The Australian bee bulletin. Vol. 15, no. 5 August 28, 1906

West Maitland, N.S.W.: E. Tipper, August 28, 1906

Registered at the General Post Office Sydney for transmission by post as a Newspaper

THE AUSTRALIAN Bee Bulletin.

A MONTHLY JOURNAL, DEVOTED TO BEE-KEEPING.

Edited and Published by E. TIPPER, West Maitland; Apiary, Willow Tree, N.S.W

Circulated in all the Australian Colonies, New Zealand, & Cape of Good Hope.

VOL. 15. No 5. AUGUST 28, 1906. PER COPY, 6D

Per Annum 5s, booked 6s 6d, in Australasia, outside N.S.W., add 6d. postage

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E. TIPPER, EDITOR & PUBLISHER, West Maitland & Willow Tree.

MAITLAND, N.S.W.—AUG., 1906.

The following is the list of advertisers in our present issue, all of whom we would recommend our readers to patronise:—

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Swarming is prevented if the queen is caged so many days that the colony is without unsealed brood for four days.

The best way to prevent swarming is to use only young queens, give room in advance, and plenty of bottom ventilation.

We used to hear much of the spider-plant for producing honey. Is it forgotten.

If you spill small wire nails, the trouble of picking them up may be mitigated by using a little magnet.

Doolittle says that colonies with entrances blocked with grass and weeds will not store two-thirds of the honey they would with a free entrance.

We acknowledge receipt of special number of "The New Idea." In it a new Picture-puzzle contest begins, and it is quite superfluous for us to say that like all Rev. Fitchett's publications it is brim full of most interesting reading matter throughout. It is now sent post free for 3/- per annum.

Also the August number of the "Australian Youth," an interesting and instructive journal for boys and girls, published for One Penny, at 52, St. Francis Street, Melbourne.

OUR APIARY.

This month we visited two of our apiaries. Leaving home at 9.15 a.m, we arrived at No. 1 about 12 o'clock. Our

first item was to unharness and feed the horse from the bag of hay brought with us. While that was being done the fire was lit and the billy boiled. Where this time last year was 70 good swarms of bees, only 12 now remained. To go carefully through them, find the queens, and see they had plenty of honey and room was our work. Several young, apparently superseded fall queens, were found and clipped. Each hive had four or five frames with brood in, and plenty of honey. To some we gave a super, others removed the linoleum or ruberoid from over the brood chamber to top of story above same, so as to retain the warmth and also give room for breeding. This took us till half past three. We were congratulating ourselves on the splendid condition they were in when the thought came: This was about the same condition the seventy were in last year. We heartily hope last year's experience will not be experienced this. We passed the night with some dear friends, and next morning, at 9 o'clock, was at apiary No. 2. At this apiary we have 25 colonies, instead of 75 last year. Here the same experiences awaited us, with the addition of having to kill three or four tarantulas and black and red spiders in unoccupied supers, and the same remarks occurring. Got home that evening about six o'clock.

Travelling along the roads in this district we were compelled to notice the number of apiary wrecks. One man had sixty hives last year, now only three; another fifteen, now only two. With the continued dry weather they say that wheat-growing is a gamble. The creeks are all dried up, and only those dairymen are getting a living who have been able to provide crops for their cattle to graze on. Everyone is praying for rain.

THE INCREASING DEMAND FOR HONEY.

W. Abram, Beecroft.

For many years past honey has not been in such demand as it is at present. What is the cause? Has the demand increased? No. Have beekeepers been reduced? To some extent, mostly through unfavourable seasons, and also through paralysis destroying whole apiaries, either of which reduced the producing power. But the main factor is the scarcity of nectar in the blossoms in most parts of Australia during last season. When only some districts suffer the effect is hardly felt, but when almost the whole continent is affected the matter is different. And this happened last season, thus the demand and price.

Well now, this would be a good time to formulate a scheme which would assist beekeepers in getting full value in future for their products. As it has been, there is no hope of getting full value for their products. Everyone takes what he can get and is satisfied, and if not satisfied, grumbling makes no difference, only aggravates matters. So why not arrange that a western, a southern, a northern and a coastal beekeeper conjointly fix the price at different times, below which none should be sold? Take a vote who should be the representative.

Honey is a sweet superior to any, yet it is not recognised as such by many. That is the beekeepers' fault. They quible about this and that, but in so doing lose sight of the paying concern. I have always tried to place bee-culture in its proper place, and I have had occasion to rectify, to me, apparent mis-statements, and I have not infrequently made bitter enemies thereby, but I am glad to say that in all my writings, which have been very considerable, I have always scored, and in all the information I have given during my twenty-five years in Australia, there is no paragraph that can be contradicted to-day. So I believe a better area could be produced by a combination of beekeepers, and, if followed out, it would result to our benefit. Honey, like every product, should remunerate the majority of producers for their labour. Has this been the case? If so, there is no complaint. In good seasons bees are

remunerative at any price that their products obtain, but what about off seasons? Do not have them, some jockel might say; but we know that bad seasons follow good ones in every district, therefore one good season naturally must support a bad one. Does the price of honey, or of anything you produce, allow that?

The production of honey is the same as the production of queens: you cannot have both in its full, one must suffer, and I have still to learn where the beekeeper lives in Australia who produces good queens at 2s. 6d. each, and makes a comfortable living thereby. A good article is worth a good price, and I deplore the time when schoolmasters introduced the untested queen trade here. I still believe it would have been better for the industry if beekeepers paid good prices for good queens. As it is, unless stringent measures are adopted, beekeeping is disadvancing, should not splendid seasons aid the industry.

QUEENSLAND BEEKEEPERS' ASSOCIATION.

Notes by "The Drone."

The second Annual Meeting of the Queensland Beekeepers' Association was held at the Technical College on the 10th instant. There was a fair attendance of members. Mr. H. L. Jones presided.

Messrs. J. W. Evans (Rosewood), Jos. C. Bailey (Gatton), and A. W. Smith were elected members.

The balance-showed a credit balance of £2 7s. 6d.; that outstanding subscriptions amounted to £8 10s., and account outstanding £4 15s. The report gave a resume of the year's work, from which the following extracts are taken:

"Among other things the following subjects have received attention: The rules and constitution of the Association have been revised and adopted at a General Meeting held on the 29th June, and your committee are of opinion that this Association now has the best set of rules of any beekeepers' association in Australia. The constitution has been altered so as to enable members in outlying districts to form branches or centres, and elect a local secretary, who will make known their wants and wishes to the Central Committee in Brisbane. These local secretaries will have seats on the committee. This should mean a large increase of membership, with a corresponding benefit to members in distant parts of the state. On the 19th January Dr. R. Hamlyn-Harris read a paper on 'Honey and its uses as a food and medicine for man.' Owing to want of funds, it has not been possible to have the paper printed in pamphlet form, but arrangements have been made for its publication in the 'Daily Mail' each Saturday. The first instalment will probably appear during the present month. A letter drawing the attention of biscuit-makers to the advantages of using honey for the manufacture of their goods, together with an extract from 'Gleanings' on the subject, has been circulated. A deputation early in the year waited on the Produce Merchants' Association with a view to certain alterations and improvements in the marketing of honey. They were given a sympathetic hearing, and a promise that the matters brought under notice should be rectified. Still, it is quite clear that an improvement must come from the beekeepers themselves.

"In March the National Association asked your Committee to nominate judges for their published list of judges for the use of country Show Committee. Your committee nominated a number of beekeepers whose names now appear in that list.

"In April he wrote to the Agricultural Department, suggesting that three samples of the best marketable honey now being sold in England be obtained, with a view to enabling members to ascertain exactly the sort of honey the English people require. Dr. Hamlyn-Harris supplied the names of reliable people at 'home' who could obtain samples. The Agricultural Department at once fell in

with the idea, and the samples should be here in a few days. One will be kept at the Department, one at the National Association rooms (where our collection of honey is housed), and the third sample will be kept for tasting purposes. Mr. Peake having drawn the committee's attention to the fact that the Fruit Growers' Association intended introducing fungus for the destruction of the fruit fly, which fungus, he stated, would probably prove fatal to bees, the secretary interviewed the officers of the Agricultural Department on the subject, and was assured that such fungus would not be introduced until the department are satisfied that it will not prove injurious to the beekeeping industry. Your Association has again been asked to take charge of the bee demonstration at the Exhibition, and consented to do so. It proved a great attraction."

