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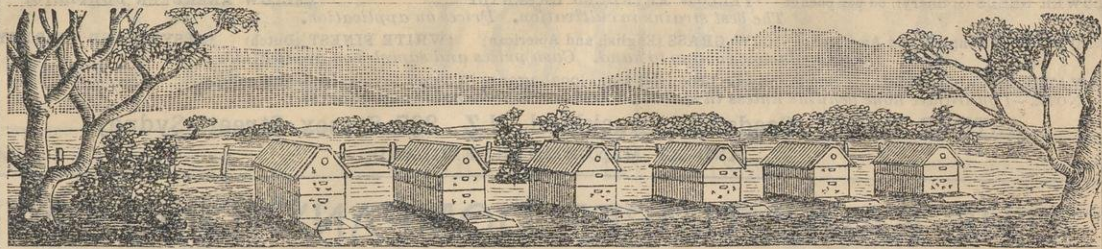
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THE AUSTRALASIAN

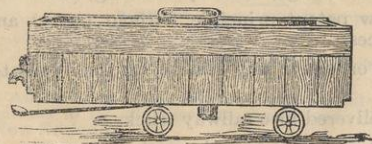
BEE JOURNAL



No. 11. Vol. II.]

AUCKLAND, N.Z., MAY 1, 1889.

[PUBLISHED MONTHLY
SIXPENCE.]



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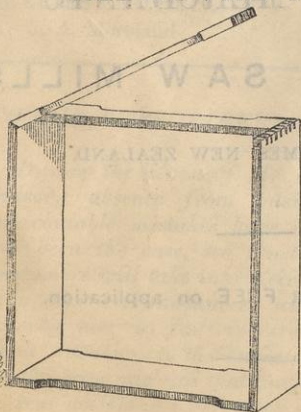
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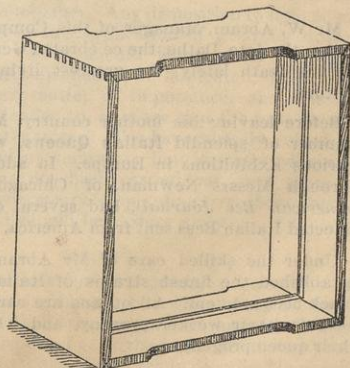


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THE AUSTRALASIAN

BEE JOURNAL

No. 11. VOL. II.] AUCKLAND, N.Z., MAY 1, 1889.

[PUBLISHED MONTHLY.
SIXPENCE.]

The Australasian Bee Journal.

PUBLISHED MONTHLY.

I. HOPKINS ... EDITOR AND PROPRIETOR.

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Editorial.

SEASONABLE OPERATIONS FOR MAY.

ALL preparatory work for wintering the bees should be finished this month, everything being done to make them snug for winter. When due attention is not given to this work at the present time, it will result in considerable loss to the owner. Winter, so far as the bees are concerned, commences about the third week of this month, and from that time until the spring work commences the bees should enjoy, as far as possible, a period of rest without undue disturbance or manipulation. If the instructions given in "Seasonable Operations" for previous months have been faithfully followed, the beekeeper should experience no difficulty in successfully wintering his bees. Where, however, the work has been neglected, no time should be lost in completing it.

UNITING.

One of the most necessary conditions of successful wintering of colonies is that they should be strong. A weak colony during the winter is both a trouble and a nuisance, and in nine cases out of ten is a source of danger to the apiary. They often induce robbing, and even if they survive the winter, they are pretty certain to succumb in early spring. Consequently, when such exist, the evil should be remedied by uniting two or more together, which will not consume more food during the winter than a weak one, while in the spring it will be in its normal condition for brood-rearing, and its strength will enable it to take advantage of any early honey flow. When the hives to be united stand a distance apart, they should be gradually moved toward each other, say two or three feet each evening, until they are close together. The least valuable queen should be removed and saved for a few days in case it should be required, and the other queen placed in an introducing cage in the hive in which the bees are permanently to remain. The operation of uniting should be performed in the evening, just before dusk, when both hives should be smoked, and the combs from the weaker colony should be inserted with adhering bees, alternately with those in the stronger hive, or the bees from both lots may be shaken on a cloth in front of the hive and allowed to run in together. Any disposition to fight should be promptly stopped by the application of a strong dose of smoke. The spare combs should be carefully put away, having been previously disinfected or fumigated, as directed last month. The next matter of importance, and one that should be at once attended to, is to see that the bees have an ample supply of winter stores. We have already referred to this matter in previous numbers, but in cases where the instruction given has not been carried out, and there are colonies lacking the necessary supply to carry them through the winter, then food should be at once given.

FEEDING.

Without doubt the best food that can be given at this time of year is sealed combs of honey, but when these are not at hand, sugar syrup will answer the purpose, and when this is used it should be medicated as advised last month and poured into empty combs (in the manner already described in previous numbers), and hung in the hives in the evening.

In the Southern districts of New Zealand and Tasmania,

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TO OUR SUBSCRIBERS AND CUSTOMERS.

During the illness of Mr Hopkins and his compulsory absence from business, no doubt some unavoidable mistakes have occurred. Where such has been the case, we trust our subscribers and customers will take into their favourable consideration the circumstances, and pardon us. He having now so far recovered as to be able to give some attention to the business, we shall be glad to rectify any mishaps that may have arisen if a line is sent notifying where such may have occurred.

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where a low temperature prevails during the winter months rendering the use of syrup impracticable or undesirable,

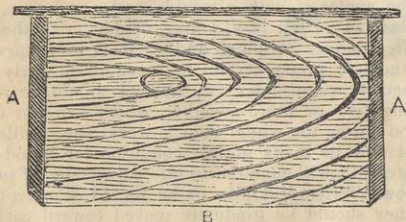
CANDY

may be substituted to supplement the supply of winter food. The following recipe for making it is taken from the *Australasian Bee Manual*:—"Take say 10lbs of sugar, put in a little water (about three half-pints), mix well and boil, keeping it well stirred to prevent burning. Boil until ready to sugar off. You can determine when this point is reached by testing it as confectioners do by dipping your finger in a cup of cold water, then in the candy, then back into the water again. When it breaks like egg shells from the end of your finger it is just right. Take it off the fire at once, and as soon as it begins to harden round the sides, stir it till it gets quite thick. Very great care must be taken to prevent the food from burning, as burnt sugar is said to be poison to bees. The candy can be made into cakes by pouring it into shallow plates, previously greased; or, it may be poured into a frame by fastening the latter down on a flat board on which a sheet of paper has been spread to prevent the candy sticking to the board. The frame should rest on the board closely all round, to prevent the candy running underneath it. A Langstroth frame will hold about 8lbs; if made according to the above directions it will be firm, dry and opaque when cold, and will stick to the frame so that it can be suspended in the hive, like a frame of honey. It should be warmed a little in cold weather before placing it in the hive. Cakes of candy should be placed on top of the frames under the mats, care to be taken not to leave the bees uncovered."

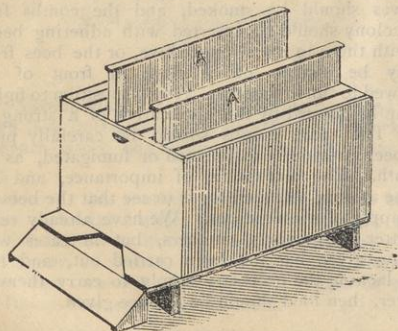
SURPLUS BOXES.

In order to make the hive as snug as possible for the winter, all surplus receptacles should now be removed, crowding the bees into the lower box. Should the colony not be strong enough to cover the whole of the combs, which may be ascertained any chilly evening, the unoccupied combs at the sides should be removed and division boards put in, in order to contract the space to the size actually required by the colony. The following engraving represents a

DIVISION BOARD



the dimensions of which, suitable for a Langstroth hive, are $18\frac{1}{4}$ inches in length and $9\frac{3}{8}$ in depth. They may be made of a 9 x 1 inch board, having the upper bar of a frame nailed on the top. Two of them should be used in each hive, as seen in the annexed illustration. Any space between the



HIVE WITH DIVISION BOARDS.

division boards and the side of the hives may be packed with chaff, or any similar material, if considered desirable.

