absorbents. Many favour the latter because they believe the foul air is in this way carried off while the heat is retained. I have not made any experiments to find out how fast air passes through cushions and quilts, but I fear the impurities may not be carried off as fast as they are produced, and think it safer to combine with the ventilation through top packing the lower ventilation already described. I have ascertained beyond any doubt that a solid board on top of a hive will conduct away the heat of the bees faster than will a quilt containing say a pound and a half of wool.

The theoretical objection usually urged against direct upward ventilation is that the warm air is carried off too rapidly, and in consequence the bees suffer. But many

of the most experienced beekeepers have obtained the very best results by slipping the honey-boards forward a quarter of an inch, or by raising them one-eighth of an inch, when placing this hive in the cellar. In such cases the air enters through the flyhole and escapes through these small openings at the top. I am personally acquainted with a clergyman, an old Lindsay boy, who uses direct upward ventilation, and has not lost a stock in wintering for the last seven years. He has now 66 stocks in the cellar, last year he had 55, the year before 46, and 36 the year previous. He regulates the size of the entrance according to the strength of the stock, an important matter in any system, but generally his entrances are reduced so as to be equal in area to one square inch. His hives are of the Richardson pattern, having hollow walls rising 3 inches above the brood nest. In his honey-boards there is a  $1\frac{1}{4}$  inch feed-hole, covered with wire cloth. I have here a piece of tin, having the edges bent at right angles one-eighth of an inch high, forming three sides of rectangular tube,  $1\frac{1}{4}$  inch wide by one-eighth deep. Three inches from one end the edges are notched, and at this point you see the tube is bent at a right angle. He places this tin, with its open side down, over the feed hole, and covers up the whole top with the sawdust cushion. The three inches of tube bent at right angles fits snugly against the wall of the hive, forming a continuous air passage from the feed-hole to the outer air. The area of this passage is only a trifle over three-eighths of a square inch, but, when we consider the probable speed of the current, started as it is from the feed-hole directly over the cluster, the tube is probably large enough. I now place the tube in position and you see the smoke issuing from it pretty freely. I close the inlet at the bottom and you see the current is stopped, even at the top of the hive. I open the inlet again and test with the smoking velvet, and you see the smoke is drawn in with the ingoing current. This method has been so satisfactory with him, and agrees in principle with methods so successfully practised by others, that I feel no hesitation in saying bees may be safely wintered by admitting air through a small entrance and allowing it to escape through a small outlet at the top.

I have here a straw hive in which I place the hot water and roll of burning cotton as I did in the Langstroth. You see the smoke comes out all over. There is ventilation here in all directions except through the bottom board. If this is such a 'sieve of a hive,' is it not probable that the bees would suffer from cold? I made three separate tests to determine this question, starting with equal weights of hot water in the straw hive and in this Langstroth hive. I found in each case that the water in the Langstroth hive cooled quicker, although the extent of cooling surface and cubic capacity of the straw hive is much greater.

In these experiments I have presented ocular evidence as to the way in which changes of air take place when hives are well ventilated, and I have shown the causes which prevent a free interchange of air when they are badly ventilated. I trust that there may be enough of novelty in this method of treatment to arouse interest in the question, and that the facts brought out may furnish food for thought and lead to further investigations resulting in something more being added to the general store of information relating to the wintering problem.—S. CORNELL in *The Canadian Bee Journal*.

### CONVINCING TESTIMONY OF THE VALUE OF BEE-STINGS AS A REMEDY.

HOW THEIR DIRECT APPLICATION CURES INFLAMMATORY RHEUMATISM; BY A COMPETENT PHYSICIAN.

FRIEND ROOT, — I have seen several statements in *Gleanings* in regard to rheumatism being cured by the sting of bees. I will now give you some of my experience and a few facts which have placed *apis mellifica* very high in my estimation as a rheumatic, and also as a kidney and bladder remedy. I give it in many cases for these diseases when indicated.

1. I do not recommend it in *all* cases; but it is worthy of a trial; and if it gives relief it will nearly always effect

a cure if continued for some time. As rheumatism is often caused from diseases of the kidneys and bladder, I deem it a favourable sign when the flow of urine is increased, if ever so little, by its use. It matters very little which way it is introduced into the system, just so it gets there. I have used the tincture many years in my general practice, and I should not like to dispense with it. Its use has a broad field in the healing art, and is not confined by any means to the above-mentioned diseases. In the treatment of rheumatism I should rather prefer the direct sting from the bee, if it were possible to apply unbeknown to the patient, which I have succeeded in, in a few instances, for I fear that, to make public the mode of application, would have a tendency to elicit unfavourable comments from the medical fraternity and a criticising public.