The adoption of the report and balance sheet was moved by Mr. Jones (president), and carried.

The meeting then proceeded with the election of officers, which resulted as follows:—President, Mr. H. L. Jones; vice-president, J. C. Brunnich; treasurer, J. M. Mitchell; hon. general secretary, F. W. Smith; hon. consulting expert, Dr. R. Hamlyn-Harris; Committee, Messrs. J. C. Rundle, R. J. Cribb, M. Peake, R Richardson, and A. H. Clarkson; hon. auditors, Messrs. Butler and D. Jones.

Mr. Cribb moved, That best thanks of this Association be conveyed to Mr. Clarkson for the work he has put into the Association during the past two years. Carried. Mr. Clarkson having suitably responded, the meeting terminated.

SAM LING.

Sam Ling is a Chinese bee-keeper in California. His drones are the product of fertile workers. He makes several swarms queenless, and then waits for fertile workers to appear, when he puts the frames of brood, bee, and all over a strong colony, with a queen and drone excluder between the stories. In this way, with an entrance in the rear of the upper story, he lets fly his drones at such times as he needs them and can keep them in, when he so desires. The workers have access to both stories, and fly from their regular entrance. Having drones he is ready to make swarms, which he does in the old way by taking three frames of brood and bees from strong swarms.

When I ventured to say that his drones were not well sexed and not natural ones he shrugged his shoulders and said, "Well, I do him that way every year. You go try him. You don't hab believe me; can do it yourself."

"But your queens and cells will be small," I said, "from mere nuclei."

"Oh, no! I make him just so big as I want him," said Ling.

Here again I engaged him with interrogations of how he did and what he meant by making large queens. He proceeds as follows, but said that I "must not tell somebody." He takes any small queen cell; and just before it is capped over he cuts from the opening with a sharp razor as small a piece or strip as he can. The bees then, he says, will build on to this opening, or extend it the fraction of an inch. When they again start to cap it over he uses the razor again, and even a third time. In this way he gets large cells and correspondingly large and better queens. Again he said, "Don't hab believe me, you can do it. I do it ebery year all time."

He, like all Celestials, intends to return to his native land; and his hopes now are to "heap rich in four more years, and then make one bee book for my own country."

He says, "I no like any more book, for I make him from my own head."

He has manuscript piled a foot high in his Chinese hieroglyphics to prove his determination.—*Gleanings.*

IMPROVEMENT OF BEES.

Louis H. Scholl.

The stock of the honey-bee has been wonderfully improved by man's management in the application of the principles of scientific bee-culture. It is true, indeed, that there is a great difference in the working qualities of different strains of bees, and that in some cases we may, perhaps, fairly claim to have accomplished improvement by intelligent selection; but as a whole, I must say that the results have been pitifully small and inadequate, considering our opportunities. We have frequently had our attention called to the fact that we have exceptional opportunities for improvment by breeding and selection on account of the shortness of the generation of the bee; but have we really made as much improvement in bees as has been made in other domestic animals in the same time

It is true that most of us believe that the Italian bee is better than the German-brown or black bee it has superseded in nearly all localities, and that the can be found those who express a preference for each of the other races that have been brought to this country, but the importation of these races is not to be considered as improvments in bees due to man's management or the application of principles of scientific culture. The only thing that can be considered in that light is the change that has been made by breeding and selection since they have come to this country. How much real improvement has there been. I think there has been some; but leaving out the claims of advertisers, many of which are not sustained by results, and remembering how many there are who believe that bees from newly imported stock are superior, it does not really seem that anything very wonderful has been done.

Too much of our breeding has been done hap-hazard, and without any intelligent system or direction other than the production of yellow bees and nice-looking queens. Will anyone else point out where bees have been produced which are better adapted to particular localities or to particular kinds of work, or where the quality of the honey, other than an improvement in appearance, has been affected by improvement in the stock.

We must remember that many people have bees that, from one cause or another, are very inferior. When one of these gets new stock, no matter where, he is quite sure to get something superior to what he has had. Accordingly he writes a glowing testimonial which the queen-breeder publishes, and plumes himself on having something really superior, whereas his stock may be quite ordinary. My own experience with some of this so-called superior stock has been very disappointing.—*American Bee Journal.*

THE APIARY.

A writer in the "Queensland Country Life" has the following interesting notes:

"I am in receipt of the National Agricultural and Industrial Association's prize schedule for the coming Exhibition at Bowen Park on the 7th August and following days. The agricultural section is very attractive this year, and contains 17 classes. There are one or two features worthy of note; for instance, a class has been provided for dark honey. To use a favourite expression of country correspondents. "This supplies a long-felt want." Separate exhibits have to be provided for trophy and class entries. In other words, the same exhibit cannot compete for trophy and again for a class prize. Comb honey will be shown under glass. The space for collection of hives, foundation and implements must be paid for by exhibitor (Class 755). This is to be regretted, for it is sure to mean only one or two entries. A special prize, valued at £3 3s. will be presented by Messrs. Swift and Grice for trophy of comb and extracted honey, consisting of not less than half a ton, shown in an atractive form suitable for retail market. This is another innovation, and had the

season been better no doubt would have attracted a large number of entries. However I have reason to believe that the prize will not go begging for an exhibitor, and shall not be surprised to find an entry from Toowoomba. The successful competitor is almost sure to have his exhibit snapped up by some enterprising grocer. "A useful novelty" this yearly shown. It is to be hoped that our lady bee-keepers will compete for the prize offered in Class 760— means an implement not previous. Best sample of cakes and confectionery made with honey. Here is a good chance for the ladies to prove that they can cook as well as manage bees. The Queensland Beekeepers' Association offer £2 2s. in prizes. Mr. D. Jones is the council steward, and entries close 19th July.

Now that the winter is upon us, we can expect very little more honey to be gathered by our bees before the spring. True, the ti-tree is flowering again, but we never get a great quantity from it. It therefore behoves bee keepers to see that the bees start the winter in such a condition that there is a hope of their going through it successfully. To do so they must have plenty of stores in the form of honey; about four or five full frames are required to see them through it, that is, allowing for their gathering a small quantity during the cold months. On the first warm day the amateur bee-keeper should look through his colonies and see that they have sufficient food. If they have not, feeding will have to be resorted to.

NUCLEUS METHOD OF QUEEN REARING.

BY F. GREINER.

This branch of apiculture is one of the most interesting and, to me, most fascinating branches of our pursuit. This is due in a great measure to the progress we have made in late years. Our forefathers were not ignorant of certain fundamental facts in regard to rearing queens, and applied this knowledge in their way; but not until American bee-masters took up this work, giving it their undivided attention, that methods were brought out which put everything previously known "in the shade."

The discovery that larvæ could be transferred from one cell to another without harm to the developing insect was made by a German bee-master during the first years of my bee-keeping—about 30 years ago, if I remember rightly. It seemed to be a frequently occuring trouble that colonies refused to rear queens or start cells over given brood, and the advice given at that time in order to outwit these obstinate bees was to remove the larvæ from the cells which they had started over their own brood, and substitute selected larvæ from the desired type. It was found that this plan worked every time, and it is my opinion that this procedure will produce queens second to none.

Priming artificial cells with royal food does very well, and if we do our work well we can usually succeed in getting the large majority of cells accepted. After the bees have once accepted a cell and supplied it abundantly with suitable food, according to their fashion, we can then do almost anything with it, and the bees will continue taking care of the inmate.

It stands to reason tha the larva which we transfer will find more suitable surroundings in that queen-cell from which a royal larva has just been removed that in an artificial cell clumsily prepared by man's fingers. A larva placed in the warm bed of another will probably not notice the change, and receive not the slightest setback, but go right on and develop into a most perfect queen-bee.