CONTRACTING ENTRANCES.

The hives should now be moved back, and the entrances contracted to about one-half of their full dimensions, but

should there be signs of robbing, it will be wise to diminish this space, so that only two or three bees can pass at one time.

MATS.

Extra mats should now be in readiness to place on the frames, three of which may be used with advantage through the winter. Since carrying out some experiments on hive ventilation, we are rather disposed to think at the present time that the closer the top of the hive is kept the better, in which case the entrances of the hives should be left wider than has been previously advised. We are now experimenting with a very close material for mats surmounted by a chaff cushion with large entrances. The results we shall communicate later on.

LEAKY COVERS

are an abomination, and should never be tolerated in an apiary. These being the parts of the hives most exposed to the sun, the roof boards are liable to crack unless kept well painted. Some kinds of timber are especially liable to warp and crack; these should be avoided in the construction of hives. Covers should therefore now have a thorough overhauling before the rainy season sets in; a single crack may be stopped with putty and paint, or, if a large one, a piece of tin can be tacked over, and painted. Occasionally, however, the cracks are so numerous that the better plan will be to tack a piece of calico neatly over the whole of the top surface, giving it a couple of coats of paint. This will effectually exclude all wet, and will amply repay for the little labour and expense incurred. Timber intended for use in the apiary during the coming season should now be placed under cover to get thoroughly dry before making up into hives, etc.

THE PAST HONEY SEASON.

WITH regard to the honey season just closed, it has been a rather remarkable one, in so far as it set in unusually early, and gave promise of a prosperous season with an abundant harvest, which, however, unfortunately was not verified. The months of August and September were all that a beekeeper could desire—warm sunny weather, a much higher temperature than usual, and exceptionally free from storms of wind and rain. Breeding went on rapidly, colonies quickly increased in strength, and the secretion of nectar was far above the average for the same period in former years. The swarming season commenced quite a month earlier than usual, and in fact the prospects could not have been brighter. These remarks do not apply to any particular locality, but to the whole of New Zealand. October, however, on the other hand, set in with heavy rains and storms, which continued almost incessantly right up to the middle of December. During that time scarcely any honey had been gathered, and in numbers of cases, where feeding was not resorted to, the loss of colonies was heavy. In my own case I had to feed during the whole of the time, and succeeded in saving the whole of my colonies, which otherwise would have starved. About Christmas time the weather became more seasonable, and honey began to come in freely, and those who had attended to their bees during the two previous months now record some recompense for their labours, owing to their stocks being in a condition to take advantage of the honey flow; on the other hand, where the bees had been neglected, the swarming colonies were so weak that more than half the season was gone before they were strong enough to take advantage of it. Taken as a whole the honey season has been very much be-

low the average, though in a few cases, where due care and attention was given, the harvest of honey has been a fair one, showing unmistakably the advantages to be gained by judicious feeding during a spell of unpropitious weather in spring. So far as I can gather at the present time there will be rather less than half a crop for the whole of the colony.

THE HONEY MARKET.

The Auckland province, without a doubt, holds the premier position in the Australasian colonies for the production of honey, both as regards quality and quantity, and the latter has now become too well known and appreciated by dealers in this and the neighbouring colonies, that an increasing demand for it for export has arisen. Dealers, however, in the South and in Australia will purchase only in bulk, and although there are a number of inquiries for the same at the present time, it cannot be obtained as our large producers appear to be putting all their honey into small packages. This is rather unfortunate, as it entirely cuts off the export trade, and will have the effect of throwing a large quantity on the Auckland market, unless something unexpected should turn up. I am certain that our beekeepers would act wisely by retaining in future a good proportion, if not the whole, of their honey in bulk, as I feel satisfied they would get a much better price, and there would be no risk of the local markets becoming overstocked. I have heard of a few sales of two pound tins at 7s. 6d. and 8s. per dozen, and a little in bulk at threepence per pound.

I. HOPKINS.

DRONE LARVÆ UNAFFECTED BY FOUL BROOD.

ON several occasions we have had the opportunity of examining combs unmistakably affected with foul-brood, containing drone and worker cells, both of which had been used for breeding purposes, and what struck us as being most singular was that the worker cells only contained the remains of diseased larvæ. Some two years ago we first noticed this peculiarity, and made a mental note of the same; since that time we have on several occasions, when examining foul-broody hives, observed the same curious phenomenon. It seemed to us very singular, for to all appearances, drones had recently been bred in the cells, but as we could not be absolutely certain that such was the case, there was nothing to guide us as to whether we had observed anything remarkable or not. During the present season, however, it was our good fortune, whilst examining a colony affected with foul-brood, to come across a comb containing a good proportion of drone cells from which drones were emerging. The worker portion of the comb immediately adjoining the drone cells was badly affected with foul-brood, the larvæ being in an advanced stage of decomposition. The colony

was fairly strong, and had at the time a good proportion of healthy brood emerging from the outside combs, the latter appearing of newer construction than the centre ones affected with the disease. We drew the attention of the owner of the bees to the circumstance, and expressed a wish to examine the hive again later on, a request which was readily acceded to. Subsequently we found all the drones had emerged and not a trace of disease could be seen in their cells. We are anxious to learn whether the same thing has been observed by other apiarists, for if so, it would be worth recording. We have certainly never seen a diseased drone cell ourselves, neither has Mr. O. Poole, to whom we mentioned the subject. If it should prove correct that drone larvæ are not affected by foul-brood it opens up a wide field for further investigation on probably new lines. If we may be allowed to speculate on the matter at the present juncture, can it be that the disease originates in the spermatheca of the queen, and is conveyed thence to the fertilised eggs, which ultimately produce worker brood only? However, it is perhaps as well that we should not theorise further in the matter until we have more information. We draw attention to the subject in the hope that beekeepers who are unfortunate enough to be troubled with foul-brood will bear the matter in mind, and observe and notify us should similar facts come under their notice.

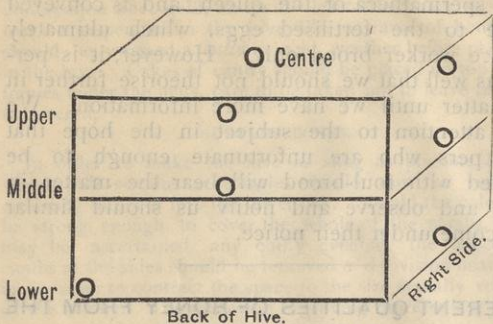
DIFFERENT QUALITIES OF HONEY FROM THE SAME PASTURAGE.

No doubt many of our readers have, like ourselves, observed the fact that honey gathered in different seasons in the same locality, and so far as can be seen, from the same pasturage, varies considerably both in flavour and consistency. We have remarked that in some seasons the average quality of the honey is much higher than in others. We do not refer to isolated cases, but to the honey harvests generally throughout the country. The difference is so remarkable in some seasons that one could scarcely believe that the honey had been produced in the same locality. Last season, for instance, the honey gathered in some parts of the Waikato and in the vicinity of Auckland was remarkably fine in quality and grain compared with that gathered in previous seasons, and also with the production of the season just closed. How is this to be accounted for? It is certainly not by reason of a change in the flora of these districts, for, so far as we can learn, the bee pasturage is unchanged. We have spoken to many honey producers on the subject, and they are at a loss to account for the difference. Unless it is due to atmospheric influences, we know of nothing else likely to account for this marked change in different seasons, and even should it be due to this cause, we have no data on which to formulate any theory. Can any of our readers throw light on the matter?

INTERNAL TEMPERATURE OF HIVES

By J. R. MADAN.

