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# THE AUSTRALIAN Bee Bulletin.

A MONTHLY JOURNAL, DEVOTED TO BEE-KEEPING.

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

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

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No 6.

SEPTEMBER 30, 1908.

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# "The Australian Bee Bulletin."

**A Monthly Journal devoted to Beekeeping.**

**Circulated throughout the Commonwealth of Australia,—New Zealand & Cape of Good Hope.**

**Editor & Publisher: E. TIPPER, West Maitland, N.S.W. Aus.**

**MAITLAND, N.S.W.—SEPT. 30, 1908.**

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WE call attention to a letter in another page from Mr. E. Hunter, of Trunkay, giving an account of the formation of a Beekeepers' Association at Trunkay in a most successful way. We are sure that every beekeeper, who has the interests of his industry at heart, will wish it every success. Beekeepers have a number of enemies. We, ourselves, can reckon up many of them; dealers in Sydney and elsewhere. The mercantile spirit of the age, dealers of the day, make all the money you can, honestly if you can, but make it. Our friend in a recent number tells us of some dirty work. We know of a big foreign firm and dealing inland, but with a paltry ton of honey, when told to sell for a certain price, sells it for less and sends the lessened returns. When told to send a tin of our honey, which was clean and well-extracted, sends another full of vermin, and coolly gives no satisfaction. It is now two years since we sent a consignment to a Sydney firm to receive word back it was received in such a damaged state that two tinsmiths had to be employed to put it in a saleable condition. Was in Sydney at six o'clock next morning to be told by the railway employees, who had handled it, there was scarcely any damage at all. The firm admitted that only one tin was very slightly damaged. Also that the honey was on its way to a foreign port. Nearer home, called at a local store; they did



not want honey, had just purchased some of the best honey they had ever got at 9/- a 60lb. tin. We subsequently saw some really black honey from the same shop; but the seller was such a good man. We find, in our neighbourhood, only dark honey, but beekeepers in every direction; and so it goes on, not one getting any returns from it.

### BEE STUDY.

There is no better way to become acquainted with the life and habits of bees than by study and experiments, but sometimes experimentalists jump at conclusions and propound them as absolute facts, whereas they are the results of conditions and circumstances; when these change the results change also. Variability, profused in everything in creation, brings about such changes; thus it is possible to ride one's hobby to some extent, but when that is reached retrogression sets in, sometimes slow, sometimes rapid, and thus the cycle goes round. But the bees do not change their habits as some beekeepers change their contentions and hypotheses.

Breeding by selection is nothing new. All the old masters have worked hard to improve their bees, and much good has resulted therefrom. We may aid nature, but we cannot change it. This leads to success, which is as much the result of nature's law as retrogression is. Progress points one way, retrogress the other, and variability acts as a medium between the two extremes. Who attempts to go beyond these points places an obstacle in the way.

With the invention of the bar frame hive, which made it possible to divest the bees' abode of every comb, to examine every cell, and to note every detail, together with the introduction of the Italian bee to Germany, and afterwards to other countries, the study of bee life became a much easier matter than hitherto. It was

now possible to demonstrate beyond any doubt many things that puzzled observant naturalists before. For instance, the duration of the bees' life, the laying of eggs by the queen for worker, drones, and queens in their respective cells, the parthenogenesis, etc., could now be positively proved. The mysteries of the beehive became available to those who carefully studied them—they could be read like an open book. Some, at first, sceptical, were soon convinced and henceforth laboured in the new aena. How clearly and successfully these masters did their work is and remains a standing monument to their credit though their labour has eased. New theories have been advanced (and the old ones belittled) by the younger generation, but they have no chance to demolish the great work accomplished.

To the new theorists belong those who content that bees with longer tongue, more exquisite colour, disease resisting, non-swarming, non-stinging, etc., can be obtained by select breeding for these qualities from stocks possessing them most pronounced. I have repeatedly shown how unsatisfactory these contentions have proved to be so far. Bees in their hands have not changed their inborn instinct and habits, nor acquired something different. The so-called long-tongue bees do not gather honey where others find none; disease-resisting bees do not yet exist, nor ever will, and they swarm when everything suits, no matter how one tries to prevent it. These theorists overlook the fact that bees are entirely dependant upon natural condition for their existence, and that the apparent gain in one direction is lost in another, so that every attempt has signally failed. On the other hand not infrequently excellent qualities are obtained from the progeny of stocks below the normal standard of excellency. Thus we are still without a bee that satisfies all requirements, and the qualities which the old masters found good, are still the best. These qualities



are industry, stamina and docility. Any race or variety possessing these is worth to keep, and the one most superior in these respects is the Italian bee, as has been conclusively proved in every country where bees are kept. They also combine beauty with utility. Whether queens at three for 7/6, or one for 5/- even, are the bearers of these superior qualities is another matter. But who has already bees that permit four or more fertile queens free in each hive ought be able to even do them at less than half a crown each. It shows what beekeeping is coming to! Perhaps it is time to form a queen-supply union, and to agitate the Federal Government to fix the price of queens by law!