I am well aware that the above is as yet largely theory. It needs careful testing whether or not thus produced queen-bees are any better for it. But it is quite certain that we cannot make a mistake if we let our bees accept a lot of stocked up cells first, allow them to take care of the young larvæ for about 24

hours, then remove them and replace with just-hatched larvæ from our best mother bee. I look upon this method with so much favor that I have adopted it as the best plan. In all our operations with bees we must remain as close to nature as possible and consistent with the object to be accomplished.

If it were possible and practical to obtain our queen-cells from our best colonies, having them start the cells naturally and under the swarming impulse when the honey-season is on, that would be the ideal, and we will do well to make the very best use of all queen cells that are so built in our apiaries by our breeding colonies; but the quantity is too limited, and we do not often have them at the time when we need them most; consequently we are depending upon other more prolific methods, and the one outlined is a good one.

As to the matter of mating the queens, the baby-nucleus plan is all the go at present at any rate among the queen-breeders. I have tested the Pratt nucleus boxes and have been successful with them, still I do not keep them in use. I fear they do not take care of themselves as larger and more populous nucleus colonies would do. With a larger nucleus colony feeding is seldom necessary. This is an item in favor of it, although the larger the more expensive.

A few years ago I made a lot of small frames of which 4 fill a regular brood frame. I can use them thus in my regular hives, or I can use them separately in a small hive by attaching a top-bar to each. The way I do use them is by means of a sort of long-ideal hive holding 18 or 20 of them. By means of division-boards, close-fitting, I can divide the long-ideal hive into 4 compartments, a small entrance to each. When I first made this small frame, my idea was to use them in a small hive during the summer, and unite a number of them, putting 4 frames into one large brood-frame.

In practice this uniting and putting on large frames did not work to my satisfaction. It was unpleasant work, and took too much time. I conceived the idea that perhaps I might winter these nuclei on the small frame and thus have nucleus hives ready and stocked up early in the season and at any time. This worked well. A few days before the queen-cells are ready I slip in the division-boards, letting the queen go where she will. On the third day cells are given to the queenless parts; when these queens are laying they are removed, and if we desire to increase the number of our nuclei the hive is moved to another place and an empty one like the one moved away is put in its place. Each compartment is fitted out with honey-combs, and at least one comb of brood and bees. The flying bees or field-bees from the moved hive make pretty fair nuclei and we are thus doubling the number to start with. With these hives it is an easy matter to have what nuclei we want to use.

The uniting in the fall is also easy. In fact, the whole matter becomes so easy that it almost runs itself. The feeding can be done by giving combs heavy with honey instead of liquid feed. There is no trouble in getting any of the regular colonies to clean up such combs and fill them with honey during the early part of the season.

It goes without saying that these hives do not winter on their summer stands, but have to be taken into the cellar; but 4 of the nuclei, when they are united in the fall by removing the division-boards, make a large enough body of bees to guarantee the wintering indoors.—*American Bee Journal.*

G. W. E., Wynyard.—I have been a snbscriber to your paper for a good many years, and I shall miss the A.B.B. very much. It will be like losing an old friend, but I shall always be glad to recommend by friends to subscribe, as it is the best bee journal that I have yet seen, and it is with regret that I withdraw my support. With all good wishes for the future success of your paper.

PRICES OF HONEY.

Melbourne Australasian. — Honey — Prime honey is in moderate demand at 3d., choice extracted fetching 3¼d. Cloudy, dark, and inferior is dull at down to 2d. Beeswax is quoted at 1/2 to 1/3.

Melbourne Leader. — Honey. — There clear honey is selling at 3d., a fraction more being wanted for extra prime. Medium to good grade is on offer at from 2½d upwards. Beeswax — Prime clear wax is inquired for at 1/3; medium lots, more or less discoloured, selling at from 1/- upwards.

S. M. Herald.—Honey, 60lb tins, choice extracted 3d to 3½d, good 2½d, inferior 2d per lb. Beeswax—Dark 1/1½, prime 1/2.

Maitland Mercury.—Honey, 2d to 2½d. per lb. Small tins 2/3 to 2/6.

HONEY.—

Sales are improving since the reduction in prices. We are now quoting choisest from 3d. to 3½d., and medium lots from 2¾d, Adelaide is selling on this market at 3d., and this will check any advance.

BEESWAX.—

1/1d to 1/2d, with a strong demand.

ANCIENT BEE KNOWLEDGE.

Continued from last issue.

Therefore make a Box or Hive of about eight Inches in height in the Inside, and about twelve Inches broad, four square, close at the top and open at the bottom, with a Square of French or Dutch Glass on each side of about four or five Inches broad, and five Inches deep, so groved in that no Air may pass through the sides of it; which may be prevented by fixing it in with Paste or Cotton-Wooll. Let there be Shutters or Covers for each Square of Glass, to be added and taken off at pleasure, by means of small Buttons or Hasps; or you may make it without Glass if you please. Let there be two Tee-holes or Doors, the one in the middle of the one Square-side at the bottom, and the other in the middle of the other Square-side next adjoining; that when this Hive stands with the one Door towards the South-East, the other may be towards the South-West, each Door being about three Inches long and one third part of an Inch deep.

Then make another Box or Hive of the same depth, and about six or eight Inches broader, with two Squares of Glass on each side, two Doors on two of the sides, that they may tend towards the same Coasts as the other: Let this Box be open at bottom also and close at the top, except an hole in the Middle of about three Inches Diameter or Square. You may also make a third Box of about two Foot over or more, but the same depth as the former; always encreasing the Number of your Glass-squares and Doors proportionable to the breadth of your sides.

The Tops of these Boxes must be made of well-season'd dry Wood, Oak, Beech, Fir, or Sugar-chest, and made in Pannels joined to prevent shrinking, swelling, warping, sptitting, etc., the sides with Studds and Pannels, as every Joiner can direct you. The top on the inside may be either of the Board as it is, which is best, or if you doubt that it will shrink you may line it with a thin Mat, as I have seen it, or Plaster it with fine Mortar made of Lime and Hair; always remembering to singe off the Hair that may probably stick without the Mortar.

You may also make sticks to hang in several places of the Boxes, of about half an Inch square, fixed in the upper part of the Box and extending to the bottom or very near it, the better to preserve the Combs steady, and to help the Bees the easier to come to their Combs.

The first of these Boxes you may take a Swarm into it at swarming time, and set it in its place where it is to stand, leaving both the Doors open to the Coasts before mentioned; which if the swarm be great will be quickly filled. When you perceive it near full add the second Box under it, placing the first on the middle of the undermost, leaving the hole in the middle open. This may be done in the cool of the evening or in the night. The next Day will part of the Bees take to their new Box, but the greater number continue their former employment until they have quite filled the upper. Then will they fall to work in the lower, and its probable may fill that also the same Summer. As you find occasion, you may add the third, and so a fourth or fifth, leaving the several Doors open in every Box whilst you find there is occasion; and as the weather grows colder, and the Bees labour less, so you may lessen their passages by small Wedges, made flat and fit for that purpose; so you may keep their Glass shut as you think good. You may if you please let your uppermost be a small Straw-hive, which is as good, though not so comely or suitable, as that of Joiner's Work.

You may make a Frame of Wood on four Legs, covered with Board or Lead, or what you please, to place these Boxes in to preserve them from the Wet, much whereof they will not endure. Let the drip be carried off from the two foremost sides, least it drive too much on the Hives or Bees. This Case or Bee-House

must stand Arras-wise with one Corner towards the South, that the Boxes also may the better stand that way. It must have Doors on every side; the two back-doors may be whole, and made to open only when you have occasion to move, order, or view your Bees. The two fore-doors may be made in several parts, the upper third part to open upwards, supported, dripping forwards, by slender Iron hooks, that the wind stir them not; these serve to keep the Bees and Boxes from Rain and Sun. The Under-Doors may be made in halves, the one to hang on the East and West posts, and the other on the South posts; those on the South posts to be taken off the Hooks all the Summer, and in the Winter also, except when the Bees are to be totally confin'd.

From this Form or Model of keeping of Bees these Conveniences and Advantages will certainly ensue.

