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## **The Australian bee bulletin. Vol. 6, no. 10 January 28, 1898**

West Maitland, N.S.W.: E. Tipper, January 28, 1898

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# THE AUSTRALIAN BEE BULLETIN.

A MONTHLY JOURNAL, DEVOTED TO BEE-KEEPING.

VOL. 6. No. 9.

JANUARY 28, 1897

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JANUARY 28, 1897.]

*The Australian Bee Bulletin.*

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## THE SALIVARY GLANDS OF BEES.

We take the following from Cheshire's admirable work:—

The larva secretes its cocoon from a gland, which reappears, in a modified form, in the adult. Its product, as is usual with insects, remains perfectly liquid so long as it is stored in the reservoir, but quickly hardens after it is drawn out into threads, although not so rapidly but that the several filaments where they cross each other partly fuse together, and so much strengthen the gossamer blind which the larvae elaborates. The secretion itself is derived from the blood by the action of the cells, surrounding a small tube or lumen. These cells have, of course, an absorbing surface on the outside, while their proximate faces secrete a liquid silk, which, as formed, is passed into the reservoir, where it collects in considerable quantity before the time of spinning.

By inserting a needle into the mouth of a worker bee, and passing it upwards, behind the front wall of the head, the latter may be so opened that its salivary (?) glands, in a partly broken condition may be obtained for examination; but if the attachments and entire forms are to be investigated, we must proceed as follows:—Partly fill some shallow receptacle, such as a pomatum-pot, or large pill-box, with melted bees' or paraffin, wax. When cold, with a hot wire melt a little bath in the centre of the waxen surface, and then insert the bee we wish to dissect, so placing in this case that one side of the head is submerged. By a second application of the wire, re-melt the wax in the neighbourhood of the head, using no more heat than is necessary to secure thorough adhesion, and now cover with water or glycerine. A powerful light and a good watchmaker's eye-glass (secured round the operator's head with a tape, when it can be pushed up on to the forehead if not required) will permit of reasonably good dissection, although, of course, better results can be reached by using a Stephenson's erect-

ing-binocular microscope—the instrument with which all the dissections for this work have been made. The bee thus securely held by the wax, both hands are free to manipulate. Now, with a needle-knife (made by heating a large needle, beating it flat, and afterwards sharpening upon a hone, and inserting into a wooden handle), cut carefully round the compound eye, and lift it off. Curiously folded, and passing round the optic ganglion, we have a long whitish body, which a facetious friend compared to ropes of onions. It is one side of the System No. 1 of Siebold. Behind this and extending from the top of the head downwards, we find packed inimitably a second gland system consisting of many pouches, joined by canals to a common duct, which may be followed until it is discovered to enter another duct running backwards and forwards in the body. Tracing this channel towards the thorax, we see it enter the neck, and immediately after bifurcate or fork. Following the line of one of the two ducts, we come upon a reservoir leading backwards to another gland system of singular structure with two lobes, lying in the front of the thorax on each side of the body. The operation here described is not likely to be accomplished with one bee, and I spent many days, and spoilt many specimens, before getting the glands in their entirety, with their connections; but I have good reason for supposing that these successful dissections are unique.

Taking pains to secure an entire right or left gland of System No. 1, we find it to consist of an inelastic, transparent, central tube or duct, without branches, and of the uniform diameter of from 1-800th inch to 1-1000th inch, surrounded through its length, which is fully once and a half that of the entire body of the bee, by between 1000 and 1200 berry-shaped bodies, like clusters of grapes, called acini, of which one is much enlarged. In these acini the secretion is produced by cells, which develop, perform their function, and pass



away to be succeeded by others. The cells forming each acinus are surrounded by a bag-like membrane, or propria, through which the blood passes continually, to supply the material out of which the secretion is elaborated.

System No. 1. is *intracellular* in type—i. e., every part of the surface of each cell is absorbent, so that the secretion it furnishes has to be removed from its interior by a duct, which enters its wall, becomes surprisingly delicate, and takes within a lengthened, sinuous course, bringing itself in contact with the cell plasma. These chitinous tubes, each about  $\frac{1}{15000}$  inch in diameter, after leaving the cells, pass parallelly through an enveloping tube, where, by independent perforations, they enter the main duct, which at this point raises itself into a sort of papilla, having a sieve-like end. Tracing this duct onwards towards the mouth, we find it enter a pouch, or ampulla, lying at the side of, and beneath a plate which forms what may be termed the mouth-floor.

Systems No. 2 and No. 3 are *intercellular*, like the spinning gland, whence they are derived—i. e., the cells are arranged around a cavity, towards which they present their secreting surfaces, while they absorb material from the blood by that portion lying next the propria. When the several ducts begin to unite, they develop an interior spiral thread like to that of the tracheae, both in purpose and appearance. Their presence led Fischer to suppose these glands to be lungs. In System No. 3 these threads are especially strong. They pour their contents into a sac curiously covered by star-shaped plates. The ducts of both systems uniting, as previously described, form a single channel, passing onwards through the mentum or chin, into the tongue, where it terminates in a salivary valve, from which the saliva is pumped out during the action of sucking, an operation which may be artificially performed after the death of the bee.

System No. 4 of Schiemenz, or the olfactory gland (*Riechschleimdrüse*) of

Wolff closely resembles No. 1 in its minute structure, being intracellular, and, in consequence, very active. It has its aperature immediately within the mandible, is singularly large in the queen, smaller in the worker, and still less in the drone.

A question of surpassing interest, but immense difficulty, now presents itself, viz., What is the purpose served by each of these glands? Admitting, for argument's sake, that the office of the stomach mouth is correct, we have three or four distinct functions to be performed by such structures as we are now considering. First a secretion to assist digestion, second, to change the cane sugar of the nectar of flowers into the grape sugar of honey, and possibly also to convert starch into sugar (both of these functions are performed by one salivary secretion in our own case); third, to soften and make plastic the wax plates formed on the under side of the abdomen, so that they may be elaborated into comb, and also possibly serve as a vehicle in the moulding of propolis, or the application of it as a varnish; and, fourth, the production of brood food.

Without dogmatising, my investigations into this question led me somewhat confidently to point to System No. 1 as actually having the latter office. For it is first worthy of remark, that this gland—the largest and most active—is only found in the worker bees. We note that the hypo-pharyngeal plate of the hive queen, has scarcely any perforation, and that the merest trace of duct is attached to it, having clearly no secreting power. It is peculiarly important, as well as interesting, to observe here, in a parenthesis, that, the higher the quality of the queen, the further will she be removed from the worker in this matter, poor queens, hurriedly raised, really possessing this gland in an extremely rudimentary form, while those with the largest ovaries have even the plate imperforate, while no trace of duct is discoverable, just as in the case of the drone. By taking a queen *Bombus*



engaged in establishing a nest, when she does feed her own brood, we find this particular gland strongly developed; whilst in other bees, such as the mother *Megachile centuncularis*, which secretes no wax, but raises her own young, we still see it, though of smaller form. We thus get some evidence that rendering wax plastic is not the duty of this gland, but that the feeding of brood is. Again, examining a young worker employed in nursing, we find this gland turgid, and in the highest state of activity; while in the old bees of a broodless stock it is much shrunken, at the same time that glands No. 2 and No. 4 retain their normal size. Coupling this fact with the larger dimensions of No. 2\* and No. 4 in the queen and remembering her need of assimilation in order that her eggs may be produced, we shall not be far wrong in ascribing to No. 2 and No. 4 a digestive function. In other words they are truly salivary in character, which position is further supported by the existence of these glands in less development in the drone. But to return; microscopic examination of the food given to very young larvae reveals no trace of a pollen grain, and shows that it resembles in nothing any part of the contents of the chyle stomach of the nurses. It is, on the contrary, just such a fluid as a secretion might be. As, however, the larva gains size and power, the process of weaning commences, and its food undergoes a change, having now undoubted pollen, honey, and water added to it—the glandular secretion being, of course, gradually withdrawn. The pollen grains, moreover, are living, and are generally found in a growing condition, proving that they have never entered the stomach of the nurse, and, certainly, that they are not semi-digested, and so utterly contradicting the Dufour theory. In the case of the queen larva, I discover that weaning is not adopted, but

that secretion, commonly, though, as I hold erroneously, called royal jelly, is added unstintingly to the end; so that at the close of the feeding period, an abundance of highly nutritious food, which I apprehend does not intrinsically differ from that at first given to the worker larva, remains, and to which the chrysalis for some time adheres, possibly continuing to draw from it, by osmose (fluid diffusion), material which aids its development. The queen larvae does get a very small addition of pollen, the residue of which collects in the middle bowel; but this seems to be rather accidental than otherwise.

The first brood food or pap—I am almost tempted to say bee milk—is, then, a highly nitrogenous tissue-former derived from pollen by digestion, and has, apparently, a singular power in developing the generative faculty; for I find drone larvae receive much more of it than those of workers, to whom any accidental excess possibly gives the power of ovipositing, as we find it in the abnormal fertile worker. From these considerations, I have been led towards a theory, the evidence in favour of which has accumulated until I cannot but regard it as established. It is, that the queen, if not always, at least during the time of egg-laying, is fed by the workers from the secretion of gland No. 1, with possible additions from some of the others.