In the month of January, about twelve years ago, I was called to the country to see Mr J. B. I found him confined to his bed with inflammatory rheumatism. The attack was very severe, considerable swelling and intense pain. Not having any *apis mellifica* in my case, I inquired if they had any bees. I was answered they had, and I requested to be taken to a hive. I procured a number and returned to my patient. I gave him one sting before he knew what I was doing. He said 'Oh my! Dr Gress, do you intend killing me?' I assured him it was necessary to give him relief in that way or he would have to continue suffering until I returned to town and procured other remedies. After arguing a few moments I gave him a second pop, and then again a third, fourth, fifth, and I think in all about eight, when he commenced to enter serious objections, so I patiently awaited results, which soon followed in the way of relief of pain, free secretion of urine, and perspiration. I left one hour after, with advice to use the little doctors in the morning. In the afternoon he came to town to see me, and during our conversation he stated he would like to have me make a statement in the paper in regard to the great benefit he had derived. I objected, for reasons before given. But I am frank to admit that I never attended him for any more rheumatism, as the bees were always his doctors in that particular disease.

My second experience was with a negro who applied at the office, suffering with inflammatory rheumatism. I requested him to call at two o'clock, as I had just received a cal. While at home at dinner time I procured some of my cross Italian bees, and on returning to my office I turned them loose in my consultation-room, so I could go in and pick them up as I should require them. I examined the limb, found it swollen and painful. Using his own words he said, 'Doctor, if you don't do something for me I shall be compelled to get some one to carry me home. I am growing worse every minute.' I told him I would use the medicated needle, as it would act quick. I secured one of my little doctors, hiding it with a piece of tissue paper. I quickly applied it to a sensitive spot. Says he, 'Boss, that needle am pretty sharp,' and began to scratch the place, while I went in for another Italian bee. Returning I gave him another pop. He then wanted to see the needle. Of course I did not show him what I had used. I then went back to 'put some more medicine on the needle,' and on my return he exclaimed, 'Say, boss, that pain am getting better; but it am smarting just like the sting of a wasp.' I made no answer, but kept on applying until I had stung him about ten times. Perspiration now commenced to start, when he got up, stating he was free from pain. He called the next day, stating he gradually grew better, and there was scarcely any swelling left. I have used the tincture of *apis* with almost the same results, although for prompt relief I prefer the 'little doctors.'—P. C. GRESS, M.D., in *Gleanings*.

### GLUCOSE.

THE process of making glucose will be best understood by following the corn from the time it enters the factory until it runs out at a spigot, a clear, odourless liquid. The shell corn is first soaked for several days in water to soften the hull and prepare it for the cracking process. The softened corn is conveyed by elevators to one of the highest stories of the factory and shovelled into large

hoppers, from which it passes into mills that merely crack the grains without reducing them at once to a fine meal. The cracked grain is then conducted to a large tank filled with rinsing water. The hulls of the corn float at the top of the water, the germs sink to the bottom, and the portions of the grain containing the starch, becoming gradually reduced to flour by friction, are held in solution in the water.

By an ingenious process both the hulls and the germs are removed, and the flour part now held in solution contains nothing but starch and gluten. This liquid is then made to flow over a series of tables, representing several acres in area, and the difference in the specific gravity of the two substances causes the gluten and the starch to separate without the use of chemicals. The gluten is of a golden yellow colour, and the starch snow white.

By the time gluten has been completely eliminated the starch assumes a plastic form and is collected from the separating tables by wheelbarrowsful and taken to a drying room, where it is prepared as the starch of commerce or is placed in a chemical apparatus to be converted into glucose. The conversion is effected by submitting the starch to the action of a minute percentage of dilute sulphuric acid, which, without becoming a constituent part of the compound, produces by its presence merely a miraculous chemical change. This change from starch to glucose is a gradual process, and has four or five well defined stages. On the addition of the acid the first change results in the production of what is known to chemists as dextrine. If at this stage the acid is neutralised by the addition of lime and water, the process is choked and dextrine is the permanent product.

If the process is allowed to go on, the acid, however, works a second change, and maltose is the result. Here the process can, if necessary, be interrupted by neutralising the acid by means of lime water, and for some purposes in the art of brewing this is sometimes done. The third and important stage in the chemical change wrought by the action results in the production of glucose, and just here is where the greatest skill of the chemist is required.

The product must show by test that it responds to the chemical formula  $C_6, H_{12}, O_6$ . By comparing this formula with that of starch, which is  $C_6, H_{10}, O_5$ ,—that is, six parts of carbon to ten of hydrogen and five of oxygen—it will be seen that the sulphuric acid has not added to the starch, but has taken up two parts of hydrogen, and the only gain in the starch is one part of oxygen. The lime water introduced to neutralise the acid forms with it a product called gypsum, which can be removed from the glucose without leaving any appreciable trace.