1. The Bees have not far to ascend, their Habitation being but low.

2. They are not hindred for want of Room, nor for want of Entrance; their Doors are wide and on several sides of the Hives or Boxes, that they have great freedom of passage to and fro in the most busie time of their Gathering.

3. The Bees have the benefit of the Sun the whole day by this position of the Hive. In hot and dry weather the morning Sun is most necessary to invite them abroad before the Dews are off the Flowers and Trees; and the evening Sun is necessary in all weathers.

4. Their entrance or Doors may easily be straitned as the season of the year requires.

5. The Boxes themselves may in the Winter be secured from cold Winds and Rains, and the warm Sun may be excluded in the Winter months; which shining on the Hives tempts the bees to come abroad to their ruine, and usually wakens them out of their Winter sleeps, provoking them to expend their Provisions, which in the Spring-time, if the weather prove unseasonable, they may want.

6. You may make use of your Glass Windows at any time to view the numerous Colonies of these most laborious Animals.

7. These broad and flat Boxes will harbour with advantage as many Bees as possibly can cohabit together in any one Colony, with all imaginable conveniency. And as they increase in Number, so may you increase your Boxes, until you find them at a stay: And then it is best to take them by the usual way of smothering by the Fume of Brimstone, admitted by some hole left at the bottom of the Bee-house, and kept stopp'd until you have occasion to use it for this purpose. For let not anyone imagine that their Honey can be taken from them and the Bees preserved, unless by some sort of driving mentioned by Butler in his "Feminine Monarchy," which also are not commended.

The Bees will never forsake their Combs that are full of Honey, as I have several times experimented, as well by cutting off the top of the Hive and placing another over it, as by inverting a Hive with the bottom upwards and placing another over it; wherein the Bees build some Combs, yet by far the greater part of them kept to their former old Hive. Therefore all the boasts and affirmations of what hath been done to that purpose have been vain, unless such pretended experimenters have met with a new Species of Bees.

OF THE GATHERING OF BEES.

These Animals spend their time, as long as the Weather will permit and anything will yield them matter to work upon, in gathering Honey either gross or pure, or Wax, as their occasions require, and the Season of the year will afford them, according to the Poet,

Now when bright Sol makes Winter's Cold retreat
Behind the Earth, and opens Heav'n with Heat,
Forthwith they rise, and thorough Groves and Woods

Reap purple Flow'rs, and taste the Crystal Floods:
By what instinct I know not; then they fly
To their own Courts, and their dear Progeny.
Next make their waxen Cells with greatest shill,
And those they with Celestial Nectar fill.

In the first of the Spring in February, if the Weather be fair, they will abroad, and in that Month and the next, as the Spring is earlier and later, they gather much on the Hazel, Dandelyon, Dazie, Violet, Withy, Alder, Daffodil, etc. But above any other Tree, they most affect the Phyllirea; one sort of them beareth those Months an abundance of greenish Blossoms, which yield great plenty of a Gummy Rosiny Sweat, which the Bees daily transport to their Hives, and yet it as often as the day reneweth. Nothing can be more acceptable to your Bees than a Hedge of this Tree about your Apiary, it being a very close Fence green all the Winter, and yielding so great a quan ity of acceptable Food in the usual time of their greatest Necessity.

Although these Trees are not now very common, yet are they easily propogated from Seeds, Layers, or Slips. And I do assure you the effects of them to be as aforesaid, and do not advise it to your loss, as a certain Author did to place the Elm about your Apiary; a Tree that hath been always esteemed injurious to Bees, not only by ancient and experienced Bee-masters, but our modern Botanicks. Nor as hath been advised to plant the Palm tree, which neither Gold nor Silver can purchase to flourish in this Northern Clime.

The residue of the Spring do the Bees plentifully gather on the Blossoms of the Black-thorn, Bullace, Plum, Cherry, Pear, Apple, Gooseberry, Peach, and many other Fruits and Flowers of the Gardens as well as of the Meadows.

Them let sweet Gardens with fresh Flowers invite.

Thus from one Tree and Blossom to another do these industrious Insects gather their Food, being more gross than the fine Honey they gather in the Summer for their Winter store; this being but the Ambrofia, as Butler terms it, serving only for present maintenance for themselves and their Brood, for want of which (their old stock of fine Honey or Nectar being spent, and the weather bad that they cannot gather) they often die. Therefore those Plants that afford them most of this early Food ought to be propogated about your Apiary.

When the Spring is a little past, and the Summer, or May month, well entred, then the Bees prosecute their building, preparing Cells wherein to store up their Treasure for the succeeding Winter; not neglecting their Breeding, which they continue until Nature (their Mistress) prompteth them to decline it, and follow their work of gathering and storing up their Nectar whilst it is to be had. Every Bee hath its several Office, some to gather, others to build, etc., as the Poet observed—

For some provide, and by a Compact made,
Labour abroad; others at home are stay'd
To lay Narciffus Tears, and yielding Gum,
As the first Ground-work of the Honey-Comb;
Which with stiff Wax they finish to their praise.
Others, the Nation's hope, young Colonies raise.
Another part the purest Honey stives,
Until the liquid Nectar crack the Hives.
And some by Lot, attend the Gates t' inform
Approaching Show'rs, and to foretell a Storm;
To ease the laden, or imbattell'd drive,
The Drones, a slothful Cattel, from the Hive.

After the Summer Solstice, the pure Nectar rests on the Leaves of the Oak, and some other Trees, but most on the Oak; so long as these Dews fall, the Bees daily lade themselves home with it, they not omitting their making of Combs, nor as yet their Breeding.

Besides from Trees, they gather much Honey from Thyme, chiefly to be nourished in and near your Apiary, as the Poet advised—

Set Thyme about their Hives, and Pines remove
From lofty Hills, for they such Plants do love.

For Thyme yields much and very poor Honey. The Pines are only supposed to be for shelter, being ever-green; in the room of which you may place Phyllirea,

which is to be preferr'd, yielding both shelter and food.

After the Honey-dews are over, Bees gather but little; neither do they then build any more Cells, having no need of them, but fill at those times all their Cells to the very top, not only with Honey, but all the Intervals with their Bodies.

So that if you should separate or drive the Bees from their Combs before the fall of the Honey-dews, and take the upper part, you would have but little advantage, by reason of the young Grubs you would have mixt with your impure Honey. And if you should separate or drive them after, you would not leave wherewith to maintain them over the Winter; and your driving of them, being a lingering Death, would prove greater cruelty to these Animals than a sudden suffocation.

Not but that they in the Autumn continually employ themselves in gathering very pure Honey in small quantity. from the time of the Honey-dews until the severity of the Winter prohibits their flight; but not enough to renew their Store for the succeeding Winter.

Beeswax—Its Origin, Composition, Adulteration Tests, Etc.

By Adrinn Getaz.

A test with an insufficient quantity of alcohol, or at a too-low temperature would leave a portion of the myricine undissolved, and convey the impression that the wax was not pure. Another and more serious difficulty is that the chemical agents employed to test the wax acts on many other substances also. For example the soda and potash form soaps with nearly all the oils and fatty substances as well as with the wax.

Home Adulterations.

We can distinguish two classes of adulterations—those made by the farmers and bee-keepers themselves, and those made by skilful dealers and manufacturers. The first ones are usually very crude and easy to recognize. The substances usually employed are tallow, rosin, paraffin and any kind of entirely foreign substances like flour, sand, etc. Melting the wax will separate at once such things as flour or sand.

Pure beeswax has a slight but agreeable taste—a slight aromatic odor. It becomes plastic in the warm hand, without oiling or coating the skin, and is, under pressure, decidedly adhesive, with the separated parts welding together perfectly. When broken, the surfaces are granular, with a dry, unpolished aspect. When cut, they show a glossy, waxy lustre. When chewed, the wax does not stick to the teeth, but crumbles in the mouth. A small percentage of adulteration will often cause it to clog. Rosin makes the fracture smooth and shining. As cold alcohol dissolves the rosin better than the wax, it is possible to have the rosin all dissolved before the wax is much altered. The dissolved rosin can be separated by evaporating the alcohol.