THE hive in which the three following series of observations were taken, was a two-storey Langstroth occupied by a strong healthy Italian colony, which fairly filled the hive. The roof was a sloping one, with two one-inch ventilating holes protected by perforated zinc. Over the frames was an enamel cloth and four thicknesses of paper, quite hermetically sealing the hive. The width of the entrance was about ten inches. The thermometers were fairly well insulated by air-tight coverings, with paper and matting wrappings round, so as to minimise the effect of the outside changes of temperature to the utmost. The sun was shining in the afternoon on the left side of the hive, as in the diagram, thus affecting the "lower" thermometer.



ELEVENTH SERIES, APRIL 5, 1889.

| Time. | Ext. Tem | | Back of Hive. | | | Centre. | | Wind. | Observations. |
|----------|----------|--------|---------------|------|------|---------|-------|-------|---------------|
| | Sun. | Shade. | Low. | Mid. | Upp. | Upp. | Over. | | |
| p.m. 1.0 | 90 | 74 | 86 | 82 | 86 | — | 87 | o | Sunny. |
| 2.45 | 100 | 73 | 89 | 82 | 86 | — | 87 | o | |
| 3.0 | 103 | 73 | 90 | 84 | 87 | 95 | — | o | Autumn Dry. |
| 3.30 | 93 | 73 | 90 | 81 | 86 | 95 | 86 | o | |
| 5.0 | 80 | 68 | 82 | 78 | 80 | 92 | 83 | o | |
| 5.30 | — | 57 | 73 | 74 | 76 | 89 | 78 | o | Sun set, |
| 6.30 | — | 52 | 67 | 70 | 73 | 88 | 70 | o | and heavy |
| 7.30 | — | 48 | 66 | 68 | 70 | 86 | — | o | dew set in. |
| 8.30 | — | 50 | 62 | 66 | 69 | 88 | — | o | |
| 9.0 | — | 50 | 62 | 66 | 69 | 90 | — | o | |

It will be remembered that in the earlier series of observations, the "upper" thermometer used to show a lower temperature than the "middle" one. This was when a porous mat was used, pointing to a descent of cold air from above. Since the enamel protected mat has been on, the hotter air has been, as one would expect, at the top; but a steady relative lowering of the whole set of thermometers went on, as the day wore away and the outside temperature lowered. The heat just under the mat in the centre (gauged by thrusting the bulb of a thermometer through a very small close fitting hole), at first descended with the lower outside temperature, and then, as the evening went on, began to ascend. This happened before, and is doubtless due to the bees clustering

for warmth up close under the mat, as the cold increased.

But now with regard to the "lower" thermometer, it could be no longer doubtful that the sun shining on the left side had affected it all along, and consequently it became necessary to take such observations as would more decisively determine the power of the one inch kahikatea (the soft white wood usually used) to resist the external changes of temperature. Hence the following changes in the position of the thermometer were made.

TWELFTH SERIES—APRIL 9, 1889.

In this series three thermometers were placed in each side of the hive, equidistant from the front and back, in holes bored through the sides, (a) near the mat, (b) just above the lower frames, and (c) just above the bottom board. The hive facing north would thus in the morning have the sun on the right hand side and in the afternoon on the left hand side. An accurate test would thus be obtained of the effect of the sun on the internal temperature, as, if it affected it at all, the thermometers would just reverse their relative readings, as the sun changed over from right to left.

A careful noting of the two following series of readings (the twelfth series, however, taken only in the afternoon and so not showing a reversing process), will go far to establish the fact that we have been living under the false impression that a sound "one-inch board well painted with three coats of white lead paint" is little affected by cold or heat. On the contrary it seems that it is very sensitive to heat and cold, and may not the chills, etc., to which the bees have been subjected in our wintry nights and in the early spring be the cause of most of the diseases we have complained of and of spring dwindling?

| Time. | Ext. Tem | | Sunny Side. | | | Shady Side. | | | Over Mat. | Wind. | Observations. |
|----------|----------|--------|-------------|------|------|-------------|------|------|-----------|-------|---------------|
| | Sun. | Shade. | Low. | Mid. | Upp. | Low. | Mid. | Upp. | | | |
| p.m. 1.0 | 102 | 74 | 82 | 85 | 88 | 78 | 78 | 81 | 80 | o | |
| 1.30 | 104 | 75 | 83 | 89 | 90 | 79 | 79 | 81 | 84 | o | |
| 2.15 | 102 | 75 | 88 | 93 | 93 | 81 | 81 | 82 | 85 | o | |
| 3.0 | 98 | 73 | 89 | 95 | 94 | 81 | 79 | 82 | 84 | o | |
| 3.45 | 95 | 70 | 89 | 95 | 95 | 80 | 78 | 80 | 83 | o | |
| 5.0 | 68 | 64 | 85 | 90 | 91 | 76 | 73 | 75 | 75 | o | |
| 6.0 | — | 59 | 78 | 82 | 83 | 70 | 69 | 72 | — | o | |
| 7.15 | — | 54 | 70 | 74 | 76 | 66 | 62 | 65 | — | o | |
| 8.0 | — | 49 | 68 | 70 | 72 | 61 | 60 | 63 | — | o | |
| 8.45 | — | 54 | 62 | 68 | 71 | 58 | 58 | 61 | — | o | |

It will be observed (a) that at 3.45 p.m., when the sun had got well round the hive and was shining pretty fully on the "sunny" side of the hive, the temperature was actually 17 degs. higher on that side than on the "shady" side; (b) that as the day declined the "sunny" side slowly gave out its heat and cooled down, the part near the ground cooling down more rapidly than the upper part of the hive, owing, no doubt, to the heavy dew, and evaporation on the surface of the ground.

(A little later on it is intended to take observations during the whole of a chilly night to determine how long it requires before the "sunny" side has

parted with all its heat, and what the effect of frost has on the interior.)

THIRTEENTH SERIES.—APRIL 10, 1889.

(Recorded by the Editor of this *Journal*.)

| Time. | Sun. | Shade. | Left Side. | | | Right Side. | | | Wind. |
|-------|------|--------|------------|------|------|-------------|------|------|-------|
| | | | Low. | Mid. | Upp. | Low. | Mid. | Upp. | |
| a. m. | | | Shaded. | | | Sunny. | | | |
| 7.45 | — | 62 | 54 | 62 | 62 | 54 | 70 | 66 | 0 |
| 8.45 | — | 65 | 64 | 69 | 68 | 66 | 79 | 78 | 0 |
| 9.30 | — | 70 | 69 | 71 | 70 | 72 | 78 | 77 | 1 |
| 10.30 | — | 72 | 72 | 74 | 74 | 76 | 76 | 76 | 1 |
| 11.45 | — | 75 | 75 | 79 | 78 | 77 | 79 | 80 | 1 |
| p. m. | | | Sunny. | | | Shaded. | | | |
| 1.30 | — | 74 | 77 | 80 | 80 | 76 | 76 | 77 | 2 |
| 2.15 | — | 69 | 81 | 86 | 84 | 76 | 77 | 79 | 3 |
| a. m. | | | Shaded. | | | Sunny. | | | |
| 11.15 | 62 | 62 | 62 | 68 | 70 | 68 | 70 | 72 | 2 |
| p. m. | | | Sunny. | | | Shaded. | | | |
| 2.30 | 86 | 65 | 78 | 84 | 80 | 70 | 70 | 74 | 2 |

The above observations (recorded by the Editor of this *Journal*, to whom is due also the credit of the Seventh, Eighth, and Ninth Series of observations published in the April number), show the reversing process very decisively, although owing to the clouds, and the absence of observations in most cases of the sun temperature, no doubt later on a still more decisive series may be taken.

It will be noted (a) that as the sun got power, the right or sunny side thermometers all registered higher than the left ones, and (b) when the sun had crossed over that, the left (then the sunny) side thermometers registered higher than the right. So too in the observations recorded on April 14, under precisely the same conditions, with the advantage of having the sun temperature recorded. The upper thermometer occasionally registering lower than the middle one, although the enamel mat prevented all descent of cold air, is probably due to the shade afforded by the overhanging roof of the hive.

Some new insulating covers have since been made for the thermometers, in order to minimise still more the possible effect of the outside temperature.

MARKETING OF EXTRACTED HONEY.

By J. T. MULVANY.