The fourth stage in the chemical process results in crystallizing the liquid, and then the product is called grape sugar. There is a fifth stage, in which caramel, or burnt sugar, could be produced were it of any commercial value. The gypsum, or sulphate of lime, formed by the neutralising lime water and sulphuric acid, sinks by gravitation to the bottom of the vessel and the supernatant saccharine liquid is drawn off from the top. This is almost pure chemical glucose, but it is still subject to a filtering process through bone black, and refined in the same way as cane sugar is refined. The bone black has anything but the appearance of a purifying agent, but possesses the peculiar property of attracting to itself all colouring matter.

The glucose, passing through a labyrinthine system of filtering, is drawn off through spigots in the lower part of the building, and is ready to be shipped away in barrels. To give the glucose the appearance of cane syrup, as well as to impart some of the characteristic taste, a small amount of that syrup is added to suit the fancy of buyers.

To make grape sugar, the glucose is dried in rapidly-revolving vessels, from which much of the moisture escapes by virtue of the centrifugal force. Neither the glucose nor the grape sugar is used for domestic purposes, although either one is about two thirds as sweet as the sweetest cane sugar. Glucose is chiefly used for fermenting purposes, and of late years has become valuable to the brewer in making beer and pale

ales. It is also largely used in mixtures with cane syrups and molasses, and esteemed more wholesome than the cane product, which is at best only a side product or residue in the manufacture of sugar.—*American Analyst.*

## THE RECENT HONEY - POISONING CASE.

AT the interview with the Hon. Mr. Mitchelson, Acting Premier, with regard to the above, it was arranged that we (Mr. G. L. Peacocke and ourselves) should forward any suggestions we might have to offer that would assist the analyst in his examination of the samples of the alleged poisonous honey sent to him for analysis. Accordingly the following letter has been forwarded:—

DEAR SIR,—In accordance with your suggestion at our interview with reference to the recent honey poisoning case in the North, I write to explain as well as I can the difficulties connected with an investigation into the matter which shall lead to any definite result. The reason for our desire to have these cases of alleged poisoning by honey scientifically investigated is the certain injury that will be done to the beekeeping industry in this country if an impression should be created in the minds of those likely to buy New Zealand honey that there were certain serious risks attending the use of such honey. As much as upwards of three hundred tons of honey has been produced in one season in this colony, and within the last few weeks an order for five tons in one line was received by Mr. Hopkins, of Auckland. Our honey is gradually acquiring an excellent reputation abroad, and there is every prospect that a large and important export trade in this article will be established both with Australian and European markets. In view of these facts, we venture to think it important that no false impressions shall get abroad as to the dangerous character of New Zealand honey.

With regard to an analysis of samples of the honey from eating which the death of certain natives has been caused, I would say that it seems unlikely that any ordinary chemical analysis would reveal the nature of the poison which the honey is supposed to contain. The analyst would be seeking for something of which he could not know the specific chemical properties, and therefore the tests for certain known poisons would of course be useless if applied in this case. Even if the different constituent parts of the alleged poisonous honey were chemically separated, I have the authority of an expert in chemistry for thinking that it would be almost impossible to take one of those parts and say, 'This is the poison.' There is reason to believe that the poisonous agent in this honey is volatile, and that it evaporates after a time, so that honey which to-day might produce poisonous effects, two months hence would be perfectly innocuous (see Father Madan's report of Matata cases). It will thus be easily understood that in the process of analysis the toxic agent, whatever it is, might be driven off, particularly if heat were employed, the result being that the honey would appear to the analyst exactly the same as any other non-poisonous honey. It appears to me (speaking as a non-scientific man) that we might arrive at some definite conclusion by negative proof. For instance, it is believed by the Maoris that the honey which poisons is gathered from certain flowers, viz., the *wharangi*, the *whariki*, and the *puawangana*. It would be a step towards proving the truth or falseness of this idea to find out whether this honey, of which samples have been sent to Wellington, has been gathered from the plants named. This could be ascertained by a microscopical examination of the pollen grains of the flowers in question and of the pollen grains contained in the samples of honey procured for analysis. If these, after comparison, were found to be identical in shape, it would prove that the honey came from one or other of the suspected flowers, thus to a certain extent strengthening the popular theory. But if it were found that pollen corresponding to that of the flowers was not present in the honey, then we should

know that these plants had nothing to do with the poisoning. I may say here that honey always contains more or less pollen of the flowers from which it is gathered.

It has been suggested by some that the pollen grains of these flowers, and not the nectar they secrete, may cause the poisonous effects; but if, as appears, the poison is volatile, this can scarcely be the case.