## MIGRATORY BEEKEEPING.

A. F. BROWN, IN *A. B. Journal*

My experience in migratory bee-keeping covers about five years' active work in moving from 150 to 250 colonies, three or four times each year, and covering distances of from 20 to 200 miles at each move. Most of my moves were of distances of 50 to 150 miles.

In this State (Florida) there are several classes of soils, the timber growth and flora of each being quite distinct. In some the surplus honey flow comes early in the spring, in others it may be a

\* Siebold, followed by Girard, says that No 2 is small in the queen; but this is clearly an error. In many scores of queens dissected, I have uniformly found it larger than in the worker, and often containing sacules.



couple of months later, or at mid-summer and still others in the fall or mid-winter, consequently to one informed on the localities it becomes quite apparent that by being in position to move from one locality to another makes the success of securing a crop just so much more sure.

With the exception of a very few short moves, I have used the railroads, and places accessible by water transportation for all of my movings. In going long distances, I prefer the railroad for the saving of time, as well as expenses. For distances under 25 miles I have found teams the most satisfactory. Transportation by water on boats disturbs the bees the least of all, yet the actual gain therefrom is small.

After the colonies are once properly packed and ready for a move, the greatest point of success lies in getting them to their destination and opened out for a flight at the earliest moment possible. In my experience I have found colonies to stand three or four days bumping and jolting over roads and railroads better than they withstand a week's confinement on board a lighter towed by a steam tug boat. I find it is the long confinement that tells on the vitality of the bees. Colonies given *plenty of room, plenty of ventilation, and space to cluster off from* (and away from) *the combs of brood*, with ample provision of honey and water will stand transportation during our hottest weather by hauling with teams or on railroads, providing you do not keep them confined more than four or five days. I endeavour to accomplish my moves in a space not exceeding three days' confinement for the bees, and only once have I lost any number of colonies. In fact, I seldom lose any colonies. A few old bees in nearly all colonies will die, but I think it is only about the actual number that die each day when in their normal condition.

Covering about 20 moves in five years, I have never kept bees more than three or four months at a time in one locality, generally about two months, and I was off for some other pasture, frequently 150 or 200 miles distant.

When I first commenced moving bees, I knew very little of the requirements for success. My first heavy losses were from loss of *unsealed brood*. To overcome this I found *water* almost an absolute necessity. Give each colony two combs (about two quarts) of water placed next the sides of the hive, and the loss of brood will be greatly lessened. To fill the combs with water, lay them in the bottom of a tub or barrel (barrel is best) and pour water from a dipper held three feet above. When one side is full turn it over and fill the reverse side. One Langstroth frame will hold about a quart of water.

Ample ventilation is another big item in successful moving of bees. I find a rim three inches deep, the same size as hive, covered with wire-cloth, the proper thing. Put one of these on the bottom and one on the top, and securely fasten. I have tried many kinds of fastenings, and find common place laths cut the right length to reach from the bottom screen to the top one, four to each hive, one nailed at each corner, is the simplest and *best*—the *most secure* method of fastening screens and hive bodies solid.

In the front end of half of the screens have a  $\frac{3}{4}$  inch hole bored. This allows an entrance for the bees, and you can put on the screens several days in advance of the day of moving, and when all is ready to move, a cork or plug fastens the entrance hole.

Frames should be securely fastened in the hives, so they will not slide together or swing. As I use, and have used for years, the Hoffmann style of frame, which is, as most are aware, self-spacing, I have no bother about this item.

In a few instances when I have had occasion to move colonies in loose hanging frame hives, I have fastened them securely by means of two small slats nailed one at each end on top of the end bars down through and into the ends of the hive, then tip the hive up on its end, and stuff old newspapers in the bee-space between the end of the frames and the end of the hive. This fastens them securely.



If colonies have more than 20 or 25 pounds of honey in their combs, extract it, or enough to leave only this amount, for heavy combs of honey are liable to be jarred loose and be broken down.

The upper story of extracting-combs are left on, but all surplus arrangements in connection with comb honey should be removed, or the bees will "stain" them badly, and render unsightly for future use. Also, their clustering on the foundation starters will generally result in that coming down, and being lost, with the need of putting more in to take its place.

In loading bees in cars (try always to secure cattle cars) you need a number of 1x3 inch strips to lay several on the floor to raise the first tier of hives off from the floor, to allow ventilation; then lay more on top of the tier to raise the second tier, and thus all the way throughout the car.

I find that 250 colonies in two story hives make a very comfortable carload, though more can be put in if care is used. Be sure the end ventilators of the car are open, and then leave the doors wide open so that when the train is in motion a strong current of air rushes through and among the bees. If the car has ventilators on top, turn the "hood" so as to carry a current of air down into the car, and thus help to keep things cool. But whenever possible secure open cattle cars, for these are the finest self-ventilators out. It should be needless to say, yet it is well worth repeating, to load all colonies on cars with combs running lengthwise of the car, parallel with the iron rails of the track, never crosswise. In hauling on wagons load, where practical, so the combs stand crosswise of the wagon and road. I have used common, heavy farm wagons without springs, and in all my hauling, of hundreds of colonies, from a few hundred yards to 20 miles, I have seldom had a comb to break down—certainly not one out of five hundred—and I have traveled over some very rough roads; but, as I have said above, my

combs are principally in Hoffmann frames, and most have three horizontal wires to the frame. When arriving at the destination open the hives as soon as possible, so the bees can have a flight. If there is honey coming in the bees will be at work within an hour—in fact in less time frequently.

## QUEEN REARING.

### SOME CONCISE DIRECTIONS.

DR. J. P. H. BROWN IN A. B. J.

In queen-rearing, there are hundreds of small details to attend to—they have to be met at once. No books can enumerate them—no solutions can be given to suit all cases. They can only be solved and adjusted by the ready tact and practical sense of the queen-bee order.

1. The larvæ should not be over 24 hours old. This is a very important matter. Not too much should be given the breeding colony. The idea should be to *concentrate* the force of the colony to a few cells rather than distribute the force over a whole frame of uncapped brood.

2. The bulk of the nurse bees *must* be young ones, if well-developed cells are wanted. Old bees make *poor* cells—often fail to make any, some assertions to the contrary notwithstanding.

3. The hive must have plenty of honey and pollen.

4. The comb containing the larvæ must have enough recesses or openings beneath the larvæ so there will be no obstructions to the building of cells.

5. The temperature must be *favourable*—nights warm and pleasant.

6. Your breeding hives should not have less than four frames, the size or area of the Langstroth. Little 4 x 5 boxes are not fit to develop No. 1 queens—neither is a pint of bees equal to the task.

The plan for securing young nurse bees to populate your breeding hive may be something like the following:



First, secure the larvæ, and properly prepare it and adjust it in a frame of old, *clean* comb. Place this in the hive. Draw a frame of *honey and pollen*, but no eggs nor larvæ, from a strong colony; hang this also in the hive. Draw another frame of sealed honey, but no larvæ, and put into the hive. Shake all the bees off these frames first. Hang in an empty frame or one filled with foundation for a fourth one. Your hive has now four frames. It should have 1½ inch ventilating holes at each end, covered with wire-cloth. Set it 20 or 30 yards from the other hives.

Go to a full colony and draw three or four frames that are well covered with bees, and shake them in front of the hive. The bulk of the old bees will fly back to their hive, and the young bees you must make run into the breeding hive. Go to other strong hives and draw more bees, and shake in front until you get fully two quarts or more of bees in the hive. You have now nearly all young bees. Close the entrance with wire-cloth, and carry to a cool, dark room, and let it remain till near dark, then carry it to its stand. It is best to set up some obstructions in front to ward off robbers or strange bees.

In nine days from the time of forming it, cut out all queen cells but one. Place these in other hives prepared to receive them. Destroy all puny cells—best to do this now rather than wait to destroy puny queens.

## BACCHUS MARSH B.K.A.

H. SIMON.

The usual monthly meeting of the B.M.B.K.A. was held on November 3rd, 1897. Mr W. Smith (president) occupied the chair.

The minutes of the previous meeting were read and confirmed. Members reported swarming prevalent. A discussion on various subjects followed. It was decided to gather as much information as possible regarding number of hives, &c., to forward to the secretary of the Victorian Beekeepers' Association.

The Association's exhibit at the local Agricultural and Pastoral Show was a decided improvement on last year's display, and was highly recommended by the judges. It filled to advantage what would otherwise have been an ugly gap in the produce shed. A glass showcase stood at each end of the exhibit, one containing honey and honeycomb, and the other wax made up into various shapes. These show cases set off the thing very nicely, while between and below them were the various appliances for modern beekeeping, including extractors, wax press, honey evaporator, observatory hives, etc. etc. The exhibit was greatly admired by a number of people, a large proportion of whom appeared to be totally ignorant of the use of most of the appliances, some taking the extractors for churns, while others thought they were cream separators. There are not a great many people keeping bees in frame hives in this district, and of those that do, a good many will neither take a beeper nor join an association, which is of course to their own loss, though they may think otherwise.

## BEES AND GRAPES.

It is generally believed among vine growers that bees destroy grapes. Prof. James Troop, of the Indiana Experiment Station, conducted an experiment last year that, he thinks, proved the falsity of this belief. All defective berries were removed from a Worden vine when the fruit was well ripened and a colony of bees placed in close proximity to it and the whole enclosed with mosquito netting. The bees were thus confined for 21 days, and provided no further food apart from their hive supply. At the end of the three weeks the colony was removed and grapes examined, but not a single grape had been injured. Other observations showed that certain species of wasps first cut the grape skins, and the bees would usually finish the work. He thinks that it would be a very stupid bee that would not avail itself of such an opportunity.—*Cal. Fruitgrower.*



## MUSWELLBROOK ... CONVENTION.

THE Muswellbrook Bee-keepers' Association extends a cordial invitation to all beekeepers to attend the Convention which will be held during the Muswellbrook Show on the 2nd and 3rd March.