THE editorial remarks under the above heading in the last issue of the *Journal* go far towards confirming the opinion expressed in the article to which they refer, namely, that 'the difference between us is more apparent than substantial,' and that a full discussion of the points raised is most desirable in order to clear away all misunderstandings. It appears that the resolution of the Committee, to which I alluded, was not intended to apply (as its wording, without qualification, would seem to denote) to beekeepers in

general and to the honey of large apiaries, but rather to small producers who might have a few hundreds or thousands of pounds of honey, which they could not dispose of to advantage in their own neighbourhood. I have already expressed my belief that the facilities offered to such parties, by a central depot for Auckland, for getting their honey put on the market in the best style and on surprisingly moderate terms, constitute "a real boon to them, and a great safeguard to the character of the local honey market." There is therefore absolutely no difference between my views and those of the Committee on this point.

But there remains the greatly more important question, what is the best course to be pursued by "the owners of the more distant and important apiaries," the producers of five or ten or more tons of honey in a season? It was expressly to such cases that the latter part of my remarks in the February *Journal* referred, and it was with respect to their wants that I had written previously on the subject of "cheap packages for extracted honey," and ventured to suggest how I thought the Committee could best forward the interests of such producers, and of the honey industry in general, by ascertaining what are really the most suitable packages for honey of ordinary good quality (such as can be offered to compete with sugar), and by putting such apiary owners in the way of getting such packages on the cheapest possible terms.

I would beg to recall attention to the fact that the whole discussion has arisen out of the previous consideration of the question, "Can honey become a staple commodity?" When dealing with that question, and after stating the case as it presented itself to my view, I proposed the following question for the consideration of all large producers of honey, "seeing that it can no longer be treated as an article of luxury, *to be sold in small quantities at high prices*, can it be made a staple of consumption, placed within easy reach of all consumers just as sugar is, and at nearly equal price?" expressing at the same time my own belief that such a course was justifiable, "if all interests concerned—producers, agents or middlemen, and retailers—will consent to treat the article as sugar is treated; that is *put it on the market in suitable cheap packages, which shall add as little as possible to the prime cost of the honey*, and deal in it at such reasonable rates of commission or profit as is done in the case of sugar." This view was endorsed at the time by the Committee, and by most of the beekeepers who noticed the matter in the *Journal*, and as it was under the assumption that we had arrived at a general concurrence of opinion on the main points, that I proceeded to raise the question of "cheap packages." In doing so, I looked upon it as a matter of course that all mention of one-pound or two-pound tins or glasses (which I must still term small and fancy packages) must be excluded, as assuredly the honey offered for sale in that way can never be expected to compete in price with sugar. I therefore suggested 10lbs. or 12lbs. as the minimum size for tins of "ordinary" extracted honey, 60lbs. as about the practi-

cally convenient limit for large tins, and wooden kegs or barrels for packages of 100lbs. or upwards—throwing out all these suggestions only for consideration and investigation as to the relative merits and cheapness of tin or wood for the larger packages.

It is now explained that “the Committee, in arriving at the conclusion they did, took into consideration the wants of the market at the present time, which undoubtedly is for what Mr. Mulvaney terms ‘the small and fancy packages,’ except for export; and even for that purpose there are better packages than 60lb. tins.” But I would ask, can it be said that the Auckland market at present really does want even the small and fancy packages, or is it not very easily glutted with such? My view is that there is actually no regular market for honey in Auckland or anywhere else in the colony as yet, and that our only chance is to endeavour to make one, or else to give up the producing of more honey than we can conveniently use ourselves and dispose of in our own district. As to the shop business in one or two-pound packages, I am distinctly of opinion that it ought to be confined to the finer grades of honey, such as pure white clover, and that if there be one good apiary in a position to produce that quality only, it ought to be able pretty nearly to supply the whole demand of Auckland for that kind, and at the price at which it can be fairly sold in such small packages; and I believe, therefore, that one or two other large apiaries, or a corresponding number of small ones, sending all their honey to be put on the market in such a manner would only ruin the business for all. In any case I look upon this as a question quite apart from that now proposed for discussion, which is, how to put ordinary extracted honey on the market for general household use so as to compete with sugar and make it a staple article of consumption. That there may be better sized packages for the export trade than 60lb. tins is quite possible, but to this point I shall return a little further on.

It is admitted “that it would be cheaper for householders to purchase in larger quantities at a time; but (it is added) until they can be induced to do so, it will be folly to put it up in large tins.” I think the obvious answer to this is, that you can never hope to succeed in getting housekeepers to do so by only offering the article in small packages, nor until you afford them the opportunity of taking the large tins in preference, and show them that it is their advantage to do so.

As to casks fit to hold nearly 400lbs. of honey being procurable at 5s. each, that would be a valuable item of information to beekeepers, if it is to be understood that any cooper is prepared to supply orders at that rate. This is, however, not in accordance with the results of any inquiries I have had an opportunity of making as yet. I think, moreover, it must be a mistake to assume that casks would measure less (for freight calculation) than tins of 60lbs., two in a case. I may, of course, be mistaken, not having had experience of packing in casks, but according to my calculations the casks would cost more freight than the cases, whether reckoned by actual weight or by

measurement. I find the tare of two tins and the wooden case to be 18lbs. to 19lbs. for 120lbs. net of honey, being an addition of about 15 per cent.; while that of a five gallon cask is about 14lbs. for 80lbs. net of honey, or an addition of 17½ per cent. The case measures exactly 1.87 cubic feet, and as 18½ cases contain one ton net of honey, they would when packed close together take up only 35 cubic feet, or ¾ths of a ton measurement. The casks must, I presume, be measured for freight purposes by multiplying the square of their largest diameter by their height; and from measurements I have taken of a 5gal. and of a 26gal. cask I reckon that one ton of honey made up in casks of either size (the latter holding 416lbs.) would occupy a space of over 50 cubic feet, or 1¼ ton of measurement. I suppose the shipowner will be likely to charge by weight or by measurement, whichever costs most. In that case, a ton of honey in cases, if not allowed to go for ¾ths of a ton measurement, should be charged one and one-sixth ton by weight, while the same quantity in casks would be more even by the dead weight, but would be one and one-fourth ton by measurement. This is exactly one of the practical points upon which it is so difficult for distant members of the association to obtain certain information, and upon which I had hoped that the Committee, having facilities for communicating with shipping agents and others conversant with the details of export business, would be able to furnish valuable hints.

In any case I believe it will be found that the cost of delivering the bulk honey in casks to a central depôt, including freights empty and loaded added to the most reasonable charge there for putting into ten or twelve-pound tins, would come to something more than the large producer can do it for, by tinning direct at the apiary. The advantage of the former course is only evident, as already admitted, in the case of the small producers, who cannot do the work so cheaply or in such good style as a central depôt.

For the rest, I am glad to see that the principle now adopted in re-tinning the honey is to manipulate it in its granulated state, and not to melt it. This used not, I think, to be the mode of proceeding formerly with parties who bought honey in bulk in Auckland for the purpose of retailing it in small tins. It adds, of course, to the trouble, but is greatly better for the quality of the honey, and does away with the objection raised by me in the second of the four reasons given (at page 118 of this *Journal*) for preferring to put the honey on the market in the original packages prepared at the apiary at the time of extracting. I think, however, that the three other reasons there given may still be sustained, and that they are quite sufficient to decide in favour of that course under the circumstances therein expressly laid down, and which I have now again endeavoured to lay stress upon.

Any information on the following points would, no doubt, be acceptable to many beekeepers who would wish to try wooden casks as packages for extracted honey:—

1. Where are such casks manufactured within any convenient distance of Auckland?
2. What New Zealand wood is most suitable

for their construction and least likely to impart a flavour to the honey? Can they be used just as delivered, or do they require to be prepared by waxing the interior, or otherwise?

3. At what prices can they be delivered f.o.b. at Auckland or elsewhere,—specifying the dimensions: that is, height, and largest diameter, and the capacity in Imperial gallons? For each gallon we may reckon 16lbs. of extracted honey.
4. How are such casks charged for ship or railway freights when full—whether by weight or measurement, and, if the latter, how measured? and how when empty?