In last month's issue I pointed out how defined the cell-building instinct of bees is, and the other day I read in another bee paper that the practice of giving full sheets of foundation to bees will result in the destruction, to a large extent, of the cell-building instinct. I differ and repeat that so long as bees are dependant upon nature they will never lose or destroy their instinct—no matter to what extent foundation may be used.

In my long practice I have found the best course to pursue is to study bees well, and to aid and assist them to the best of one's ability, not expecting too much.

W. ABRAM.

Italian Bee Farm,  
Beecroft, near Sydney.

### SHEEP v. MEN.

How Farmers are treated by the Wade Government;  
Ruining the bee-farmers and driving settlers to  
Victoria; a Government that dearly loves squatters;  
Tormented, terrified Trunkey Creekites.

Some months ago we drew attention in these columns to the impending ruin of the bee-farmers of Trunkey owing to the fact that the Government was permitting

the general and widespread ring-barking of timber in that district. The bees feed upon the blossoms that are put forth by the living trees, but, upon the ring-barking of the bees, the trees die, of course, and there is then no food for the bees. Since the publication of our article, and owing to its publication, considerable attention has been attracted to the case of the Trunkey Creek bee-farmers; but practically nothing has been done for them by those who are in authority in this State. Apparently, the powers that be care nothing at all for the welfare of farmers; all that they have the least consideration for are squatters. Instead of men they prefer sheep. Yet, it would appear that the industrious bee-farmers of Trunkey Creek have created a vested interest by their industry and their settlement there, and it is very much open to question whether the Government has any legal right to destroy their livelihood by permitting the devastating and widespread ring-barking of the trees upon which the bees cultivated by the Trunkey Creek settlers feed.

We are glad to see that the men who are to be victimised in the interests of a number of squatters, by being deprived of their means of living, have formed an association. Much can be done by an organisation that may not be done if attempted by an individual.

We are informed that no fewer than six men have recently been to Trunkey Creek with the object of setting up as bee-farmers; but, after seeing how the local bee-farmers were treated, they abandoned their project, and as one of them was from Victoria, where bee-farmers are, it is said, highly esteemed and encouraged, it is considered probable that the intending investors in bee-farming, have gone to Victoria.

The condition of things is most disheartening to the bee-farmers already settled at Trunkey, for, as they point out, they may go to the expense of getting



bees and a considerable quantity of bee-material; and yet, owing to the ring-barking operations, they may speedily find themselves compelled to dispose of everything at whatever it will fetch. We have been asked to publish the following letter from one of the bee-farmers, in which he states, pretty fully, the grievances of an estimable body of men whom it is the duty of a patriotic Government to encourage, rather than to discourage:—

“Trunk Creek, Sept. 11, 1908.

“The bee-farmers desire to be taxed, and, therefore, to be looked upon as producers, not as loafers, as one sheep gentleman elegantly puts it. We would then be able to ask the Government to allow the beekeeper to retain green timber for his use, instead of allowing it to be killed out of a face, notwithstanding the fact that judicious ring-barking of timber spoils land, as can be witnessed here to-day by the barren, desolate-looking hills—all for the sake of sheep.

“Three years ago practically no honey was produced here. This season the value of the output was £1,500 or more, and if we can induce the Government to save the Mulgannia Goldfield from being ring-barked out of a face, the industry will keep on growing, and give employment to quite a number of families.

“The bee-farmers on July 15 petitioned the Minister, with very unsatisfactory results. I quote part of reply:—

“Ring-barking, subject to certain conditions as follows, will be exempt: All edible scrubs; all straight, sound box timber 6in. and over; all green apple tree.”

“Any tree which has a dead limb on it is supposed to be hollow, so as 93 per cent. of yellow and white box timber on the surrounding hills have dead limbs, very few, if any, of this timber will be left unwrung. The bee man wants the box, as it is equal, if not superior, to the

American bass wood as a honey producer, and it is a most desirable all-round timber, being tough and durable.