Papers on subjects of general interest, written by practical and competent beekeepers will be presented to the meeting and questions of importance to the industry will be discussed.

The sittings of the Convention will be timed to give visitors every opportunity of seeing the Show and endeavours are being made to secure to visitors the advantage of cheap fares on the railway.

DONALD G. GRANT,  
Hon. Sec. B.K.A.

*The Australian Bee Bulletin.*

A JOURNAL DEVOTED TO BEEKEEPING.

MAITLAND, N.S.W.—JAN. 28, 1898.

A Convention of Beekeepers will take place at Muswellbrook on March 2 and 3. It is sincerely to be hoped there will be a large gathering of those who have invested money and time in the industry and that they will be prepared to fully discuss the position and prospects of the same.

**D**URING the hot weather of the present time of the year see that the tops of the hives have a good coating of white paint. It makes at least a differ-

ence of 12 or 15 degrees in the temperature of the hive. Or else put shade boards or bagging on top—not close down to the top, but a space between, such as may be made by some thin sticks so that air may be circulating and so keep the top of the hive proper cool. Examine your section boxes, take off those that are fully capped, replacing them with others with starters only. See that those you store away are not attacked by the moth, and are in a warm dry place. Have all hive entrances large so as to give ventilation. See that all hives are strong. Swarms issuing now interfere with the honey crop, so see to it there are no queen cells, and there is room both for the queen to lay and also the bees to store honey. If the honey flow is slackening robber bees will be about. Interfere with the hives as little as possible in such case, and where you see them very bad, close the entrances, so as to admit only one or two bees at a time.

The Sydney Board of Health have intimated that they are willing to analyse samples of honey sent them. It is as well their address should be known. It is 127 Macquarie Street, Sydney. We want yet to know if they will undertake prosecutions for adulteration as well.

We can give a little experience that we think will be of interest to our readers. A few weeks back, weather very hot, a white box flow steadily easing off, in several of our hives there was something wrong with the sealed brood. The unsealed was not so much affected. In a few cases slight holes would appear in the cappings. The larvae were dead, slightly turned in colour at the base, but not stiff—watery. It had not the smell, the stringiness, or the coffee colour of foul brood. On reflection we remembered we had still on the hives under the cover the linoleum that had been on all the winter. Linoleum or thick oilcloth—oiled on side, (absorbent the side we put next the bees) Would it be the heat of the weather? We took the linoleums off, leaving only



the wooden hive covers on. Gave covers a coating of white paint, also as a preventative of disease spreading sprinkled with a weak solution of Easton's Phenyle. Looking at the hives this week, they are quite healthy, and the unhealthy brood has disappeared.

## MUSWELLBROOK B. K. A.

D. G. GRANT, HON. SECRETARY.

Dear Editor,—Would you allow me, through the columns of "our" paper to draw the attention of beekeepers in general, and of those of the North in particular, to the Convention to be held in Muswellbrook during the Show on the 2nd and 3rd of March next.

While not wishing to encroach on the privileges or detract from the value of the National Beekeepers' Association as a central executive body, it has long been the opinion of many of the beekeepers of this, as well as other parts of the colony, that Conventions as held in the past have to a large extent failed to reach the point aimed at, which was to give practical instruction on questions of general management to a large number of beekeepers.

They have failed for two principal reasons among many.

First, they were *not* held in beekeeping centres, making it (with the exception of the Bathurst Convention) an expensive matter to attend them, thus debarring from attendance those most likely to derive benefit therefrom, the beginners who are going into bee-culture in the hope of "making something" out of it.

Secondly, because these same beginners naturally concluded that at a gathering of that sort, of all the big bugs of the pursuit, the points raised and the discussions thereon would be out of reach of their less mature understandings and that it would be waste of time and money to go so far to listen to arguments they could not grasp.

If any proof is needed of the truth of the two propositions I advance, just

glance over the names of those who attended the Conventions at Sydney and Goulburn, aye, and even at Bathurst, although the attendance *there* was large.

It was this feeling which induced my Association to call an informal meeting of Northern beekeepers at our last show to discuss the question, at which meeting my Association was entrusted the task of arranging a Bee Convention to be held during the Muswellbrook Show, of 1898.

We hope that this will be the first of a series of "local" conventions and that other Associations will follow the good example set them, and that it will become a general custom, resulting in the holding of 10 or 20 small conventions annually, bringing instruction within the reach of hundreds *who need it* instead of as has been the case in the past, *one* annual convention at which those few who attend can learn little or nothing.

Having said this much in explanation of the step we have taken and before giving you a list of the various subjects which will be treated by competent writers, I may say that we have asked the Pastoral and Agricultural Association to use their utmost endeavours to get cheap railway fares and will no doubt obtain the penny a mile rate, and that, while the convention will be held during the first and second days of the Show, the sittings will be short and so timed as to enable visitors to the one to go to the other, thus killing two birds with the one stone. The honey display is always *the* feature of our Show and we hope that the convention will be the means of getting together a still larger number of exhibits and exhibitors.

The subjects to be dealt with and the writers who will present them to the meeting include: Paralysis (Mr. Mun-day), Foul Brood (Mr. W. S. Ploffer), Queen Rearing, (Mr. W. S. Pender), Adulteration (Mr. Tipper), Wintering, Marketing, Out-apiaries, Wax (Mr. D. Grant), Destruction of bees by factories, etc., etc.

In conclusion I wish, on behalf of the Muswellbrook Beekeepers Association to



tender to one and all a hearty invitation to come and attend our Convention and see our Show.

## VICTORIAN NOTES.

R. BEUHNE, TOORORAC.

That item on page 199, Honey "per Alameda" from San Francisco gives food for reflection. Honey can be landed in Sydney or Melbourne at less freight than from some of the inland districts. A glorious outlook for beekeepers if Federation comes without protection against the outside world.

### IN-BREEDING.

Gippslander will probably change his views after many years. I held exactly the same views at one time. But I got a dose, also from Queensland (Paralysis) some years ago, and I have not quite got rid of that fresh blood yet. I could name some who obtained their dose from the same source, and others who got it from elsewhere. Of course I do not mean that no fresh blood should be introduced, but it should be done cautiously. Buy your breeders 12 months before you want them, breed a few queens from them the first season and see how they and the old queen herself come out next spring. I have not the least doubt that the queens which caused me the trouble were first class for their own locality, but not adapted to mine.

Some beekeepers lay great stress on obtaining their queens from a locality free from disease, where in fact it does not exist. There is nothing gained if disease exists in the locality to which such queens are introduced; on the contrary, disease not existing, they are not the surviving fittest, and have to undergo the ordeal in their new location.

### FOUL BROOD.

Sparrow thinks I am wrong and that chilled or neglected brood will develop the germs of foul brood. That is exactly what I said on page 182, unless he means that chilled brood will *produce* germs, in which case I give him up.

In regard to offering a reward for a cure of foul brood. Aren't we hunting after something we have already got? A change of combs and stores with an interval of four days between, is all that is necessary.

Many thanks to friend Davey for his offer of samples of foul brood, but we can save the carriage, for I can obtain just as good within a mile of the apiary, unless he will send me a good quantity, which I should boil down for wax for brood foundation. There is no need to exhaust the germs of the whole Wimmera. Germs or no germs, there appear to be some very good crops gathered there.

When I first started in Gippsland bee trees and gin cases abounded, 300 of the latter being on one homestead alone, but they all went, till there wasn't a tree left and only about a dozen gin cases. Foul brood killed or weakened the bees, and my bees brought home what stores were left, till one season disease appeared in almost all my hives, and still I have yet to lose the first colony through Foul Brood.

As to disease resisting colonies, Mr. Willyan and Mr. Bennett can bear me out, and doubtless others also. In fact Mr. Willyan mentioned this subject during the Foul Brood discussion at our first Convention in 1892.

Mr. Abram's remarks on Foul Brood, page 207 and 208, represent perhaps in the main the views of the majority to whom beekeeping is their living.

### ROYAL JELLY.

The Editor wishes me to read up Cheshire, on condensed milk. Just now condensing water is the order of the day on account of the drought, and I will leave Cheshire and milk till winter.

## CLAIM FOR SWARM OF BEES.

The *British Bee Journal* of October 21st last contains particulars of rather a curious claim for a swarm which had gone into a neighbour's hive, and his



claim was sustained:—"At the Middlesbrough County Court recently, before His Honor Judge Turner, James Leng, of Old Ormesby, sued Robert Wood, also of Old Ormesby, for damages for having converted to his own use a swarm of bees, the value of the swarm being estimated at £1 1s. Mr. Barnley, on behalf of the plaintiff, said that both parties were employed on Mr. Pennyman's estate, and kept hives near to each other. The hive from which the bees came was expected to swarm soon, and plaintiff's wife saw the bees leave their own hive in the defendant's garden. Charlotte Leng, wife of plaintiff, said that on June 11 she had been watching the bees, and saw them go into a hive in defendant's garden. She immediately ran and told Mr. Wood that the bees were swarming and going into his hive. The defendant went round to the hive and said to her, "They are going in hard enough; it's a bad job." In reply to Mr. Stubbs, for the defence, witness said she could swear that the bees were from their hive. Wood stated that he offered to toss plaintiff for the bees, but he refused, and also declined an offer of 10s. Cross-examined by Mr. Stubbs, witness said the bees would not go into a hive in which there were bees already. Judgement was entered for plaintiff for 21s, including costs.