Tallow gives the wax a soft, dull appearance. Its taste and smell can be recognized when chewing the wax. The paraffin is harder to detect. Like the tallow and other hard fats, it causes the wax to melt at a lower temperature. It can be detected by the aid of strong sulphuric acid. A piece of the suspected wax is put in the acid. The acid destroys the wax completely, forming a black, carbonized paste, while the paraffin rises on the top untouched. The acid should be as concentrated as possible, as the addition of water prevents its action on the wax. There should be plenty of it, as the resulting black paste should be liquid enough to permit the paraffin to separate. Only about four-fifths of the paraffin is separated by that process even at the best.

General Tests.

The first general test that can be applied is that of density. Procure a piece of wax known to be pure, make it in a small ball,

and put it in a glass of water. Add gradually some alcohol until the wax barely floats, and when pushed down remains about where it is without going up or down, or very slowly. Try a piece of the suspected wax; it should behave the same way. If it does not, it is adulterated and no further test is necessary. If it does, it might be adulterated if the substances added are of the same density as the wax. Be sure that no bubble of air is left in the ball, or adheres to the outside.

The second test is the melting point. Pure wax melts at 144 degrees, Fahrenheit, when fresh, and about 2 degrees higher when old. If no apparatus is at hand the test may be made approximately by putting a small piece of pure beeswax and one of suspected wax on a piece of tin, and holding the tin over a lamp. Tne two pieces should melt at the same time. It is necessary that they should be of the same size and shape, and that the tin should be kept moving over the lamp so that its whole surface is at the same temperature.

The third and fourth tests are by dissolving the wax in benzine, and also another sample in pure spirits of turpentine. In both cases the wax should dissolve completely, and the solutions should be perfectly clear. Needless to say that these tests, like the preceding, are not always final. because other substances than wax dissolve in benzine and turpentine.

Mr. Gaille's Test.

Mr. Gaille, a chemist oi Switzerland, gives the following as the best known general process :—In the first place the wax should be tested as to its density and solution in pure spirits of turpentine. If neither of these tests detects any adulteration the following is to be done :

A small piece of the suspected wax is placed in a glass of concentrated alcohol, and heated until the wax is dissolved. If anything fails to dissolve it is evidently an adulteration. If the dissolution is complete the glass is laid aside to cool for at least half an hour. The liquid, which is more or less cloudy, is filtered and added to about the same amount of filtered or rain water. A small piece of litmus paper (the druggist will tell you what it is) blued with a little ammonia is then placed in the mixture and the whole shaken together. After a quarter of an hour the paper should have remained blue. If it has become red, the wax is adulterated. If it has not changed, the liquid is then filtered and must be clear after the filteration. It is claimed that a wax that has stood all these tests is pure, as any of the known adulterations would have shown at one time or another during these operations.

Manufactured Wax.

I use the title "manufactured wax" purposely. There are "waxes" or mixtures called wax of almost every color, degree of hardness, or melting point, that may be desired; some of them without any particle of real beeswax whatever. But do not suppose that these are frauds altogether. In a great many cases they answer the purpose far better than real pure beeswax would do. Needless to say that when any such is used for making comb foundation, it is an unmitigated fraud of the worst kind.

Such "waxes" are obtained by mixing together in varying proportions all or parts of the following substances : Beeswax, paraffin, ceresine or mineral wax, stearin, and different kinds of animal and vegetable waxes.

One of the text-books I have mentions several kinds of mineral wax. The best known, and by far the most used is the ozokerite. When purified it is called ceresine, or natural paraffin. It looks more like paraffin than beeswax and can be separated from beeswax by the use of concentrated sulphuric acid, as described above the paraffin. It disolves entirely in spirits of turpentine, but little in boiling alcohol.

Among the animal waxes is the Andaguies wax, produced by the different kinds of stingless bees of South America and gathered by the Indians with more or less dirt of all sorts. It is different from that of our bees.

The Chinese wax is much whiter and finer than the beeswax. It is the product of another kind of insects which lives on a tree or bush called there the "wax-tree." It is an evergreen with white flowers similar to those of the cherry or plum trees. These insects, by biting or otherwise attacking the leaves of the trees, cause the formation of balls similar to those that we often see on the leaves of oaks and other trees, only they are larger and of a purple color. They contain the insect's eggs in large numbers. They are gathered in the fall and kept in a secure place throngh the winter. In the spring they are hung on the trees. Soon the eggs hatch out and the insects attach themselves to the leaves. The liquid they produce rapidly transforms itself into a white wax which covers the leaves and twigs until they look as if they were covered with snow. The wax is scraped off with a thin, sharp flat piece of bamboo.

There are also bees and real beeswax in China.

The vegetable waxes are not due to any insect but are a product of the plants themselves. The white powder-like substances seen on plums or figs is something of that sort. It is found on the leaves of some plants or trees, on the berries of some others, and even in the bark of the cork trees. Each kind is somewhat different from the others, but all are too brittle to be used alone.

Stearin.

The stearin has another origin altogether. It is white, almost transparent, much harder than beeswax, does not burn quite as fast, and for some purposes is far superior. It is prepared by heating tallow and dissolving it in boiling ether several times until the stearin is pure.

A French bee-keeper, Mr. Butet, says that by putting a little of the suspected wax previously melted in a boiling solution of soda, the pure wax will form a beautiful white soap, while the ceresin if there is any, will remain untouched.

Bleached Wax.

The wax to be bleached is melted with some water and a little cream-of-tartar. The whole is kept on the fire and constantly stirred a while. Then the melted wax is poured in a trough having several rows of holes in the bottom. Under the trough is a cylinder revolving with the lower part plunging in iced water. The streams of melted wax are carried around by the cylinder and solidify in the water in the form of threads or ribbons. The ribbons are placed on large cloths stretched on wooden frames, and exposed during several days to the action of the sun and the dews. They are then put in sacks and piled in a room for two or three weeks. A kind of fermentation occurs and the ribbons weld together. They are then melted again and the same operation carried through one or more times, if necessary. At the last melting 5 per cent. of tallow is added, otherwise the bleached wax would be too brittle. It is now quite white, somewhat translucent, and much harder than the unbleached wax. A slight chemical change has also taken place.— *American Bee Journal.*

DUMMIES.

The dummy used by most small-hive apiarists is just a thin board put in at the side, which is removed to give space when handling the frames. This, to my mind, is the least necessary use of a dummy. The reason why we call these boards "division-boards" is, they were intended originally to divide the hive into several compartments, and that we use them yet for separating the part of the hive that is used by the bees from the empty space, whether large or small, at the side. True, in an out-apiary where no divisions

are made, where the colonies are all in good shape, the dummy is hardly ever moved. But when we have weak colonies or have made nuclei, we dislike to place them in a large brood-chamber. It seems to us they feel about like human beings housed in a church or in a large hall—they want to have some sort of cozy corner where they can huddle together and keep warm.

The ordinary dummy is made free from all sides, so that the bees may not glue it fast. We don't want our dummies to allow the heat to pass off around each end, for, in that case, they are only equal to an ordinary comb in a frame. We think there is loss of heat in this space on the ends, and so we devised an end to our dummies that may fit without ever being tight, and without ever being glued fast in a way that would cause a jerk and a jar when the dummy is moved. This is achieved by nailing a strip of oilcloth or enamel cloth on the end of the dummy, so that it may make a soft half circle, which rests well against the end of the hive, but which gives, and gets loose, at the least exertion. In this way we have a dummy that effectually encloses the colony of bees within the limits we desire. The bottom of the dummy might be fixed in the same way, but heat never goes down—it rises—so there is no deperdition of heat at the bottom, and we find it advisable to leave a bee-space at the bottom, so that the most active bees make the police of the empty room at the side.