[We hope to be able to go thoroughly into Mr. Mulvany's interesting article and furnish the desired information in our next number.—Ed.]

FURTHER NOTES ON FOUL-BROOD REMEDIES.

By J. A. MORELAND.

THE same yesterday, to-day, and for ever.

There is no question that, if we follow out the instructions given in the work of the Rev. L. L. Langstroth, we shall not go far astray in bee-keeping; and I would respectfully refer all the readers of the *Journal* that are situated in districts infected with foul-brood to pages 19 and 20, and 257 to 260 of that work, containing the experience of Dr. Dzierzon with foul-brood.

I have been looking for the result of your Westland correspondent *re* immersion of combs in brine, but up to the present in vain.

I am sorry to say that I have slight traces of foul-brood appearing in three colonies which were hived on combs that were immersed in brine, but I can safely assert that I have kept free from this disease longer with immersed combs than by any other method I have tried, and I have tried phenol, and removing the bees from both hives and combs and hiving them in new hives and comb-foundation. But it must be borne in mind that I am situated in the midst of three beekeepers on the gin-case principle, and they are all about 200 yards distant, and until their bees have died out I do not think I shall keep clear of the disease for long together. The bees I hived on immersed combs in December, 1887, have kept clean to this fall, and have produced 107½ lbs. extracted, and contain now, I would estimate, about from 40 to 50lbs. of honey. Those hived in November last extracted 85 lbs., and contain 60 lbs. at present, so that they have done fairly well, this being my highest yield since I started. One peculiar feature in these two hives is, since December last they have collected exactly the same amount of honey up to the last extracting, but the latest hived have surpassed the others since. One of my colonies stole a march on me, as I called it, and swarmed away early in November, so I lost one stock set down on these combs. Now comes another experience. From these bees that were left I took part of their combs and divided the bees, raising two queens.

One in a very few weeks had her hive full of bees, and I do not think the other raised 500 bees all the summer, and about three weeks back I headed her. And of the two I believe this inferior one had the most bees at starting. She looked a fine, lively bee, but there was a fault somewhere.

Returning to this question of foul-brood, I may state that the greatest difficulty I have had to deal with is getting the bees to clean out their combs, and I have noticed in several instances that it is not until the height of the honey flow that they pierce the caps of the cells from which the brood has not emerged. Now, by cleaning the combs as I have recommended, and cleaning them to the best of your ability, you assist your bees to do what you want them to do; and, if salt and water will not eradicate foul-brood, your combs are in a far better condition for you to operate on with any other treatment that you may wish to try, for your cells are all uncapped and your combs are empty. Now it seems to me to be out of the question to try to eradicate this disease by spraying combs filled with pollen, brood, and foul-brood, for I think the disease is stored with what your bees have collected for food, and it is quite possible for the germs to be deposited with the first load of pollen placed in a cell by the pollen or honey gatherer, consequently it is as likely to be at the bottom as the top of a cell filled with stores, and I think more so, for surplus stores are mostly laid in when feed is plentiful and your colonies are strong, which must be at a time when your bees are able to feed their larvæ on *wholesome food, freshly gathered from the field.* I also take it that all the various treatments that are recommended by so many beekeepers all the world over is for the express purpose of *saving the combs—that is what I believe all modern beekeepers are aiming at (I am)*—else what need to be physicking your bees and spraying your combs, when by removing your bees from both hive and comb for a few days, and rehiving them in a new hive on new combs, if they are clean, you eradicate it at once? If we are to destroy the hives and combs to keep clear of the disease, we who are situated in badly infected districts have to do it twice in a year—spring and fall—and I think when that day arrives we will leave off beekeeping as too expensive a luxury, for even if you melt down your combs you have a great loss in wax, and if you have to purchase comb-foundation to replace your old combs, I do not think you will find it a financial success.

Now, in conclusion (for I think I have given you enough on this subject), I would ask your readers to give this pickling business a fair trial, and tell us all about it. Don't say, "I don't want my views or experiences to be published." We do not want that. There's no go in that, but out with it after this style if necessary: "After giving Moreland's pickling idea a trial, I find it's all a fraud," but *vice versa* would look better, of course. Now, if you feel inclined to try this idea of mine, this is just what to do. First, make your mind easy on one point, that is, that your bees will not starve, for they are to be taken out of their hive and put into a box that is perfectly clean and has

not been used by bees before. Second, select the stock you value the least, foul-broody of course; isolate it as far as you conveniently can from all your other bees, and your neighbour's if possible, and, after shaking all the bees from their combs, hiving them in the box before mentioned, take the combs from this foul-broody hive that contains no brood and place the combs you have taken from the bees with brood in them in place of the combs removed. This is to let what bees emerge that will. Now, we will suppose that if you do this early in the season, you may make this one hive receive the combs of two colonies removed and hived in boxes. Now, when these bees have emerged, if they are not badly infected, you may have sufficient bees to take charge of a top box. Thirdly, take these spare combs out of the way as quickly as possible, and uncap *every* cell. Now for your pickle tub or box. This is supposed to have been made, and is of course just ready. But perhaps you want to know something more about this. Well, you just want it so that your frames will hang in it as they hang in the hive, and it must stand high enough above the frames for you to nail on a small strip of wood to receive a piece you will have to put across your frames to keep them in the brine. That is an improvement on the tub. Now you must fill this tub with combs, or you will perhaps find the lower portion of your combs trying to get on top of the water, and that will not do them any good, for if they get so far aslant they are apt to break. Suspend your combs in the tub; *after that* pour in your brine, composed of 6 lbs. salt to 9 gallons water. Let them remain say a week. Pour out your brine before releasing your combs. After that place your combs in a comb-holder—a wooden one with a back to it—and get your garden syringe to work, and don't be afraid of it. Make the dead bees, pollen, foul-brood, and all other matter fly out of it. Place them in the extractor; throw the water out; hang up in an airy place to get dry, being sure to keep your combs far enough apart to allow a free current of air between them, and out of the reach of your bees. And after they are dry, if you are not satisfied that you have eradicated the disease from them, you can disinfect *perfectly* with any solution you choose.

Now, to return to your bees. After hiving them in the box, you might keep your eye on them, for I have a notion they don't care about a common box after being in our hives a while, for I know in some instances they swarm out next day or the day after. Some recommend to close them up altogether. If you have a dark room where they cannot get any light, and it is very cool in that room, it may be all right, if you feed them, but if you have not let them have their liberty, for under any other conditions than those mentioned above they are very anxious to get out, and a great number of them die, and I don't like that. Well, after they have been in that box long enough to have consumed all the food taken from their old hive, you can hive them afresh in a new hive on comb foundation—well, say in a week. Now, when you have hived these, remove them to some fresh place in your apiary, as far from your foul-broody stocks as possible, and use your

combs that have been pickled for your next stock, and so on till you clean all your stocks. And lastly, some three weeks before you are going to operate on your isolated stock or stocks, cage the queens in those hives and serve them as you served the others. You will be safe for that one season, if you manage that properly, I can guarantee. One thing you want, to mind your pickle tub does not leak. If you have to fill it up, make what you add to it about the same strength as what is in the tub; second, keep it covered up well, so that bees cannot get at it, and when you have done syringing your combs, where the matter has fallen shake plenty of carbolic acid powder about.

I have tried painting my old hives inside as well as out. The bees took to them all right, but whether it was of any benefit or not I am unable to say.

I am sorry that the convention has fallen through, for I am sure that all who attended would have reaped some lasting benefit by being brought in contact with those who have passed years in the cultivation of the honey-bee, in hearing their views and opinions on various matters; but I hope we shall all be able to muster up some day and hold a monster meeting that will surprise ourselves. I mean to come some day, if I have to stump it, for I want to learn something, and we have very few enthusiasts here.

Another idea of mine is that all advanced beekeepers should write to their local newspapers requesting box hive keepers not to throw their polluted combs outside for bees to go and clean out, but to destroy them, also describing foul-brood and its effects.