## VICTORIA.

T. BOLTON.

Your correspondent, T. R. O'Grady, (page 205 last issue) appears to be under a misapprehension as to what is claimed by me for the Heddon hive, or as I have been careful in the past to put it—for a "divisible brood-chamber invertible hive," not necessarily that of Mr Heddon's design, though it is with hives nearly the same as his that I have tested and proved to satisfaction for several years now the reliability of the method of swarming-time management originated by myself and set forth from time to time in your columns, and also in

*Gleanings* briefly once, as long ago as June, 1895, when the editor, led by Dr Miller, pooh-poohed my statements (*Gleanings* May 1, 1896) as I have only recently learned on receiving the loan of some back numbers of that journal from a friend; also the same critic (the great Dr Miller) in "Straws," July 15, 1897, referring I presume to some of my communications to *A.B.B.* on inversion, says "The *Bulletin* may save its readers much disappointment by saying the same discovery was made in this country (U.S.A.) years ago, and after extensive trial it proved a failure. Bees don't always destroy the cells, and besides, they often swarm with only eggs in queen cells." Very likely, but then I never claimed as a discovery that just turning the hive upside down *every nine days* and the bees will destroy the queen-cells, nor did I ever claim that either the Heddon hive or inversion were, as Mr O'Grady puts it, "a sure *preventative* of swarming." If anyone has been led to think I make or made such claims I am sorry for their disappointment and loss, which will be sure and certain were they to attempt to achieve what in my apiaries is achieved successfully every season, by merely buying Heddon hives, and inverting them every nine days; but such a result can only be blamed to their own lack of care in reading, or to their own hastily-formed conclusions as to what I intended to claim. Now, Sir, if your readers will refer back to *A. B. B.* for June 24, 1895, they will find there fully explained what in my view is the theory on which the most advanced apicultural practice rests—and by advanced I mean profitable—namely on two essentials, first to have perfect control of swarms, second that such control shall not involve handling frames, and hunting for cells or queens. I there showed that no modern practice as then known (either in U.S.A. or elsewhere) complies with these both two essentials and my arguments have so far been unchallenged and I now make claim, after over two years' further lapse of time and trial, to accomplish *both* these features by the simple adoption of



a divisible brood chamber hive and inversion. My claim then is for control of swarms and without handling frames of necessity to achieve it. By *control* of swarms I mean what others generally do *not* mean by this term. I endeavour to get all my colonies up to swarming point and strength and waste *no* time in trying to hinder, discourage or prevent swarms, methods for doing which occupy so much attention and space in our journals the world over and especially for the benefit of those who keep bees in out apiaries. All such work I regard as needless, a direct loss, time and energy negatively employed that under better management would be positively spent for profitable results by the care of more colonies or otherwise. Then there is also the discontent and setback to the bees themselves as they are fooled and thwarted and what shall be said for the numerous big and expensive traps and devices, some as cumbersome as hives which the leading lights in U. S. A. have given as the only other alternative to such methods for so called controlling swarming. Control of swarms then, to me means to encourage the condition and preparation for swarming and there and here is the vital point, by inversion (not to thwart it, or prevent it) secure this—that no colony has cells sealed before a particular day in any particular apiary, or out apiary, and that day past with its proper management—which I will yet explain more fully—that thereafter no colony shall have swarming cells *sealed*, except if sealed at all on every ninth day. In brief to have all swarms due on a given day, with a *safe* interval till another fixed day nine days after, and so on through season of the year. To do this without frame handling and the other drawbacks and losses mentioned as *inherent* to all other plans of swarming time management as far as my acquaintance with bee literature has enlightened me on any system or plan now in use. This is what I have solved (Dr. M. and E. Root notwithstanding) and in solving it I have got something of more prac-

tical solid advantage to myself as one who makes his livelihood at honey-raising than could possibly be resultant to me from such points of advantage; as my fellow beekeepers occupy their best thoughts upon, such as the varying of a hive dimension or frame top bar, or shape of a cover, or whether it is best to lift honey out of a long box 1 story high, or lift supers off a box from above. Such points as that raised by Loyalstone is to me (page 201 last issue) a triviality as compared with the question of how many *more* colonies, with the expenditure of time he now gives his hives could he properly manage with hives permitting controlled swarming in my sense of the term and without frame-handling. "Take them any way you like" says he, they (the long idea) are the best for simple management. Well, let me ask him, suppose he owned 100 colonies in such hives, and had to go to work away from home, how would he secure himself against loss of swarms? Or suppose he gave all his time to bees, and had 200 at home, 100 eight miles away, and say 50 in another direction, how would he secure his swarms, prevent any increase, have no after swarms, even up all his colonies to equal and full strength and yet do nothing to discourage swarms, invest no money in swarm-catchers, etc., and pay no one to watch them, handle no frames, and guarantee no swarms had escaped? I will not be too hard on his hive. Sir! how will he do it if we allow him *all* the frame handling he desires, and his queens clipped, and then after the crop is over, how is he going to put his hives some 20 miles away possibly (or two miles if he likes) to catch a straight follow on bloom elsewhere. In a succeeding article I shall explain how all this may be accomplished by my method.

P.S.—With regard to the "points," raised by Loyalstone, in themselves they amount to nothing. I have queens in October and November that have fully that amount of brood, but continually I draw on such and level them down by



levelling others up at their expense. When I go to such a hive to invert it, it is the work of a moment to shake out one or two of its cases of brood and give them to weaker colonies, giving empty cases in their place. It is better to have all one's hives about the same strength than half of them excessively strong and the balance medium to weak and hardly worth extracting. It makes a larger aggregate host of workers in the apiary also, and it is cheaper also to harvest honey from say 100 even colonies than to take the same amount from a varying lot; and for out apiaries no good results from having some of our hives filled up in 3 or four days to repletion with honey and the rest not filled properly, or in all stages of storing when the next visit is timed say 9 or 10 days for extracting. Now see the labour Loyalstone has to level up his big hives and frames to handle. Then again look at his idle capital and plant. If he has only five frames occupied, say, he must keep all his big box and his complement of frames for it idle for the time being, say 15 L hives and boxing for same equivalent to three Heddon cases and frames. With the H. these are not necessarily idle; they can be on some strong hive getting filled with brood or have three other weak colonies in building up in them. Then as to foul brood, it is quite unnecessary to overhaul as much as he puts it, to find out if a hive is diseased, and then if it should be a case for boiling down commend me to the Heddon hive and unwired frame for the job in any aspect of it. With regard to Mr. O'Grady's remarks on the Hooker hive there are some serious objections in its construction which he has not perhaps thought of, which I shall point out at some future time.

We publish our Scale of Charges for advertising. We shall be glad to increase our advertising pages.

J. A. B., Cumnock:—We had about 6 in. of rain here yesterday, it was badly wanted.

## QUESTIONS.

W. E. BAGOT.

139.—Have you sold all last year's crop? How did you put it up? Where did you sell it? What did you get for it?

140.—Your ideal site for an apiary.

E. T.

140.—At foot of hill facing sunrise, with cultivated flats in front.

J. GALE.

139.—Yes; in 2lb tins and 60lb tins; locally; four pence.

140.—With a south east aspect, near a stream with high wooded ranges west and south west.

H. NANCARROW.

140.—My idea of an ideal site for an apiary would be on a gently sloping hill facing north and east with a shallow stream running round the foot, a forest of white and yellow box, apple tree and gum within a mile, 200 colonies of Italians.

R. BEUHNE.

139.—Yes, sold all last year's honey and this year too. Last year's in 56lb tins, this year doesn't want any packages.

140.—My ideal site for an apiary is a nicely laid out flower garden in front of a glucose honey factory.

W. C. HUGHES.

139.—Yes, long ago. Had not much to sell unfortunately. In well cleansed and bright kerosene tins. Sold it at the apiary. £1 per tin.

140.—Just such a spot as beekeepers often see at the heads of the gullies of the Hawkesbury and Macdonald rivers. Within easy access of abundance of pure water, close to the flower producing trees and shrubs, protected from cold and strong winds, and with all that can be got of both morning and evening sunshine. In open country I prefer a gentle slope to the east with some tree or wall protection from severe winds.

## QUESTIONS NEXT MONTH.

P. WHITEHEAD.

141.—What is the best method for the clarification of dark grades of honey?

142.—Honey kept for a time in copper or brass vessels, does it produce verdigrise like water does, or in any way injured?

T. BRADLEY.

143.—I have to sell my honey as soon as I extract, it granulates so soon here. Is there any way to stop that?



## BEST WISHES.

R. H. LONG.

'Tis the season for Wishes when everyone strives  
To wish pleasant wishes for once in their lives,  
So I wish you as many as bees in your hives.

[Thanks friend Long, and may all the good  
wishes you wish to ourselves and others come  
back with tenfold interest to yourself.]

## GREETING.

BY R. H. LONG.