When a small swarm or a nucleus is confined to, say about half the usual number of combs, until it gains strength, when combs are added to suit its need, the dummy is placed up against the last comb and there remains until more combs are added. A small colony may winter on six of our combs. The space behind the dummy is then filled with dry leaves. There is no necessity of explaining to the reader the advantage of such a wall of warmth-keeping material. The hive always faces south with us, so that this heavy wall is on the most windy side, which is always west or north-west here. The hive being double on the back, the bees are very well protected against the high winds, and we ascribe a good part of our success in wintering to this method. We may say all we please about a cluster of bees keeping warm anywhere if they have enough to eat. We all know that there is a limit to their endurance, and we know, also, that the colder they are the more they consume. So it is a good plan to shelter them as much as possible in out-of-door wintering.

The space behind the dummy, when the colony is reduced in number of combs, may be used for feeding. Sections partly emptied, or a saucer full of feed, or any kind of feeder, may be put down behind the dummy in easy reach of the bees. They soon find it, and if the entrance is reduced so as to leave only the opposite side open there is no danger of robbers.

We make our dummies of $\frac{7}{8}$ lumber. We find that they are stronger than thin ones, and there is but little expense. —Dadant in *American Bee Journal*.

INTERESTING,

I am a subscriber to 6 bee-papers, 3 fruit journals, 3 farm papers, 3 iron and wood-working journals, 2 health journals, several religous papers, and 2 popular magazines. After studying some of the other papers for a while and then coming back to bees, I find the mind rested and clear, and this study often brings ideas into the bee-line which are commonly used in these outside operations, but were never thought of as being applied to bees.

Every evening I engage in an interesting chat in some of these papers. But when it comes to work, I depend almost entirely on books, not papers. Papers I give away. In the books I expect to find the cream. Everything sorted out and boiled down in better shape than I could spare time to provide the ability to do. Of course, different compilers have

different views or systems, but I soon see which is best suited to my needs, and I know exactly in which book to look for the plan. I liken the bee-papers to crucibles in the assayer's workshop, but books should be the store-chests for the fine gold—or the summing up of the whole matter.

For illustration: In rearing queens I often use Alley's method, but at some times of the year it is almost impossible to get long rows of larvæ of the right age, so I change to the Doolittle method. In this it is difficult to see the very small larvæ. I take the comb containing the larvæ inside a building close by a window, but in the shade. When I get the wax and am ready to lift the larva I move the comb out into the sunlight for about a second, and the smallest larva can be as easily seen as if it were under a microscope. Keeping the eyes in the shadows causes the pupils of the eyes to enlarge so that the rays of light pass through a larger opening, and more rays of light strike on the retina of the eyeball, and consequently a picture of the larva is perceived by a greater number of optic nerves. This magnifies the object. —*Exchange.*

To Clean Kerosene Oil Cans.

I first fill them with water and let them stand a day or two. This removes the loose oil. Some of them will be clean with water only. If you happen to put hot soapsuds into a can containing a quantity of loose oil the next can it is put into may be almost clean already, and the oily suds will make it worse than it was. The soapsuds should clean all but three or four out of a dozen. Those which still smell of kerosene I put over a fire which is as hot as possible without melting the solder. Kerosene is a volatile oil, and dry heat can remove what soapy water cannot reach.

After the oil has been driven out, the gummy residue which has collected in the seams of the cans will be dried down and smell musty. In such cans drop half an ounce of beeswax. Keep the can hot to melt the wax. Tilt the can to make the melted wax follow the seams down the corners and around the bottom, and up the opposite seam to the top seams of the can, and it is easy to coat the inside seams and remove the last particle of smell.

Now in order to see just where the wax is going we should stand within an open door. Rays of white light (from the clear sky) must pass in at the cap and strike the inside of the can and be reflected back out the cap or we cannot see anything within the can. Rays of skylight passing in from many directions as it would out of doors or before two or more windows will criss-cross one another and obstruct the fainter rays coming from within the can. The one who understands this can clean cans twice as well, and twice as rapidly, and earn four times as much as the one who thinks it all depends upon elbow-grease and soap. Even in simple matters we have need of photography and chemistry. Even those who would ignore these if shown where to hold a car would soon wobble out of the right position, and not be able to find it again. —"American Bee Journal."

[We have found dry sand or ashes a good method of cleaning such tins.—Ed.]

PURITY OF YELLOW-BANDED BEES.

By Henry Alley.

Just what constitutes purity in the yellow races of bees but few beekeepers seem to know. When the late S. B. Parsons, of New York, imported the first yellow-banded bees from Italy, the inexperienced beekeeper supposed that the bees were very yellow, and that all queens and bees bred from imported queens would be handsomely marked. But we were all disappointed, and queen-breeders were not alone in discovering that the so-called Italian bees were hybrids, and only a race of black and

yellow bees crossed or in some way mixed in blood, and it was found impossible to rear clear yellow queens, or uniformly marked worker-bees from any queen imported from Italy. This fact alone was enough to condemn them as hybrids. The young queens were marked from a solid black to striped and a rich leather-colour.

Very few beekeepers of the present day know to what extent we poor queen-breeders were abused by our customers, and yet we were doing the best we could with the stock we had. When the customer had received a queen, all went well until the time arrived for the yellow bees to appear, and then the trouble commenced. The young bees were found to be marked with anywhere from 1 to 3 bands. We were accused of having our queens mated to black drones, etc. The fact was, all our young queens were mated by drones from the same mother the young queens were reared from. The drones were black enough, I assure you. Not even this in-breeding process improved the colour or markings of the bees. American queen-breeders were not long in "catching on" to a way to improve the uniform markings and color of both Italian queens and bees, and it was the American queen-breeder who fixed the standard of purity of the Italian bee.

American queen-breeders soon commenced to select the brightest queens and drones for breeders. In the course of a few years thereafter the Italian bees were more uniform in markings, and thus was the standard of purity fixed, and much yellower queens and bees were produced. American beekeepers are not indebted to the beekeepers of Italy for the beautiful yellow bees we have. It is a fact that the beekeepers of Italy continue in the same old rut, and will not, or can not, learn anything from the American queen-breeders. We find that to-day the imported queens from Sunny Italy are no improvement on those sent to America 45 years ago.—*American Bee Journal.*

WHOSE PROPERTY ?

In a case heard at Gunning on the 6th July, before Mr. C. F. Butler, P. M., the complainant, Moore, a land owner, proceeded against Ball and others, three youths, for larceny of honey. It appeared from complainant's statement that the honey was in the hollow limb of a tree in one of his paddocks, and that he had known that the bees' nest was in that tree for two years previously. He stated that the bees were English bees which had gone wild, and that he had not brought them there, they had come and made their home there themselves. His charge was that the defendants had gone into his paddock against his wish, and had cut the limb down and taken away the honey. The P. M., held that the produce of such bees could not be the subject of larceny, and dismissed the case.—*The Magistrate.*

We acknowledge receipt of a circular urging the growth of Ramie Rhea) by farmers, etc. It says:—

RAMIE (RHEA). A PROMISING INDUSTRY.

Dear Sir,—I have already called your attention to the possibilities of Ramie (Rhea) Cultivation. There is a vast opening for it in our Colonies.

The Royal Horticultural Society, I am pleased to say, is advocating its exploitation. I have the pleasure to give you a copy of the letter:—

ROYAL HORTICULTURAL SOCIETY

RAMIE.

Dear Sir,—I was glad to see your varied collection of Ramie at our show. It was extremely interesting, and shows that the plant and its manufacture have great possibilities in the future if carefully and scientifically conducted experiments are carried out. The Council had much pleasure in awarding you a Silver Medal.

Yours faithfully,

W. WILKS.

One of our leading Agronomists writes:

"If there is anything in it at all it means that we have a new industry of no mean importance It means not only that we may be able to grow and decorticate but that later on, like the kindred industry of Jute on the Banks of the Hoogley, we may come to see the degumming, bleaching, and weaving of Rhea. Here we have an improvement of the right order, a new industry which bids fair to eclipse Indigo even in its palmy days. Strength, assuming Rhea to be 100, Hemp 36, Flax 25, Silk 13, Cotton 12, its filaments 2½ to 18, it resists atmospheric influences; air and water have little influence on it no matter how long exposed; these are only a few of its merits. It is lustrous like silk, an ideal clothing material."