It is possible that not nearly such violent effects would be produced by the eating of this honey on anyone who only consumed it in moderate quantities. The natives, I am told, when they find honey in the bush, devour it in large quantities, swallowing the comb with the honey. But what amount of the poisonous honey would suffice when eaten to produce injurious effects could only be ascertained by experiment: a special point I would commend to the attention of anyone appointed to investigate this question.

If a careful *post-mortem* examination had been made of the body of one of the late victims, as well as an analysis of the contents of the stomach, an important light might have been thrown on this obscure question. I would, therefore, respectfully suggest that should another case of the kind unfortunately occur, steps should be taken to have such examination and analysis made.

My object in submitting to you the foregoing remarks, in which Mr. Isaac Hopkins, the well-known apiarist, concurs, is merely to indicate the reasons which appear to us to justify our desire to remove any unfounded apprehension in the minds of home or foreign consumers of New Zealand honey on account of the recent so-called honey-poisoning cases; and to point out the difficulties which have presented themselves to us in our endeavours to have this matter thoroughly investigated so as to lead to some definite conclusion on the subject. As a non-scientific man, I would not presume to instruct the scientists to whom you may refer the question. But I would venture to suggest that by consulting with more than one of our College Professors of Chemistry a means of arriving at some practical result would probably be devised; whereas a simple analysis of the samples of suspected honey would probably lead to no increase of knowledge with regard to the points upon which definite information would be found valuable.

I have only to add that we have taken steps to have specimens of the flowers supposed to yield poisonous honey sent to Dr. Sir James Hector, besides the samples of honey procured from Matata and the Bay of Islands, as well as the painstaking report of Father Madan on the Matata case.

I have the honour to be,  
Sir,

Your obedient servant,

GERALD L. PEACOCKE.

To the Honble. E. MITCHELSON,  
Acting Premier,  
Wellington.

#### A HOME MARKET.

THE bee papers, and many beekeepers, have advertised to sell our honey in the home market. This is a question, however, that has two sides to it. We find our home market fairly glutted with honey from the small producers, at a very low figure. Of course much of it is not in very good shape, but all the same we are expected to compete in prices with it. This we prefer not to do, as we put our goods up in the neatest possible manner, and we can as well send it to some market where the crop is short, and realize considerably more for it. Now what is the use of trying to retain a 'home market' for our honey when we can do better by sending it to some reliable commission house? If our goods are all right they are usually soon disposed of, and we have found commission men as prompt in making returns as other dealers. Then, too, many of our home dealers expect us to wait on them for the pay till the honey is sold, and we have known such in the meantime to fail and not pay at all. Again some dealers will expect to pay only in trade, at their own prices, which is not always very satisfac-

tory. Then, again, some are inclined to kick when we come to settle, because some other 'honey man' has been around selling some inferior grade for less. Now when we send to some good house in a city where honey is wanted we avoid all this; get our money in a bunch, and perhaps find that we have realized considerably more than if we had forced it on a glutted home market. Another nuisance is peddling honey from the house. Many beekeepers put up signs at their front gates, 'Honey for Sale,' to attract any chance passers. We used to do this, but stopped it some years ago. We found that all kinds of people would stop, inspect the honey, waste an hour or so of our valuable time, and perhaps go off saying that they could buy honey for the same, or less, in some store. Then people would come Sundays and at all unreasonable times, and the amount of such sales were usually very small. Of course it is all right to supply neighbours with what they want, and to sell to them at very reasonable rates, but to advertise and sell cheap, to anyone, thus competing with and underselling storekeepers, whom we may have supplied, usually does not pan out very well.—C. H. DIBBERN in *Western Ploughman*.

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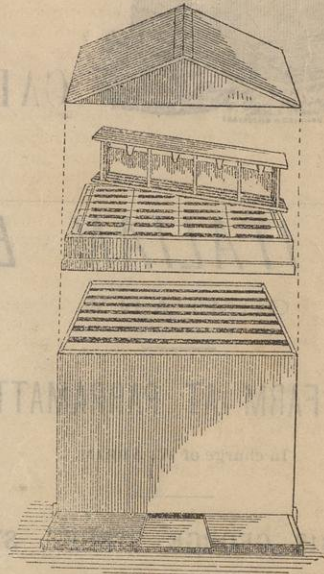
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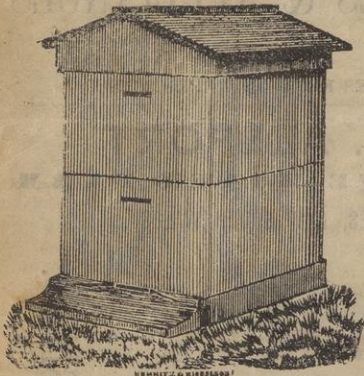
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