I hope our editor will soon be able to resume his chair, and that we shall soon hear of his complete recovery.

Blenheim.

[The above communication arrived too late for insertion in our last issue.—ED.]

BEEOLOGICAL NOTES.

By G. A. GREEN.

ONCE again after a long silence I send you a few notes. When last I wrote it was in the full expectation that we were to have a grand convention of the New Zealand beekeeping brotherhood. We then did not expect to see our dear friend the Editor laid aside from his labour by sickness. Let us hope that it may please God to soon restore him to health, not only from an apicultural standpoint, but more especially for the sake of his wife and family, although there is no doubt that our business is greatly suffering from want of the experienced head and hand of our trusted friend to guide us onward in this time of depression and overstocked honey market.

* * * *

Now let me congratulate you, friend Poole, for the able manner in which you are keeping up the high standard of our *Journal*. I hope that you may be well supported by beekeepers gener-

ally, both with pen and cash, so that the *Journal* may be able to retain its high position as one of the foremost bee periodicals in the world. By the way, brother beekeepers, how is it that you do not let the Editor know your views as a body on adding a poultry department to the *Journal*? Remember you will have two journals in one, so to speak, for the same price, and the bee matter will not be condensed to make room for the other department.

* * * * *

There seems a general impression abroad that the black bees cannot fertilize the red clover. For a long time I have had my doubts on the subject, as I have often seen the bees working in large numbers upon red clover, especially heads of the second growth. But now I am fully convinced that they not only can, but do secure the fertilization of at least the second crop of heads. In my travels I have come across two settlers who state that although the first heads of the red clover does not ripen, yet the second growth does, and one of these settlers harvests his own red clover seed, and states that he finds it to germinate better than the imported seed. Other settlers, especially those whose farms are situated on clay soils, should try the experiment, and let us know the results through the *Journal*.

* * * * *

I have read with great interest the articles and experiments of the Rev. J. R. Madan, in connection with the internal temperature of hives. The tables given show clearly the results of the successive experiments. Personally, I am unable, through absence from the apiary, to assist with the experiments as suggested, but I should think many of our beekeepers who have time on their hands could gain information (for themselves and others) which may help to solve this and other knotty problems which still remain dark by spending a little time in experiments.

* * * * *

A very interesting field for investigation is opened up in the "tenth series" in connection with the stream of hot air found leaving the entrance at a temperature of from 75 deg. up to as high as 86 deg. at one observation. This air must have been expelled by the bees themselves, or it would have slowly passed off above through the mat. It would appear to be a question requiring solution why the hot air was expelled (faster than it would naturally evaporate) when the inside temperature was comparatively low. At times I have noticed strong streams of hot air coming from strong, healthy hives in quite cold weather, in the early part of May, when there was a considerable flow of honey, also in strong stocks as early as August.

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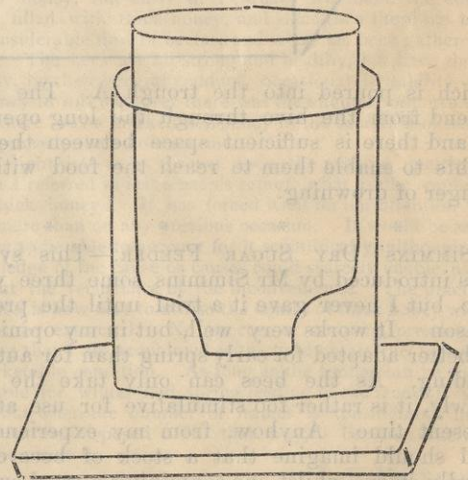
BEE FORAGE.—In many parts of New Zealand there is often a great scarcity of forage during the months of February, March, and April. This is especially the case in some parts of the North, where fully one-third more surplus could be obtained if there was only enough honey gathered during these months to keep the bees going, as

at present about 25lb. or 30lb. of honey has to be left in each hive to last them over until the autumn flow. This being the case, it is a great wonder that beekeepers, especially those engaged in farming operations, do not provide forage of some sort that would bloom at the time required, and what could be got to answer the purpose better than the ordinary buckwheat, which will well repay the cost of cultivation in the grain produced, besides the honey it yields as well. Lately I have seen several small patches growing in different places, and in each case the results have been very satisfactory as regards the crop of seed produced, while the bees worked on it well.

BEE GOSSIP.

By O. POOLE.

FEEDING BEES.—Having recently had occasion to feed up for winter about twenty colonies of bees, and having no feeders handy, I constructed some make-shift ones out of some old 2lb. honey tins and pickle bottles, which answered the purpose very well. I first cut a round hole in the bottom of the tin two inches in diameter, over which I placed a piece of perforated zinc the size of the tin. I next procured a half-inch block of wood about four inches square and drilled a similar hole through that; this wood formed a stand for the tin and was placed on a hole cut in the quilt over the frames; the bottle filled with syrup with a single thickness of leno or net tied over the mouth was quickly inverted, and placed on the zinc; the tin keeps it steady and prevents waste. A strong colony of bees will readily take down from one to two pints of syrup during the night, which should be slightly warmed before being given every evening until the bees have stored a sufficient quantity for winter consumption.



The above represents the make-shift Feeder.

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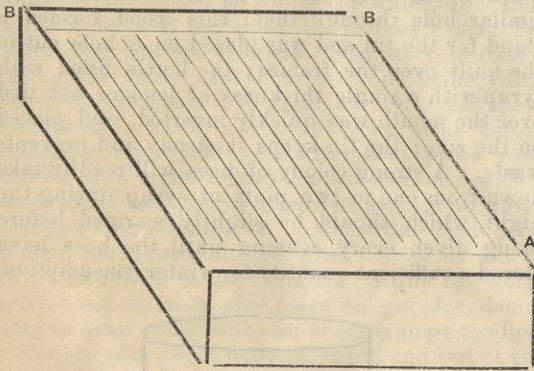
In cases where bees are short of stores in autumn they cannot be fed too rapidly, so that the food may have time to ripen and evaporate whilst the warm weather lasts. Unsealed and unripened stores in the hive are liable to produce

dysentery and other disease. Consequently, to winter successfully the bees should always have 'an abundance of sealed stores.' Many English beekeepers now adopt the plan recommended by Mr. Cowan of making one or more stocks store and seal sufficient combs for all the colonies in the apiary. The plan appears to me to be such a good one for late feeding that I give Mr. Cowan's description of the process:—

'I had a parafin stove fitted so that one hive could be kept at a high temperature night and day. A large feeder, holding about half a gallon of syrup, is placed on top of the hive, and is replenished as fast as the bees take the syrup down. In this way the bees very quickly fill and seal their combs from top to bottom. As fast as the combs are completed they are removed and distributed among those hives requiring stores, giving the hive empty combs to fill. By adopting this method a large number of combs may be filled and sealed in a short time.' Of course in this country, if this plan were adopted early in the autumn, the stove could be dispensed with.

* * * *

THE CANADIAN FEEDER.—A capital feeder for the above purpose will be found in the *Improved Canadian*, which can be made of wood of any size to hold from ten to twenty pounds of syrup



which is poured into the trough A. The bees ascend from the hive through the long opening B, and there is sufficient space between the uprights to enable them to reach the food without danger of drowning.

* * * *

SIMMINS' DRY SUGAR FEEDER.—This system was introduced by Mr Simmins some three years ago, but I never gave it a trial until the present season. It works very well, but in my opinion it is better adapted for early spring than for autumn feeding. As the bees can only take the food slowly, it is rather too stimulative for use at the present time. Anyhow, from my experience of it I should imagine that a stock of bees could hardly starve whilst one containing a good supply of sugar was in the hive, as the mildness of the winter season in New Zealand would allow of the bees using it almost at any time. It is made by taking a Langstroth frame and tacking a thin piece of wood completely over one side; the other side is movable, and extends to within a quarter of an inch of the top, being kept in position by

wire tacks. The space inside is filled with moist sugar, Demerara or Porto Rico, but I have found them take the New Zealand manufactured sugar very well. By tacking on a few strips of thick cloth at the ends it also acts as a dummy or division board. A strip of American cloth about four inches in width placed over the top will collect sufficient moisture to enable the bees to remove the sugar.