Anyone can grow it. I shall be pleased to send a pamplet on cultivation to anyone applying. If anyone who has specimens growing will send me samples well dried before packing I will gladly report on the prospects and quality of fibre. Not only is it an agricultural but later a manufacturing industry for our Colonies. All who have land should experiment. It costs nothing to grow a trial patch but a small outlay for seed.

Yours faithfully,
D. EDWARDS-RADCLYFFE.
Staines, England.

CHYLE AND IMPULSES.

We know that the different organs of the bee will take different parts from the blood for nourishment In this way all the organs get their proper nourishment, and the blood is used up. The products of this process are either breathed out by the tracheæ or removed from the blood by the malpighian vessels.

A certain organ may especially need fat; then the remaining blood will be richer in albumen and sugar-like substances; if not other organs will use up this surplus. In this way the composition of the blood of the bee may vary according to circumstances.

As long as the bees are close together in the winter cluster, and feed themselves on the winter stores of honey, and probably very little pollen, all the blood produced is used up to preserve the life of the colony and to produce the necessary heat.

As soon as a great activity takes place, probably caused by the first flight in spring, induced by a warm day, every member of the colony will produce more chyle or blood than is necessary for the preservation of its own body, and hereby the progressing impulses are incited. The young bees especially are the producers of heat. and for this purpose fat and sugar in the blood are used up in larger quantities than albumen; consequently the blood will get richer in

albumen. According to the law of diffusion, the blood will now take more sugar and fat from the chyle in the stomach than albumen because the tendency is to equalize the two fluids. So the chyle, too will get richer in albumen, and this rich chyle, if fed to the queen, will excite the ovaries, and egg-laying will commence soon afterward. In this way the breeding impulse is aroused in the whole colony. The queen needs more nitrogenous food to produce the necessary chyle; the few young bees will have plenty of consumers for the produced chyle, and the queen will lay a small patch of eggs only in the first brood-period, and all the produced chyle is consumed by the larvæ and the queen.

As soon as young bees gnaw out of the cells they will produce chyle, too, if pollen is present or gathered by the field-bees; but a single bee can feed perhaps 5 or 10 larvæ, and may be more. The first 3 weeks we may have 100 young or nurse-bees; and then it will be easy for the queen to lay 1000 eggs during these 3 weeks, which will be afterward, as larvæ consumers of the chyle produced by the 100 young nurse-bees. Inside of the next 3 weeks we shall have 1000 nurse-bees, and they need 10,000 eggs. In the third brood-period 100,000 eggs or larvæ would be necessary; and as we know that no queen is able to lay so many eggs, necessarily an increase of the blood takes place. The young bees get surcharged with blood; and we can observe this, as we see their abdomen generally more distended than with field-bees of the same colony.

The next result of this condition is that the wax-glands are excited. It is proven by Schoenfeld that much blood is necessary for the secretion of wax, and this is one of the reasons why bees can not and do not always build combs As for wax-secretion and comb-building, if fat and sugar are used, albumen will get to be still more diffused through the blood, and hereby another impulse is aroused the drone impulse. We can always observe whether comb-building is going on in connection with a surplus of albumen, for then drone-combs will be built by the colony. This is the explanation why swarms will build worker-combs as long as the queen can lay a sufficient number of eggs for the young bees accompaning the swarm; and why the same swarm commences to build drone-cells where the queen can not lay enough eggs, or when young queens are gnawing out of the cells. It is the explanation why small colonies or nuclei generally build worker-combs. They do not have enough young bees so that a surplus of albumen can be present in the blood.

As the chyle has always the same composition as the blood, or nearly so, the queen, too, receives a chyle very rich in albumen, and so the same impulse is aroused in her body, and she will lay drone-eggs in the drone-cells, which, if other conditions prevailed, she would neglect entirely.

The young drone-larvæ need a food very rich in albumen, and so the increase of blood is diminished for some time by comb-building and by rearing drones.

Further, we know that a drone needs 24 days for development, and in the last 2 weeks the cell is capped and will need no food at all. Meantime the number of young bees has increased every day, and the increase of blood will be greater and stronger.

As in early spring, the surplus of albumen was transferred to the ovaries, so this surplus causes at that time, and at that state of development, a desire for more ovaries, as the old queen and the larvæ are yet unable to consume all the chyle produced by the many young nurse-bees. Quite a number of queen-cells are built, and the young larvæ in them are good customers for the albuminous chyle. So we see the abundance of food causes an ever increasing number of food-producers. The contradiction between the multiplied supply of nourishment and the limit of egg-laying power of the queen

is finally solved by the swarming act.

By this theory we can explain many mysteries in bees. This theory explains why and how swarming can be prevented if we in some way avoid a surplus of albumen, or, as we said, the increase of the blood. The more a theory can explain the facts we have observed, the greater will be the probability of its correctness. This theory does more: By reasoning from it we can incite and retain certain impulses to our liking by certain manipulations; and if we make use of them correctly we shall succeed. This fact makes it nearly certain that the theory is correct.

Many problems remain to be solved as yet; and in some points later investigations and closer observations may correct some parts of the theory; but that it is correct in the main points I am fully convinced; if I consider in what an easy way it gives us an insight into the very life of the honey-bee to such an extent as we never had before.—*Exchange.*

SWARMS AND SWARMING.

The following is a question and answer which appeared in the "American Bee-keeper."

Q. How can you keep your colonies queenless after the second swarm is returned? There must be considerable unsealed brood in the hive and thus give the bees a chance to rear a queen.

A. The youngest larvæ is supposed to be four days old or seven days from the egg—too old to rear a queen from. If the first swarm was to be delayed a day or two, by weather or other interference, it might cause the second swarm to issue in less than seven days after the first warm issued and then the queens might leave a few eggs and there would be larvæ that would not be too old. In the third paragraph there is this sentence which is not thoroughly correct: It says that second swarms are of large size because they include the bees of the first swarm. That expression has been stereotyped so often that it was penned without a ripple of thought. It is true in some cases but not always. The size of the first swarm is varied a great deal by the amount of reverence the bees possess for their old queen. A good one more and a poor one less, almost down to nothing. This is governed by her age and her ability to lay eggs for the prosperity of the colony in the new home. If the queen has not been restricted in her laying she will have reached the height of her capacity some time previous to the issuance of the swarm. Such a queen is of the highest value in the old hive before the swarm issues, but not of much account in a new colony. You might as well expect a man of 60 to have the working energy of a man of 30. He might have the resolutions and knowledge but he will be found lacking in physical strength. He has been at the top of the hill and is going down the far side. The bees desire to cast their lot with a queen that will improve with age. The bees of the first swarm have devotion or attachment to the old queen, but as soon as the old queen is absent a devotion is cultivated for the queens yet in the cells. And those bees which are nurses during the development of the young queens may have more devotion to the young queen than the field bees which ordinarily issue with the first swarm From these assumptions it can be discerned how a first swarm may issue and leave the old hive well stocked with bees, or how a second swarm may issue and leave the hive well stocked with bees. It shows that there are two different conditions that bring upon the bees the disposition to swarm and that all the bees in a colony are not readily susceptible to the same conditions.

Now, we come to these after-built cells and the queens. The queens from such cells are poor. When we remove the old laying queen and those queens also that come out with the second swarm we have the hive filled with bees that have very little regard for queens of so low a grade. There may be bees in the colony which

have developed a swarming mania from some cause or other. These may try to "raise a rumpus" and excite the other bees to swarm, but usually only a quart or two will get on the wing until they begin to return to the hive again. Here is a disposition of bees that is opposed to the swarming mania. We may crowd the hive all we can and they will not swarm. But this disposition is seldom obtained by common methods; and when it is obtained it is not noticed by the bee-keeper. He takes it for granted that the bees of such a colony are really non-swarmers and breeds queens therefrom for his whole apiary.