'Ere the old year whose hours so swift are  
fleeting,

Shall merge in others full of future care,  
How shall I send my little bees some greeting  
To tell them all the love for them I bear.

The lessons they have taught of brave endeavour,  
our,

The welcome they receive where'er they roam,  
The peaceful way their numbers live together  
And know no sweeter place on earth than home.

Those hours above all others shall I treasure,  
Spent in communion with their wondrous ways;  
The dying year has held no truer pleasure.  
Than moments passed with them in silent praise.

My little Bees, this is my loving greeting,  
When New Years bring fresh trials for me and  
you,

The lessons thou have taught, oh, keep repeating  
And I to learn and strive to live them too.

## CORRESPONDENCE.

Mrs. Jennie Atchley, Texas, U. S. A.,  
November 29th, 1897:—The *Bulletin*  
gets better all the time, and she has no  
waste space at all. With kind regards.

G. S., Otago, New Zealand:—I like  
your papers very well, I find a lot of  
information in them. As I am only a  
beginner I cannot give you any news  
concerning bees. The weather here is  
very dry, the swarming backward.

R. G., Coolac:—Bees are doing fairly  
well, but the hot weather is against  
them. The honey came down in 6 or 7  
last week. Weather is keeping very  
dry, a little rain to-day but nothing to  
do any good. Water very scarce about  
here.

Have you no shade on your hives? A good  
coat of white paint makes a great difference in  
the temperature of a hive.

The fumes of sulphur are said to be  
agreeable to bees, and lately fumigated  
combs will call robbers in much less  
time than will combs not so fumigated.

A Mr. Evans says:—I would advise  
those who are interested in bee-culture  
as any other business to accumulate all  
the information they can on the subject,  
and then modify it to fit existing con-  
ditions.

Professor Cook speaking of the price  
of honey in California says:—It still  
holds very low; a few have sold for 4  
cents per pound, but many can get no  
more than 3 or 3½ cents for the best  
extracted honey.

J. A. B., Cumnock:—The bees have  
done very well with me this year; so far  
I have got nine 60 lb tins from eight  
hives, spring count, and have increased to  
15 by dividing. I did not let the bees  
swarm as I consider it a bad practice.  
It is very amusing to read some of the  
letters in the *Bulletin*, especially those  
that rub it into "Sparrow". As soon as  
I read his letter, I thought he would get  
ridiculed. And it serves him well right.  
Some of these old beekeepers seem to  
forget that they once were beginners. I  
have been reading and studying a lot  
about hives lately, and I have come to  
the conclusion that the Heddon hive is  
the best. We don't want to handle  
frames so much; we want to handle  
hives, and the Heddon is the one for  
that purpose. I am going to test it for  
myself this season, and I will let you  
know how it succeeds. Friend Bolton  
has succeeded with it, so why not other  
people.

W. G., Campbelltown:—I am very  
pleased to see G. W. Gordon taking the  
stand he does concerning the Foul Brood  
Act. I am not in favour of such an Act  
being passed, as I think we are taxed  
enough at the present time and I would  
be in favour of an Act that is confined to  
the districts where Foul Brood is. Foul  
Brood is not known in Campbelltown or  
the surrounding districts. I am sur-  
prised at Mr. Gale stating that Foul  
Brood was in every part of the colony,



and I can assure him that Foul Brood is not known in Campbelltown or the surrounding districts. I think Mr. Gale is very wrong to make such a statement without knowing what he is writing about, but I cannot see for the life of me what benefit a Foul Brood Act would be where beekeepers have apiaries in the bush where the trees have got bees nests in them. They would be infected with the disease, and Brother Gordon, I am one on your side, and I am glad to see you take the stand you do. Bees are doing well this year. It has been the best year we have had for seven years. Early in spring the narrow leaved ironbark came out and we got a splendid flow of honey from it, beautiful and clear. Next the blue-gum and ti-tree and a splendid flow from that, beautifully clear. Now the broad leaved ironbark is out at the present time and a good flow of honey is coming from it. The grey gum, white gum, box, blackbutt, and mahogany are to come out.

P. W., Lake Macquarie, asks:—Kindly allow me space in your paper to ask your most unselfish contributor "Loyalstone" how he proposes to make beekeeping pay with honey at 1d per lb? I amongst many others fail to make it pay at 2d per lb., and would feel grateful for a little enlightenment upon the subject of improved methods of working, etc. Re the peculiar disappearance of bees from hives spoken of by Mr. W. E. Fackender, of Unanderra. The same symptoms have prevailed among the bees in this neighbourhood since the latter end of September. Though there has been a plentiful supply of honey in the hives, pollen has been exceedingly scarce, and I am inclined to think that the "dwindling" is attributable to that fact, though I have been unable to induce the bees to accept meal of any kind as a substitute for pollen. I am the more willing to attribute the trouble to a pollen famine for the following reason. During the last few days pollen has been coming in freely from the oaks, and the improved appearance and activity amongst the bees is very marked.

I may add that sulphide works cannot be blamed for the trouble in my case, as though there are extensive works of that description at the Lake, the distance my apiary is removed from them, and the fact that all the prevailing summer winds tend to carry fumes, etc., away from rather than towards it is sufficient to do away with that assumption. I hope you will be able to publish further opinions on the subject.

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According to a German paper, slum-gum is worth seven dollars a ton to mix with commercial fertilizers.

A resident of Echuca East, Victoria, named Willyan, sprayed on his grape vines a poisonous fluid, with the result that his bees have been poisoned. Mr. Willyan estimates his loss at about £100.—*Melbourne Leader*.

J. W. V. Allen, says:—I wish to say a few words to those who may contemplate entering the arena of bee-keeping, and wish to know the shortest and safest road to success for the beginner. He should take a course of training, of at least one year, with a bee master—not simply a bee-keeper but a *bee-master*—one who understands his business, and is successful in the management of it. If I were young again, and going into the bee-business, I would take such a course of instruction if I had to work for my board and privilege of learning the business.

C. P. Dadant, says:—It is a mistake in wintering to mistrust hives that have only old bees, if conditions are otherwise satisfactory. Aside from the fact that they are less able to take care of the brood, they are otherwise fitted to go through winter fully as well as the young bees. Their bowels do not so readily become distended with discharges as those of the young bees, for they eat less. In transporting bees long distances while importing them from Italy, years ago, we ascertained beyond a doubt that the old bees could stand the trip better than the young, and we ascribe it to the reason above given.



A. C. FRASER.

144.—What is the most amount of honey got from one hive in a season, and amount of wax, and how many castings in one season from the same hive?

EVERTON.

145.—If an apiary of bees is completely prevented from raising drones, may that be taken as a certainty that they, the bees will not swarm while they are kept in that condition?

## CORRESPONDENCE.

There are 25,000 members in the German Beekeepers' Central Association.

It is asserted only one out of 16 beekeepers in America take a beeper.

Beekeepers! Try to dispose of your honey locally as much as you can, but you should not forget that the large towns of the colonies contain at least one fourth of the population, and there should be the greatest consumption with out production. See that you have that market, not the adulterators.

A. J., Tamworth:—You will find enclosed an insect which I received from a neighbouring beekeeper. It is killing the bees wholesale. It waits about the boxes and as soon as a bee comes out it catches it and sucks it dry. All along the fences the ground is covered with dead bees. If they do not clear out soon the bees will die of starvation as they have eaten all their stores and will not work while these insects are about. He asked me to write to you to see if you knew what they were. What is the best way to get rid of red ants.

The insect to hand is a dragon fly. A riding whip is a good thing to kill them with. The most effective way to get rid of ants is burn the nests out. Keep everything about honey clean.

Everton, Parkes:—The honey harvest in this district, from Oct 1st to 31st, has been very poor, from what I have heard of the takings, which appear to have averaged about 5s. per colony. Perhaps it is as good as can be expected, considering there are about 400 colonies within a radius of three miles. However, we

may expect a little more honey before the summer is over, as the good 4in. rain we have just had is sending some more honey bearers into bloom. Drones have been absent from my colonies nearly three months now, but are just commencing to put in an appearance again. Honey is selling here at 3d per lb retail. A few months ago there was some honey being sold here which was positively bad, but I was unable to get a sample of it.

R. V. J., Macleay River, December 30th, 1897:—Kindly inform me what is wrong with my bees. I have 27 hives of bees and nearly half of them are infected in the following way:—A good many of the cells have from two to six eggs in them, a great deal of the brood in their cells is raised higher than the surrounding ones and is open at the end; the matured brood in some of them is dead. It seems solely to attack the matured brood. The colony does not increase, but rather the other way. There is none of theropy appearance of Foul Brood about it. All my hives are bar frame. Please inform me of a remedy.

You have neglected your bees, and some how they have lost their queens. In their trouble they have promoted a worker bee to be queen, who only lay drone eggs, and several in a cell. The remedy is, get fresh hive and put in old stand. Take old hives 50 or 100 yards away, and shake all bees off. Place combs in new hive on old stand. The bees will all fly back to old stand excepting the laying workers. Have laying queens ready to place in hive on new stand. Maxim—Never let your hives be without larvae and eggs.