“You will notice in quotation from Departmental letter—‘All green apple trees.’ This is a most useless timber; no good for building, fencing or mining purposes, and no earthly good to the bee man, as in this district it blooms too late; and why the Government have chosen this tree for preservation is a conundrum, unless it be that the tree is hard to kill and suckers profusely. Thus, the Department is preserving this useless timber at the expense of superior trees, or probably for the benefit of the sheep man, and to the disadvantage of the miner, builder, fencer, and honey producer. The apple tree is the most crooked, least durable, of any of the existing trees in the bush.

“I would like to say that seven-tenths of the subject area,—viz., Mulgannia goldfield—is steep, hilly, and rugged country, and ring-barking will not improve the sheep-carrying capacity 10 per cent. all round, while the destruction of the timber will be in years to come an inestimable loss.

“The Government decided that the above-mentioned goldfield should be converted into six improvement leases and to let blocks go by tender—a most satisfactory and equitable method—but pressure of some kind having been brought to bear, the Department decided to submit to auction.

“Herewith is a rough sketch of land showing adjoining holdings. Now, what chance have I, for instance, to outbid any of the surrounding holders, all of whom are wealthy; and, after outing me at auction by bidding up past the true value can turn round and have land re-appraised, and therefore obtain it, after all, at a less price than I would have been willing to pay.

“This Government is truly a sheep-farmers’ association. Mining and every other industry is overshadowed by sheep.”—“Sydney Truth.”



# CORRESPONDENCE.

Trunkey.

The Editor, "A.B.B."

Dear Sir,—Glad to say that we have made a move in this district in the way of protecting the bee-industry so far as we are able.

At a meeting, held on the evening of Sept. 8, 14 beemen attended, while all others interested in the industry in this locality sent apologies for unavoidable absence.

Mr. Rose, a lover of bees, and every-thing connected with the insect, presided, and under his experienced presidency, not many minutes elapsed before we had formed ourselves into The Trunkey District Bee Farmers' Association, with funds to meet all initial expenses, a good solid committee and an enthusiastic lot of members.

Before the association settles down to rules and bye-laws, information is to be sought from the beemen of Victoria and South Australia regarding the running of their associations or unions.

In the meantime the Secretary of the local union is instructed to write to prominent honey-producing men of the State, with a view of having other Associations formed, with which we could co-operate or affiliate.

The great desire of the beemen of this district is to be subjected to some special form of taxation, in order that they be not regarded as parasites among the producers of the State, and to be able to ask protection from the Government.

I am,

yours truly,

E. HUNTER.

W. & C., Berridale.—We always look forward to the "A.B.B." Of course we are only new chums and know very little about the business, but are anxious to learn. Would you be kind enough to explain to us the use of division boards and spacing strips. Hoping you have a very good season.

[Division boards are to keep the brood compact. For spacing strips full combs answer the same purpose.—Ed.]

W.F., Bungowannah.—The past season has not been very good for honey in this district. I got nearly a ton from 60 hives, which is rather better than the average for the district. The prospects are fairly good for the coming season.

R S., Parkes.—I am pleased to hear you are getting about again after the unfortunate and trying illness you have experienced, and hope you will now have welcome return to good health. Bees here have wintered very well, and are pretty strong in consequence. There is a prospect of a fairly good season, though I don't think it will be an extraordinary one for honey. I hope you will have and enjoy the benefits of a good season.

E. H., Trunkey.—Will you kindly supply me through medium of your columns name and address of the secretaries of Bee Associations of Victoria and South Australia. Is there not a chance of forming a representative body of N.S.W. Bee-farmers? The beekeepers in this locality have gained some slight concession from Government already, and it seems, that if the whole of the beekeepers of N.S.W. would all join hands, we would soon be a force in the state, and result in our industry be acknowledged by the Lords that govern.

[Will the various secretaries send this information to us.—Ed.]

W. A., Beecroft.—Above all else I hope you are again enjoying good health and will continue to do so; the Bee Bulletin is holding its own—just as the



First Italian Bee Farm does—in spite of keen competition. And I hope that your bees are in good condition for the coming season's work, in order to repay for care bestowed upon them. My bees are, I am glad to say, in excellent condition and some are getting ready for swarming. The winter has been most suitable for them and they turned out much better than I expected they would. It is a pleasure to see the sheets of brood as compact as brick walls, indicating the good laying capacity of the queens. Drones have been flying for some time, but now the weather is quite wintry and interfering with queen-rearing to some out extent. I have, however, been sending last season's queens, and full hives of bees. The Prospects of the season are good.