By the common method the swarm comes out and the old queen with it. If increase is not desired the swarm and old queen are returned to the hive from which they came; and their queen cells destroyed by the apiarist. But the bees belonging to the old laying queen have little regard for cells. They return to the hive only to swarm another day. In a couple of days the honey they took in their sacs is being converted into wax for the construction of combs in their new domicile. They have been out several times and loafed in the hive until they have lost all interest in the affairs of the old hive and cluster upon it merely to rest or for temporary shelter from the dews. It is like allowing a hen to sit ten days and then attempt to break her up and have her go to laying again, to try to get these bees to resume labor with old conditions unchanged. Even if the queen is removed now it would take considerable time to stop the secretion of wax and dispose their minds or instinct to resume work in the old hive. It must wear off slowly, in a length of time, and meantime the richest of the harvest is passing, and the bees are ageing rapidly. The old queen has spent her vitality to bring up the force of bees and if they do not work now all is lost beyond recovery. They may become consumers of the product of other bees' labor.

It is more commendable to handle one colony according to the rules of nature than to produce a whole car load of honey by haphazard management. Commendation may be the result of ignorance as well as knowledge, and in a swarming system I believe the disposition of the bees should be manipulated more, and the hives and fixtures less. The bees gather the honey; that is the principal consideration, and as Doolittle says, they can store it in a nail keg if there is nothing better provided.

If we confine the hen in a box away from the nest she may get over her disposition to sit and start to laying again in a few days. So, also, if we confine a swarm of bees in a box their scare and separation from the queen rids them of all their former intention regarding swarming. They forget their queen, so that when they are returned to their old hive they readily take up with the work in hand.

As soon as a swarm alights on a bush the queen begins to travel through and through the cluster of bees leaving her scent on each worker she touches or travels over, and this is the main stimulus that causes the bees to seek isolation from the parent hive.

A STEP BACKWARD.

At a series of farmers' institutes recently held in Colorado, *the speakers being paid by a state appropriation*, the man who handled the beekeeping part of the programme advocated that farmers and others who intended to keep only a few colonies of bees should not go to the expense of movable frame hives, but should put their swarms into plain boxes. His argument in defence of such amazing advice was that even when they used modern hives they almost always had the combs built crooked so that the frames could not be handled, and that even when they were straight they never handled them. He thought, too, that it was easier for the inspector to examine box hives than frame hives in which the

combs were crooked, and, finally, while if any hives had to be destroyed on account of foul brood, the loss would not be as great as if the hive had cost more.

DAIRYING.

As so many beekeepers are now going into or adding dairying to their other avocations, and having done so ourselves, we purpose giving a short space each month to this subject. We know there are many periodicals already tackling it, but there are many-sided experiences. We have had such ourselves, and, in addition, are living amongst a number of dairy farmers, who can, and will, also assist with their experiences. We trust our efforts in this direction will be appreciated. We will do our best to merit such appreciation.

BUNKUM.

We take the following from the "British Bee Journal" :—

"*Bunkum.*—A Mr. W. Reid writes as follows in the *Australian Bee Bulletin.* I do not know if the article quoted from is original or copied from some unknown source, but I have no hesitation in voting the 'facts' as *fiction.* Such one-sided statements are the acme of ridiculosity, so that their mere enumerance goes further in their refutation than any words of mine, however strong. 'A neighbour had thirty-three hives. Thirty-one blacks died of starvation, leaving him two Italian hives. Another beekeeper alongside of him, at the same time, had nineteen blacks and one Italian. The nineteen died from starvation, leaving him the one Italian. I knew another beekeeper who had forty-two hives—two Italians. Bee-moths ate out the forty blacks, leaving the two Italians.' Mr. W. Reid has the modesty to conclude this rhapsody with the following words: "I think, Mr. Editor, I may have trespassed too much on your space." I think so too, and if I could whisper loud enough to reach Mr. Tipper I would counsel him to edit such copy in future."

The above is by a Mr. Macdonald, of Banf, Scotland, who evidently knows little of what he is writing about. Let him place an Italian stock beside a black one, and he will soon find the blacks are being robbed out. That is a common experience here in Australia. For the last 25 years Australian beekeepers have been importing and breeding from the best Italian queens. There has been nothing of the kind done with the blacks, who, with very few exceptions, are doomed by every advanced beekeeper. The only man we know who was partial to black bees got an Italian queen from us. He had it only a short time when he came to complain that the bees from the queen he had from us were robbing his black hives. From the care taken during the past 25 years to raise good Italian queens, we believe there are none superior to them in any part of the world. Question—Is "Bunkum" a word suitable to a first-class journal?

CORRESPONDENCE.

W. B., Stroud.—There is nothing to write of about bees, as there was nothing in them last season, and only two tins this year. Hoping you have had a better time down there.

E. B., Pambula.—No bee news. Last year was a very bad one down this way. I have moved my bees some 12 miles away, and they seem to be doing a little better, and I hope to have a better season next time.

F. L., McLaren Vale, S.A. — I was sorry to hear of your bad luck last spring with your bees. I myself lost 40 out of 100 hives. I put it down to the long cold winter we had. It was a drizzly cold spring. We got but very little honey last season. In regard to drones flying back to their old stand after being shifted, as mentioned in the last number of the A.B.B., I had some do the same thing. One time I shifted a few colonies to where I now live, a distance of about 2 miles, and on going there two days after I found quite a little swarm of drones, and a few workers mixed with them. It was a bright day in the beginning of November. We are expecting some honey this coming season.

Mr. Frank Kneebone, Warrak, Vic. — I have never seen in your journal how to boil beeswax for hours without boiling over. This is the way I do it, and you can have it boiling as long as you like so long as you do not put too much of a flaring fire:—Put 20 lbs. of wax (that has been melted once) or a little more if you like, but this is the safest, into a kerosene tin; then add water to within three inches of the top of the tin, then put it on the fire as soon as most of the wax is melted? Take the tin off and place with corner of tin next to the fire, but take great care that there is no fire under the tin. In that way it boils very much after the way soapy water does in a copper of clothes, being about two inches high in the corner. Of course the less wax the less danger? You might give above a trial.

CAPPINGS.

Honey is not, as is generally understood, gathered by the bees, but it is rather a product of the bee. Bees gather nectar from the flower. This is not honey, but a thin watery fluid. It is taken into the stomach pouch of the bee and converted into an entirely different article containing about 25 per cent. solids, and then deposited in the comb cells. The bees then evaporate it under high temperature until it contains about 75 per cent solids. When sealed over it is ready for the market.

Honey Strainer.—Take a stout tin pail, cut off two inches at the top. Then make a frame of folded strips of tin, soldering them to a lower rim, and the top part cut off. Line the inside of this frame with the fine copper wire-cloth used for milk-strainers, the finest mesh procurable, and you have a model strainer quite capable of removing every particle of foreign matter from the honey. This effective and expeditious mode of procedure is so great an improvement that it requires only to be named to be adopted.

Should we get a spell of cold weather do not forget to see that the entrances of hives are kept clear of dead bees, and in case of snowstorms the snow should be swept off the hive-roofs before it thaws. If the sun shines while snow is on the ground hive-entrances should be shaded. The ordinary extending alighting board makes a good shade if leaned up in front of the entrances. A large proportion of the bees that take flight at such times fail to return to the hive, the white snow apparently alluring them to destruction; they alight on the cold snow, become chilled, and die in a few seconds.

I had some honey in a rusty can that had granulated, and I placed it on a vessel of water on the stove, liquifying it in the can, and all the loose rust mixed up in the honey. I fed it to the bees. The result was that it killed them at once. I could not believe that the honey containing rust was the cause at first, so I took honey from a can that had no rust, and fed the two side by side, and now I am sure that the honey containing the rust was the cause of the death of the bees. There was enough of the rust to cause the honey to become quite dark.

In the *Progresiive Beekeeper* a certain writer is strongly criticised. It says:—"His articles also contain a vague intimation that there is still left back some weighty matter that is too deep for the average beekeeper to comprehend, and therefore the more important part is left unsaid and unwritten. He has a way of soaring high above us, of the laity, breathing a more knowledge-giving and brain-invigorating atmosphere, and looking down on us with a feeling of pity, mingled with contempt. I believe it is well for such men to be called down occasionally and made to see and understand that the rest of humanity is not so ignorant that they cannot see the egotism of a high-flyer."