* * * *

I must, however, caution my readers not to attempt giving strongly medicated syrup in either of the two first mentioned feeders. When it is necessary to give that kind of food it must be poured in the combs and placed in the hive. The bees will not take it readily out of bottle or other feeders.

* * * *

DRIVEN BEES.—These are extremely useful in autumn for strengthening weak colonies. When in England I have frequently had over fifty stocks given me in a single season by cottagers and others for the trouble of driving. People who kept their bees in straw skeps and obtained the honey by suffocation in the autumn were only too glad to get the trouble of sulphuring off their hands, and readily parted with the bees, although in some few cases a small charge was made for them. Bees, however, are much more easily driven from the English straw skeps than from the colonial gin case; but when they can be readily obtained they will amply repay the extra trouble. I advise every apiarist who can obtain driven bees in this manner to do so. Care, however, must be taken to see that they are free from disease.

* * * *

WINTERING SURPLUS QUEENS.—Many persons at the end of the honey season have queens at the head of weak colonies, which, when united to others in the ordinary way, have to be destroyed. Now if these could be preserved with a few bees through the winter they would often prove of great value the following spring. Mr. D. A. Jones, the editor of the *Canadian Bee Journal*, with that end in view, has been carrying out a series of experiments in Canada during the past winter; and the plan he proposed, as given in that publication of September 19th last, was as follows:—'Boxes or tubes from twelve to eighteen inches long, two or three inches inside measure, will be made of pine lumber; the top nailed on, the bottom open. These we intend to half fill with Good or Benton candy, others with sugar poured in hot so that it will cake in top of tube. A few nails driven through the sides will prevent this food from dropping down. One piece of comb will be placed beneath these stores, others will be given two, and some none at all. From a quarter to a pint of bees will be given each queen, and when compactly clustered just under the stores, with sufficient protection to avoid the escape of heat, we think they should winter well. The long tubes, in our opinion, will keep the bees more compact and retain the heat better than any method we can devise. A cluster, a foot square, two or three inches deep, will winter well, and why should not a smaller cluster of the same

depth, placed in tubes, and having the same amount of protection, winter just as successfully? This plan would require but a small number of bees to each queen, with a correspondingly small consumption of stores. These tubes can be placed side by side on a shelf in the bee-house, or hung up in such a way that will admit of ready examination from below.' This plan of saving queens might prove practicable in South New Zealand if the tubes or boxes could be kept in a place sufficiently cool to induce hibernation. Anyhow, the experiment would be worth trying, and the loss in any case would be but small. I presume we shall know the result of the American experiments in the course of a month or so.

MR. COWAN'S NEW BOOK.—A new publication is announced by Mr. T. W. Cowan, forming Vol. II. of the Guide Book Series, 'The Honey Bee, its Natural History and Physiology,' which, I venture to say, will be heartily welcomed by all beekeepers. Works on this subject are generally published at too high a price to be within the reach of every beekeeper, but this will be issued at a figure that will place it within the reach of all. It will be fully illustrated, new engravings being now in course of preparation for that purpose. Mr. Cowan states that it will be free from superfluous matter, and that exploded theories shall not fill its pages. I can only say 'Welcome.'

* * * *

SECOND-CLASS HONEY.—In many parts of New Zealand the honey produced from various sources, owing to colour, consistency, and quality, notably that from flax and some varieties of bush, is of inferior quality and quite unfit for table use. When this is sent to the auction rooms (as is often the case) the price realised is very low even for this grade of honey, much to the disgust of the vendor, and in many cases the purchaser, who, probably is not a judge of honey, is little better satisfied. Now, in my opinion, the public sale of these inferior grades of honey does infinite harm to the trade generally, and has a tendency to lower and keep down the price of the best honey, for which, in my opinion, the producer should never receive less than sixpence per pound wholesale. Take some of the Waikato honey, for instance, notably of that class which used to be produced at the Matamata apiary. I maintain that it is impossible to rival it, and I do not believe it can be produced outside New Zealand. Now there are so many uses for second-class honeys for which they are as well adapted as the best, that it would be more advantageous for the beekeeper who has only a small quantity, to utilise it at home, preferably to sending it to market. Of the value of honey vinegar I have spoken in previous numbers; and there are many more economic uses to which it can be applied. Properly handled it makes a most delicious wine, equal, if not superior, to some grape wines. In England it is largely used in the manufacture of confectionery, Messrs Huntley and Palmer, of Reading, using a large quantity every week for making their celebrated honey biscuits. It has also

come extensively into use of late years for making aerated summer drinks. I believe if some one would undertake the manufacture of these articles and very many more that can be made with honey which I have not enumerated, in New Zealand, or if beekeepers could co-operate to establish such a factory, there would soon be an immense demand for them, and it would at once relieve our markets of the poorer grades of honey, and consequently a better price would be obtained for the better kinds.

Reports.

FROM BAY VIEW APIARY.

THE HONEY SEASON 1888-89.

THE complaint made by the Editor in the April issue about the delay of beekeepers in sending in their reports, and the consequent difficulty of estimating the yield of the honey season, is so plainly well founded, that I hasten to furnish the results of the Bay View Apiary without waiting for the final close of operations before winter, as I have heretofore done. No doubt the proper course would be for every beekeeper, at least every member of the Association, to communicate the approximate amount of his year's take of honey as early in each season as possible, say end of February or early in March, in order that the whole year's crop and its probable effect on the market may be fairly judged of.

The report this time may be very short. The season has been nearly as great a failure as the preceding one. Seventy-one stocks, which had wintered without any accident, were reduced, by uniting, to 64 spring count, and only increased during the season to 73. The temperature of the spring months was fully two degrees below the average, while that of the summer months was on the whole about normal. The spring season was decidedly a late one, the blossoming of fruit trees, etc., being a fortnight or three weeks later than usual. We had no swarms before the ninth of November, and there was very little tendency to swarm all through the season. The surplus honey stored up to the end of December was so thick as to be quite unextractable. During January we extracted scarcely 1,000lbs. of good amber honey, but early in February we found the combs again filled with thick honey, and since then there has been no considerable flow of nectar, and what has been gathered is thick. The bees are all strong and healthy, but have shown plainly, by their general conduct, occasional irritability, and tendency to rob wherever there was the slightest opportunity, that there was a marked deficiency in the secretion of nectar during nearly the whole season.

No light has been thrown upon the puzzling question to which I referred in last season's report, what is the cause of the thick honey? It has forced itself on our attention this year more than on any previous occasion. It would be satisfactory to be able to account for it scientifically, although the knowledge of the cause or causes could scarcely enable us to prevent the recurrence of the inconvenience. The practical question is how best to utilise the combs of thick honey which cannot be extracted. No process of scraping, pressing, or melting that I am acquainted with could obtain the honey in a marketable condition. As long as the frames can be made available for winter and spring feeding of the stocks it is all well, but when the number of frames is considerably more than can be disposed of in that way, it becomes a serious inconvenience.

J. T. MULVANY.

FROM TAWHERE APIARY.

I OBSERVED last year that when in the North your honey seasons were good ours were bad, and *vice versa*. The same holds good for the present season. You complain of a short crop. I have to be thankful for a very good one,

and the more so that at the beginning of the season it seemed hopeless to expect a crop at all.

The winter was the mildest, driest, and most sunny that I remember since coming to the colony, and one would have expected the bees to come through it well, but the reverse was the case. Although every precaution was taken to ward off foul-brood—bees shifted to fresh boxes, brood combs removed that had the least suspicion of disease, and all but the strongest hives contracted to five or six combs—when the spring examination was made, only 60 out of 140 were found alive, and most of them in a deplorably weak state. Having put things in order, I set to work hunting up reinforcements, and was fortunate in being able to buy 25 strong hives, from which in due time I got a number of good swarms. By offering a good price I secured about 20 more swarms, and my own bees recovering strength about the middle of December, I had by that time 150 hives of various degrees of strength, quite 100 of them bringing in surplus honey. The weather at this time was rather broken and unsettled, but not so cold and wet as you had it in Auckland. It was particularly favourable for us, as it threw back the season a little and kept the ground moist, so that by Christmas the ground was covered with clover blossoms, and the bees were in a state to do justice to them. Another break in the weather occurred in the beginning of February, bringing up a second growth of clover and prolonging the honey-flow, which lasted well into March.