A. C. Fraser, Inverell, writes:—About the middle of spring my bees took the paralysis very bad, a black hive in particular. I put some sulphur on the entrance, but did them no good, so I tried fumigating them with sulphur by putting some fine sulphur on a piece of cloth and putting it in the smoker, which seemed to do a great deal of good, for in a week afterwards I had no paralysis in my bees. But a fortnight after foul brood broke out in them. Whether it was foul brood or not I do not know, but by the way it is described in the A. B. C., it had all



appearance of foul brood, but I was requeening most of my hives with cells. Well, by the time the young queens were fixed for laying, there was only an odd cell here and there with a rotten larvæ. Well, by the time the young queens got in good laying order I found it had all gone. Now, I see some beekeepers have had the same thing. Firstly I do not think it was foul brood, because it went away whenever the old queens were killed. Well, according to other writers, they say that you must destroy all the hive to stop it from spreading. I found it in No. 3 box first and in a day it was in all the other hives. Well, as I said, it seemed to be foul brood, but I blame the sulphur for it (putting it on the entrances.)

J. J. Parry, Erina, Gosford, writes:— I promised to give you my experience among the bees. Being a lover of nature and having a little scientific knowledge, also fond of insect life, I decided to get a hive of bees and see what sort of a hand I would make with them. Well, I got hold of an old copy of the "Western Post" newspaper. Therein I saw an advertisement of Mr. George James, of Gordon. I wrote to him and bought a hive of Italian bees in full working order. This was about September, 1895. Well the experience I gained between September and Christmas, only a few months, induced me to try my hand at some more. So I then got Mr. James to make me 12 hives and put in three frames with bees and a queen, so I fed these and got them up to about 7 frames by winter (Gallup). Well, I wintered fairly well considering I was a novice at the game, starting in spring with nine. Well, I've increased the number to 74, all got from three to four stories on. I have spent a good lot of money on them buying the necessary appliances for the working of a modern apiary, and I am now making a Bichromate of Potash battery for wiring my large frames by electricity. We had a very good spring but the flow fell off altogether. The apple tree is now in blossom and the

peppermint will be out shortly. The very dry weather spoilt the season. I am not grumbling, I shall take over a ton this season. I must now leave off abruptly to ask a few questions. Well, Mr. Editor, I should like to know (1) Whether the crude nectar of flowers contains cane sugar or glucose and whether there is a definite formula for honey? Cane sugar and glucose are very similar in their composition, but different in properties. Grape sugar or glucose gives sweetness to most fruits, is a product of the methamorphoses of starch, cane sugar and woody fibre. This is fermentable but cane sugar is not. (2) Is honey producing by itself a reliable source of income. With regard to those leaflets you intend to print you can book me a few hundred. We want to get the people to understand the uses and medicinal qualities of honey. I think honey producers should let the Government see that they are combining to supply the public with a healthy and wholesome food, and are worthy of a small privilege in the shape of a duty on that cheap glucose that is coming in to adulterate our pure honey, deceiving the public, ruining an industry with a loss of money paid for the imported stuff, to give the people that eat any quantity kidney troubles. Its not the extra price I am looking at altogether, its the ready sale we should have for our honey. We will say the price of honey to have risen 1d a lb; it is no inconsiderable item in our pocket, I can assure you. If you don't look out next election and bring some of these things under the notice of the man you intend to vote for, you will perhaps be worse off next year than this. There are a terrible lot of novices started this year. I can tell by the quantity of supplies some of the leading firms have sold. You will have the "Universal Providers" in for the beekeepers' supplies next spring.

Crude nectar consists of cane sugar which is afterwards turned by the bees into grape sugar. Cane sugar is distinguished by the polaniscopes by rotating to the right, grape sugar to the left. Honey under the polaniscopes shows a rotation to the right.



## WYEE.

BY ELLIOTT J. RIEN.

If this is the law, that I am trespassing in following my property on my neighbours' land for the purpose of bringing it home, the sooner it is altered the better, or my neighbour should be made to deliver my bees safely to me or take consequences. The same as if my cow or horse got on to his farm. It might be worth while to get up a test case suing for value of swarm as Mr. Abram suggests.

If Mr. Shaw will see that there are some eggs and larvae in his nuclei until the queen commences to lay he will not lose his virgin queens. Another method is to, if you have not any eggs or brood available, go to nuclei and as soon as the queen can fly take her off the comb and bring her outside, and let her go at entrance. Repeat this a couple of times, at intervals, finally making her fly in the air. I have never lost a queen so treated.

Sparrows are generally pretty smart birds, but, Mr. Sparrow, there is a difference between a queen being mated and a queen laying. Sometimes she does not lay for four or five days or a week after mating, so Mr. Editor's bees and yours are of a kind after all.

I do not know about anxiety being the cause of failure in introducing, but when I am too confident and neglect to keep a close eye on them, is generally the time I come to grief. By the way, can you get a better cage than the old pipe cover?

Send us nails with hives in flat, that is good. In places like this it is difficult to get suitable nails and delay often means loss. Now then, supply dealers, is this not worth considering?

About adulteration. There is a place in Perry Street, Sydney, where, I have been informed on the best authority, honey is made. I have eaten the made stuff. When will these people be stopped?

After all that has been written about foul brood one would think we knew something definite about its origin, yet we hear now it is caused by chilled brood. I quite agree with Friend Abram

that chilled brood will not cause it. I have had any quantity of chilled brood, even black stuff, and yet never saw foul brood in my hives. Only a fortnight ago some men chopped a tree down and left the comb lying about exposed to rain, etc. I went two days after, got the bees, fixed the combs in the hive, chilled brood and all, and yet foul brood has not come yet. The fact of the matter is foul brood is a bacillus disease and chilled brood forms a good breeding ground for places where foul brood germs are in the air. I have yet to learn we can originate a bacillus any more than we can hatch a queen without an egg. There must be a spore to start from, and this coming into a hive of sick bees or chilled brood starts the mischief just as the germs of typhoid and other diseases attack only weak subjects. I am convinced if there are no germs of foul brood about, chilled brood can never cause the disease, in spite of Mr. McEvoy's opinions.

Yes! A beekeeper should have the same protection as a dairyman, poultry farmer or other worker. No more and no less, as at present.

Honey from America! A screw loose somewhere. Where? Mr. Editor, can you let us know what those 289 cises brought? It would prove interesting.

Hear, hear, that it would.

Gum for honey labels never proved satisfactory with me, Loyalstone. Nothing so good as well boiled smooth flour paste with a little salt added to preserve it. It only requires care in the making.

Do Wagtails (*Sauoprocne Motacilloides*) eat bees? I am suspicious of them. I have seen them eating one of our greatest bee enemies. I do not know its name; it resembles a horsetinger somewhat, but kills a great number of bees, and I can never find where the injury is. It sucks the honey out, leaving the bee dead. So if they help themselves to a dainty morsel now and then, I am sure they do not make a habit of bee eating. They certainly perform a friendly office for us.



## THE INFLUENCE OF BEES ON CROPS.

BY ALBERT GALE, in *Agricultural Gazette*.

Some writers have given their experience of bees searching for the nectary, and the insects' apparent failure to discover it at first sight. When bees are seen searching about the essential organs of flowers it is not the nectary they are in search of, but the gyrations they make are for the purpose of collecting the grains of pollen. If a bee is seen at work on a sunflower or other composite bloom, her movements in gathering pollen differ greatly from those in collecting honey. Every leg is brought into play in the former work, and her motions are as systematic and various as the figures in a country dance. How differently she goes to work in collecting honey. Her head bends towards every expanded flower, and her tongue is thrust into every nectary. At some she pauses momentarily—some insect has been there before her; at others her stay is longer; she has her reward.

Notwithstanding an insect may have rifled the nectary of its honey, and when visited by the bee found to be empty, in a few minutes another or the same bee will revisit it, and this time her stay may be longer, because between the two visits the nectary will have secreted another supply. The indecision of the bee at a flower is no proof that she is looking for the position of the nectary.

To-day bees may be industriously at work upon a flower of certain colour, and to-morrow forsake it for one of less conspicuous shade. "It would appear," says Darwin, "that either the taste or the odour of the nectary of certain flowers is unattractive to hive bees, or to humble-bees, or to both, for there seems no reason why certain open flowers which secrete nectar are not visited by both. The small quantity of nectar secreted by some of these flowers can hardly be the cause of their neglect, as hive bees search eagerly for the minute drops on the glands on the leaves of the *Prunus laurocerasus*."

"The small quantity of honey secreted" is the cause. Within a near radius there were, undoubtedly, flowers that were secreting larger quantities of honey, and both humble and hive bees always visit flowers where they can gather the greatest quantity in the shortest space of time. When the hive bees were searching "eagerly for the minute drops on the glands on the leaves of the *Prunus laurocerasus*," the honey flow must have been scarce elsewhere. I have seen bees in time of famine search the most unlikely places in the hope of getting something to take home. "A drowning man will catch at a straw," and a bee on short allowance will do the same.

Some years ago, at Cooma, in a dry season, a bed of turnips ran to flower. They were sown on a sandy, thirsty soil. For three or four days they were besieged by bees. Almost suddenly the bees ceased to visit the turnip blooms, although they were still expanding. The cause of their forsaking the turnips became evident. About one-third of a mile away, on the banks of a creek, a small paddock of lucerne had flowered, and the bees were bestowing their attention on it, because it was yielding a greater supply of food. Their harvest from the lucerne lasted but a day or so. The scythe stopped the honey flow, and the bees returned to the turnips. Was it the dark blue flower of the lucerne that caused the bees to forsake the creamy yellow flower of the turnip, or the superior quantity of honey contained in the lucerne? Undoubtedly the latter. The whole family of trefoils are well known to be great honey producers.