My crop is 10,500lbs., all extracted honey but a few hundred pounds. The demand for honey I find quite up to previous years. A good part of my crop has gone to Melbourne, and my brand is pretty well known in Napier and Wellington. I do not cultivate the Auckland market. On the whole I am well satisfied with the result; it is much better than I expected.

The trouble now is to winter the bees. It is very unsatisfactory to lose a third of one's stocks during the winter, and I have made up my mind to try the plan of removing them to empty hives and feeding rapidly medicated honey or sugar. I think of making a trough to hold about 100lbs., and floating a piece of perforated zinc on the surface. This I would lay in the honey-house, and let them take in the honey as fast as they can carry it. I know many persons would object to this as having a tendency to start robbing, but when the supply is kept up continuously I should not be much afraid. Feeding in the hive I have never found a success.

GEORGE STEVENSON.

Tawhere Apiary, Gisborne,
April 6, 1889.

We believe that such disastrous wintering as described by you is in a great measure due to insufficient attention being given to the bees during the autumn months. It appears to us scarcely possible, during such a mild winter, that so great a loss should have accrued, had the instructions as given by us each month been duly carried out. With regard to your proposed method of feeding, we certainly should not care to adopt your mode of procedure. The danger of fighting and robbing is too great, and you will find, unless we are greatly mistaken, that fighting will first commence at the feeding trough, and extend from that to the hives. At the same time you will be also feeding all the bees in your immediate neighbourhood. Not only that, but it is much too late in the season for comb building. Your best plan will be to contract the hive by means of division boards, and fill the combs with medicated syrup, as recommended in "Seasonable Operations" for this month. This plan we have successfully followed out during the past month in our own apiary.—[Ed.]

FROM OUR OWN APIARY.

IT must be understood at the outset that we have not been working our apiary during the past season for honey but for queen-rearing only. We commenced the season in August last with twelve colonies of black bees, six of which were headed shortly after by imported Italian queens, as we have before stated we believe them to be the best all-round bees, after having tried all varieties now under cultivation, except the Carniolans, which we feel certain would not prove acceptable for our queen trade, as the difference in appearance between them and the blacks is so slight that it can only be recognised by an expert, and the probability is that many

purchasers would not feel satisfied that they had a different race of bees.

During the season we have raised about two hundred queens on a modification of Aley's plan, described in the *Australasian Bee Manual*. After testing each queen those proved to be not purely mated, or which had any defect, were at once superseded by others. A large number of tested queens sold and there was a fair demand for untested ones after our advertisement appeared. We have the satisfaction of knowing that a large proportion of these turned out to be purely mated. We were very fortunate in sending out our queens as there were only three lost in transit, and these we replaced. We increased our stocks and, after wintering the weakest nuclei, we go into winter quarters with forty colonies, all in good condition and headed by Italian queens.

In queen rearing, as a matter of course, the bees, being in small colonies, are unable at the latter part of the season to gather sufficient honey for winter stores, and therefore must be supplied either by giving frames of honey from strong hives or by syrup feeding. As we had not sufficient of the former we gave sugar syrup, both in combs and by means of the bottle feeder, and to make room for the latter an empty body box was placed above the bottom hive. Before commencing to feed many of the weaker colonies had ceased brood rearing, but the effect of feeding has been to stimulate brood rearing, and we now have a large number of young bees emerging every day. We anticipate being able to winter all our colonies safely and being able to send out queens very early in the spring.

Epsom, Auckland, April 22, 1889.

Extracts from Foreign Journals, etc.

HOW DO BEES BREATHE.

BEES require a breathing apparatus quite as well as ourselves, and I think it will astonish you when I tell you how complicated it is. In the first place, bees have no lungs like a horse or bird. They do not depend upon one organ to supply the oxygen necessary to enable the several parts to perform their functions.

Before going further, let me explain that the air we breathe is composed of three gases, one of which, oxygen, is the element that sustains life, as well as the fire which burns in the grate. Life may be called a burning process.

In ourselves, our blood comes in contact with oxygen within the lungs, and then travels by the most delicate channels to every part of our body. In the bee there is a blood pump like our heart. It is called the "dorsal vessel," and resembles somewhat an injector, such as is found on every locomotive, but depends upon the opening and shutting of valves, for its successful operation. It leads the blood, received through the several openings in it, to the head, whence it oozes back through the whole body.

Instead of lungs, bees have what is called a "tracheal system"—a tracheal is merely an air-tube—and these air tubes travel in every conceivable direction within the body. They receive the outside air through openings in the body called spiracles. Adult bees have fourteen of these openings. The spiracles open into large sacs, from which branch out the tubes before spoken of. As I before said, the blood does not receive the oxygen from lungs, and hence these air-tubes must perform this life-giving function. Every part, every member, however small, however delicate, must be reached by these breathing tubes. Bees breathe with a regular motion, but

instead of an expanding and contracting of the chest, it is a lengthening and shortening of the abdomen. Watch a tired bee stop at the entrance before going in, and you will see it pant like a tired horse.

Take a good sized pill-box and fill it half full of wax. Catch a worker, and kill it with ether, chloroform or alcohol, and permit the killing fluid to evaporate. With a hair pin, heated over a lamp, make a little bath of melted wax in a convenient spot in the pill-box, and having clipped off the wings and legs of the bee, drop it on its back in the little bath aforesaid. The bee should not be more than half immersed in the wax, which is then allowed to cool. When cold, which will be in about a minute, pour water over the bee until it is covered. In a good light—say sun light—with a needle knife (made by heating the point of a coarse sewing-needle until red hot, hammering it with a tack hammer, on the face of a flat-iron, and after tempering by heating cherry red and plunging in water, sharpened on a hone, and inserted in a match for a handle), and a fine needle inserted in another match, go to work and cut away the under part of the rings of the abdomen, and carefully lift them off.

If you have good eyesight, or if not, by aid of a cheap lens (magnifying glass) of good construction, you will be astonished at the sight before you. There lie the honey-sac, digesting stomach, bile tubes and intestine. Running in all directions, but starting from the sides, you will note fine white tubes branching out into smaller, and these organs into still smaller, until lost to sight. These are the air-tubes I have been talking about, and you will note that they not only encircle the digesting stomach, but are wound around the other parts in sight. If your lens be strong enough, and you have not ruptured it in your dissection, you may find the nerve system, which lies just under, or when the bee is right side up, just over the wax-producing portion of the abdomen, and which runs the whole length of the bee from tail to brain. You will find it composed of two "cords" almost transparent, with occasional bulgings in which the two "cords" are joined. In and about this very nerve system you will find the fine breathing tubes before spoken of. Up into the compound eye, with its thousands of lenses, run other breathing tubes, every lens being supplied with oxygen in this manner, so that its functions may be performed.—*Exchange.*

Queries and Replies.

J. A. MORELAND.—Foul-brood did not make its appearance in any of the hives during the time the editor had charge of the Matamata apiary, which he attributes chiefly to the precautionary measures taken, including the use of camphor.

The beekeeper will ordinarily derive all his profits from stocks, strong and healthy, in early spring.

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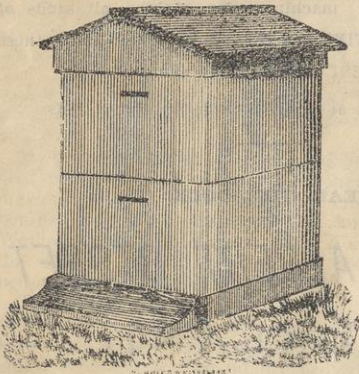
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