Whatever may have been the reason for plants to have brightly coloured flowers, and to be otherwise decorated so as to attract insects to aid in the work of the development of the vegetable world in past ages, it is evident in these latter times the bees at least have been sufficiently educated to go without leading strings, and have kicked over the traces, and now work according to their own sweet will, or a higher one.



Darwin himself is not quite so sure that the colours and markings of flowers in every case are for the sole purpose of attracting bees.

I have before remarked that bees do not work indiscriminately on every species of flower that comes to hand, notwithstanding they are all honey producers; but one peregrination is confined to collecting from one species, and in the next ramble they may select another and so on. Whatever species of flower they may select to gather from, it is not the colour of the bloom that is the attraction. In watching bees at work on a bed of poppies, the brightly-coloured flowers are not chosen in preference to white. Any colour in the bed is as attractive as that of any other.

"Bees repeatedly passed in a direct line from one variety to another of the same species, although they bore very differently-coloured flowers, I observed also bees flying in a straight line from one clump of yellow-flowered *Enthera*, to every clump of the same plant in the garden without turning an inch from their course to plants of *Eschocholtzia*, and others with yellow flowers, which lay only a foot or two on either side. In these cases the bees knew the position of each plant in the garden . . . so that they were guided by experience and memory."\* The experience they had gained was that *Enthera* contained more food than *Eschocholtzia*, and Nature had taught them that it would be impossible to impregnate the ovaries of the one with the pollen of the other.

What is our Australian experience as it regards the colour of flowers that are chiefly visited by bees? There is no denying that some of our endemic flowers are as brightly coloured as the exotic; and, before the introduction of foreign plants and the bee (*Apis mellifica*) the chief honey-gathering social insect was the little native bee (*Trigona carbonaria*), one of the chief insect fertilisers in Australia. The chief honey yielding plants in these colonies are the *Eucalyptus pittosporum* and the ti-tree (*Leptos-*

*permum* family.) The colour of the native flowers named are whitish, with a few exceptions. The chief exotics that have been introduced are fruit-bearing and ornamental flowering plants, which nearly in all cases bear brightly-coloured flowers or blossoms. The exotic, white, flowering fruit-trees in the spring-time are very conspicuous by the multiplicity of the blooms they bear; yet our little native bees now as readily find the nectary in them as our introduced bees, and they cannot have had ages of experience to guide them.

On the other hand, it is very singular that the hive-bee, on its introduction into Australia, and before it had been sufficiently colonised, should forsake the highly-coloured garden flowers of the Old World that were introduced here at about the same time as the bee. These highly-coloured flowers and the hive-bee, as far as Australia is concerned, are coeval. Untold generations of them had learned to work these blooms, we are informed, and their experience had greatly aided in the development of species and the production of showy flowers of the land of our fathers. On the introduction of the bees and the flowers referred to, the former appear to have suddenly turned their attention from the latter, and apprenticed themselves to the work of attending to the whitish native honey-bearing flowers of the Colony—a colour that the writers on the subject say the bees studiously avoid for the more gorgeously-coloured ones their progenitors had been at such pains to produce by erecting those bright-coloured sign for the benefit of the bees of to-day, for the purpose of saving them both time and labour. Nevertheless, the hive-bee, when introduced here, after having been educated to the highest standard in the recognition of colours they are said to possess in Europe, have started *de novo*, and worked upon, not our introduced ornamental flowers, nor our showy blooms of "red, blue, and purple," but upon "simple white or yellow ones"; so unlike the education in



colours they had received in the other side of the world. Question—Will our eucalypti and acacias, and other white and yellow flora, in ages to come, develop highly-coloured flowers and of a larger size than at present, and will the bees then forsake the colours they now work upon in the same way they are said to have done in the other parts of the world? It is queer bees should have gone back in their tastes for colours, when they crossed the Line in coming to this side of the world.

Some years ago a series of questions were submitted by the Department of Agriculture to the beekeepers of this Colony, relative to what plants were visited by bees as regards size and colour of blooms.

In the ranks of the beekeepers are men of keen observation as to whence their honey flow comes. The whole of the answers given are full of interest. Of course, the imported fruit trees and other exotic flowering plants are named as giving the spring supply of pollen and honey, but the ironbark, grey gum, bloodwood, blue gums, and the eucalypts generally are by far the most remarkable as honey yielding, and all these have white flowers. On the northern districts the broad and narrow leaved ti-tree is stated "to be the largest honey-yielder we have"; therefore its *white* flowers are the attraction. One beekeeper states that "one year he grew a plot of *white* poppies for experiments with opium, and found the flowers literally crowded from daylight to dark with bees."

The article concludes by saying, "Regarding the size and colour of flowers most affected by the bees, much diversity of opinion exists among apiarists." . . . It is, indeed, an open question if colour has any effect in the matter." In the report one observing beekeeper quaintly observes, "The bee is quite indifferent to the size of a flower, provided he can get what he wants"; and, from experience, I can add, quite indifferent as to colour.

## ROYAL AGRICULTURAL SOCIETY'S SHOW.

The following is the schedule to be competed for at above Show to be held at Sydney from April 6 to 12th:—

- First prize, £1; second prize, 10s.
- 526.—For the best twelve 1 lb. sections.
- 527.—For the best six 1 lb. sections.
- 528.—For the best large frame of Honey.
- 529.—For the best small frame of Honey.
- 530.—For the best small frame of Honey (sections excluded).
- 531.—For the best samples of extracted Honey in twelve 1 lb. jars or bottles.
- Champion Prize.—Trophy, or £3, for the best Collection of the Products of an Apiary, presented by S. Freeman & Son, Merchants, Sydney.

## UPPER HUNTER P. & A. ASSOCIATION.

The following is the Apicultural schedule to be competed for at the above, to take place on March 2nd, 3rd and 4th:—

- Open to all-comers, entrance 10s 6d.
- 403.—Collection of the Best Apicultural Products, in trophy form, to include extracted and comb honey and beeswax, 1st prize £2, offered by P. and A. Association; 2nd prize, case of wine valued 25s, offered by Messrs Brecht Bros.
- Open to all-comers, entrance free.
- 404.—Best Leather Coloured Queen and Progeny, bred by exhibitor, in observatory hive, 1st prize 10s, offered by Mr. C. C. Paul; 2nd prize, 5s, offered by Mr. F. Budden.
- 405.—Best Golden Queen and Progeny, bred by exhibitor, in observatory hive, 1st prize 10s, offered by Mr. W. Hill; 2nd, 5s, offered by Mr. H. J. Clarke.
- 406.—12 1lb Jars of Liquid Honey, 1st prize, 10s 6d, offered by Messrs M. Campbell and Co.; 2nd 5s, offered by Mr. Hazelwood.
- 407.—12 Pickle Bottles of Liquid Honey, 1st prize 10s 6d, offered by Messrs M. Campbell and Co.; 2nd 5s, offered by Mr. T. Ellertou.
- 408.—12lbs. Granulated Honey in 1 or 2lb. jars, 1st prize 10s, offered by Dr. Wilson; 2nd 5s, offered by Mr. Walter Campbell.
- 409.—12 1lb Sections, 1st prize 10s 6d, offered by Mr. J. C. White; 2nd 5s, offered by Mr. W. N. Campbell.
- 410.—Two Langstroth Frames of Comb Honey, 1st prize 10s 6d, offered by Mr. J. C. White; 2nd 5s, offered by Mr. D. G. Grant.
- 411.—Three half-depth L Frames of Comb Honey, 1st prize 10s 6d offered by Mr. R. G. D. Fitz-Gerald; 2nd 5s, offered by Mr. W. Lipscomb.



412.—12lbs Beeswax, 1st prize 10s, offered by Mr. A. Roberts; 2nd 5s, offered by Mr. J. C. Luscombe.

413.—Three sheets Medium Brood Foundation L size, not less than 6 sheets to the lb, 1st prize 5s offered by P. and A. Association; 2nd 2s 6d, offered by Mr. W. Hornery.

414.—Beverages made with Honey, not less than three bottles, 5s, offered by P. and A. Association.

415.—Honey Vinegar, three bottles, 5s, offered by P. and A. Association.

(Open only to Members of the Beekeepers' Association. Entrance free.)

416.—6 1lb jars of Liquid Honey, 1st prize 7s 6d; 2nd 2s 6d, offered by Mr. R. T. Keys.

417.—6 Pickle Bottles of Liquid Honey, 1st prize 7s 6d, offered by B. K. Association; 2nd 2s 6d, offered by Mr. H. Stubbs.

418.—6 1lb Sections, 1st prize 10s, offered by B. K. Association; 2nd 2s 6d, offered by Mr. T. J. Haydon.

419.—1 Langstroth Frame of Comb Honey, 1st prize 8s, offered by the P. & A. Association; 2nd 2s 6d, offered by Mr. J. McKenzie.

420.—2 Half-depth L Frames of Comb Honey, 1st prize 5s, offered by B. K. Association; 2nd 2s 6d, offered by B. K. Association.

421.—3lb Beeswax, 1st prize 5s, offered by B. K. Association; 2nd 2s 6d, offered by B. K. Association.

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## RINGBARKER SPARE THOSE TREES.

ADAPTED FROM "WOODMAN SPARE THAT TREE."

BY W. C. H.

Ringbarker, spare those trees,  
Touch neither bark nor bough  
God made them for the bees,  
Man should protect them now.  
'Twas the Great Father's hand  
That placed them in that spot\*  
Ringbarker, He owns the land,  
Thine axe shall harm them not.

Those old familiar trees,  
Whose glory and renown,  
Are sung in hives by happy bees,  
In bush, on farm, in town.  
Ringbarker, cease thy stroke,  
Cut not their bark-bound ties.  
Spare box, and shrub, and oak,  
All bloom where honey lies.

When dark-skinned idle boys,  
Oft wandered in their shade,  
They claim'd, as chief of native joys,  
The sweets the wild bees made.  
No Langstroth held the frame,  
No Bingham gave the smoke,  
Delicious nectar, all the same  
Came from thy heart, old oak.

My heart-strings round thee cling,  
Close as thy bark, old friends;  
Here shall the hive-bee sing,  
His praise who thee defends.  
Old trees, bloom on, be brave,  
Ringbarker, leave the spot,  
Good laws shall help to save,  
Thy axe shall harm them not.

\*As many of the flowering trees and shrubs, most helpful to the apiarist, grow on slopes and hill-sides, and in comparatively poor land, it is contended that in the interest of the nation generally for sanitary, and rain-producing purposes, and for appearance, as well as of the beekeeper in particular, these trees should be preserved. When flowering trees grow on land suited for agriculture and needed for that purpose, the apiarist must be content to see them fall, and look for the blossoms of cultivation in their place, but in other cases, unhappily too common, he has both reason and right to support him in his objection to the indiscriminate and wholesale system of ringbarking now in vogue.—W.C.H.

At a Wisconsin Convention a Mr. Evans said he once started a young man in the bee business, and two years after the young man bought 200 colonies, came within a quarter of a mile of him, started in the business, and sold honey for about one half-price.



To keep late drones take frames of drone brood and put in a queenless colony; remove all queen cells in the latter, and it will keep drones as long as

they are wanted. Keep the strength of the colony up by occasionally giving it a frame of sealed worker brood.

# ITALIAN QUEENS & BEES FROM ITALIAN DRUMFIN APIARY. ITALIAN

## Prices of Queens—

	One	Three	Five	Ten.
Untested ..	5/-	13/6	20/-	39/-
Tested ..	8/-	22/6	35/-	69/-
Select Tested ..	15/-	42/6	70/-	

Untested Queens warranted purely mated at 1/- each extra.

Over 95 per cent. of my queens were purely mated during 1895-96-97 Nuclei at 3/- per frame to go with any queen.

Prices of Full Colonies, Bees per lb., Imported Queens, &c., on application to

W. S. PENDER, Drumfin Apiary, West Maitland, N.S.W.

or to PENDER BROTHERS, Manufacturers, West Maitland

## A Stitch in Time saves Nine.

And early orders save disappointment. If you intend to purchase Queens for the coming season, give me a trial. Book your orders now and pay on delivery. I can supply you with good prolific Queens, whose bees are good workers and gentle to handle. The very best imported mothers only are used, and for industry, gentleness and beauty, their bees are unsurpassed. Mismatched Queens are a novelty. Write for new circular and see testimonials.

### PRICES—

	1	3	5	10
Untested Queens ..	5/-	13/-	20/-	39/-
Tested Queens ..	8/-	22/-	35/-	65/-
Select Tested (Breeder) 1 for 15/-, 2 for 27/6				

Honey or Beeswax will be taken in payment for QUEENS (if preferred) for all orders of 10s. and upwards. Safe arrival guaranteed to any Post Office in the Australasian Colonies.

I can also supply you with anything you require in the Apiary. Write for prices.

## A. A. ROBERTS,

Rosebud Apiary, MUSWELLBROOK, N.S.W.

**W**ANTED TO SELL three (3) Choice Cypri-Italian Breeding Queens. Safe arrival and satisfaction guaranteed. Price, 10/6  
E. JACKEL,  
Berwick, Victoria.

## Beekeepers! Attention.

*Pamphlet on How to Refine Beeswax, and Obtain Top Market Price.*

BY LOYALSTONE, PRICE 5/-, POST FREE.

**T**HIS is a cheap and inexpensive way for Beekeepers, large and small, to refine their wax. Read the following extract from a letter of that well known beekeeper Mr. A. A. Roberts, of Muswellbrook, N. S. W. Referring to my wax he says, "It is really a splendid sample of wax and a credit to yourself and method of refining it. It is the best sample of wax that I have seen and I have shown it to several and they consider you are a champion at refining wax." Note the address:—

**Chas. U. T. Burke,**

LOYALSTONE, LYNTHURST,  
WESTERN LINE, NEW SOUTH WALES.



## ITALIAN QUEENS.

I CAN supply Italian Queens. Splendid stock at the following prices:

	One	Three	Five	Ten
Untested	5/-	13/-	20/-	39/-
Tested	8/-	22/-	35/-	65/-
Select Tested	15/-	42/-	65/-	

Comb Foundation at lowest rates. Your own  
wax made up at 6d per lb.

Give these a trial and prove for yourselves  
their quality.

F. PHILLIPS.

ENGLEBURN APIARY, NABIAC,  
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When you are wanting HONEY LABELS or any description of PRINTING or BOOK-BINDING to write us and we will be pleased to execute same at very reasonable rates.

A. BEE BULLETIN.

Queens - Jubilee - Queens.

THE BEST. THE CHEAPEST.

My Queens are Superior to any,

Because I possess and devote the greatest amount of skill, knowledge and experience to the ART OF QUEEN-BREEDING, which is a SPECIALTY OF MINE.

Untested, 5s.; Tested Pure, 15s.; Extra Choice,  
30s. each.

On a number of Queens Special Quotations.

And all kinds of Bee Goods supplied.

W. ABRA M.

## Italian Bee Farm.

BEECROFT, NEAR SYDNEY, N.S.W.

Winner of National First Prize and over 100  
Special and First Prizes,

**QUEENS. QUEENS. QUEENS.**  
FROM AUSTRALIA'S LARGEST BREEDER.

**I**F you want a fine strain of Italian Bees, the result of 14 years' careful breeding, send along your orders at once and see what splendid Queens I can furnish by return mail. My home yard is stocked with over 300 colonies of the finest Italian Bees, including over a dozen Select Imported Queens, and a large number of perfect Breeding Queens of my own well-known strain. Carniolan Queens are raised in an out-apiary, from Imported mothers and mated to Italian drones. By my advanced method of queen rearing, the most perfectly developed of queens only are produced, and as my breeders are excelled by none, I am enabled to guarantee satisfaction to all customers. If you have not already tried my strain, send along a trial order, and note the improvement that the infusion of vigorous fresh blood will make in your apiary. All queens are sent free by post, and safe arrival guaranteed to all parts of Anstraliasia. We have no foul brood in Queensland, and my apiaries are entirely free from disease of any type. Send for my 50-page Catalogue (free) and learn all about the different classes of queens I send out, and other things of interest to beekeepers.

	One	Three	Five	Ten
Untested Italian Queens .. .. .	5/-	13/-	20/-	39/-
Tested " " " " " " " "	8/-	22/-	35/-	65/-
Select Tested Breeding Queens .. .. .	15/-	42/-	65/-	—
Carni-Italian Queens .. .. .	5/-	13/-	20/-	39/-

"I am so well satisfied with the queens that you supplied me with last season, that I will take 50 more at the price you quoted."—C.S., Chidlow's Well, W. Australia.

"I am really proud of the queen you sent me, for there are no such bees for a good distance around, and those I have shown them to are determined to have some like them." F.G.S., Wardell, N.S.W.

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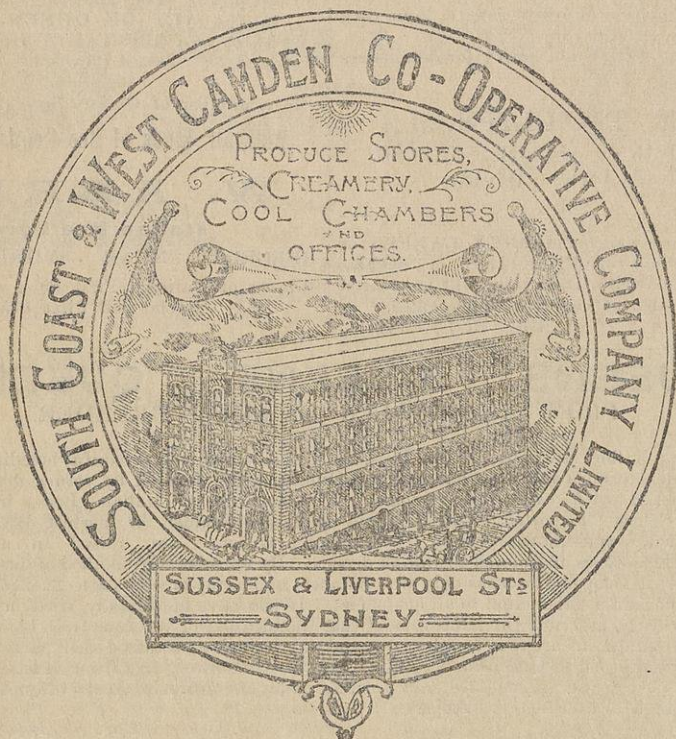
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