[Many thanks, Mr. Abram, for all your good wishes. May your coming season be fully up to all your anticipations.—Ed.]

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### Converting Old Combs into Commercial Beeswax.

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Though bee-farming is one of the most progressive industries at the present time, there is one branch of it that has not kept pace with the improvements made in other branches, and that is in the production of good commercial beeswax from what may be termed the raw material. In all apiaries, large and small, there is frequently an accumulation of old, broken, and odd pieces of combs, besides cappings, that could be converted into commercial wax had we some simple and inexpensive means of doing so. The bee-farmer in a large way, with several hundredweight of wax to deal with each season, can afford to set up a good plant, which, though expensive in the first place, would soon pay off for itself. What we badly need is something suitable for the small beekeeper, who might save 20 or 30 lbs. of wax each season, but which now is wasted because there is no ready means

at hand. I am sure I am justified in saying that many tons of wax material are now wasted through the same want, and considering the high price of beeswax this means a serious loss, both individually and collectively.

The cheapest form of "wax extractors" available at the present time are not at all satisfactory. Some work by steam, and others by heat and pressure; but it is reckoned that about 50 per cent. of the wax is lost in them, that is, that not more than 50 per cent. of the wax is extracted, and my experience bears this out.

In my early days of beekeeping, I rigged up a primitive wax extractor that enabled me to save a good deal of wax—though rather troublesome, it proved better than nothing. I used a kerosene-tin as a boiler, into which I put two or three small bags made of open scrim, filled with broken and scraps of comb squeezed into small balls. The tin was three parts filled with water, and set on the fire to boil. A piece of inch board, nearly the size of the inside of the tin was cut, and several one inch holes bored through it. When the wax had been boiling for some time, the tin was taken off the fire and stood against the side of the shed near where a small batten was securely nailed on the wall. The board, or follower, was then placed in the tin, a short upright fulcrum placed on end, and under a 4 x 3 inch lever some six feet long, one end of which was placed under the batten on the wall. A tremendous pressure could then be exerted, and the clean wax which would then float on the water was skimmed off. The boiling and pressing was repeated till no more wax could be secured.

### WAX PRESSES.

The original "Hatch" Press, in which the combs, after being boiled in scrim bags, and all the wax extracted in that manner, was placed on the press and squeezed while still hot.



This method is both expensive and in many respects unsatisfactory. All such methods have a tendency to darken the wax, and as a correspondent in "Gleanings" says:—"Furthermore, if the screw be raised and removed entirely, the refuse has to be shaken up before the pressure is applied again. This must be repeated a number of times in order that all the wax, or, more properly speaking, all that it is practicable to obtain, is removed. The great trouble with steam presses, and, in fact, with most wax-presses, is that the last ten per cent of wax comes out so slowly that the work is often hurried, and there may be then a loss of from five to ten per cent. In the steam press, and also in the hot-water press, another melting-tank has to be used if rapid work is to be done.

The "Hershiser" Wax Press is on the same principle as the other presses, but much improved, and intended to be used in a boiler under water. The broken combs, etc., to be rendered are placed in layers and covered with scrim, each layer about four inches thick. A follower is then put in, and another layer, and another follower, and so on. Under each corner of the followers are springs. The boiler containing press is filled with water, placed over a furnace, and after boiling for some time, the screw press is brought into play; after lengthy pressure the screw is released, when the springs force up the followers, and the water, which is kept boiling all the time, rushes into the cakes again. This is repeated till no more wax can be pressed out, and it is claimed that about 98 per cent. or more can be pressed out in this manner. My own opinion is that, as a press, it is the best yet suggested.—  
"N. Z. Bee Farmer."

(To be continued.)

## WANTED.

A COMPETENT MAN to take charge of 80 hives of bees during the Summer Months. Apply, Mrs. G. W. GRIFFITH, Eumong, Manildra.

## REQUEENING BY UNQUEENING.

It has been held by some that when a queen is removed from a colony, the bees are in such haste to rear a successor that they select for royalty larvæ too old for best results. For 25 years S. D. Chapman has been requeening his colonies annually by merely removing the old queen a week before the close of the honey harvest, leaving to the bees entirely the task of rearing a successor, and the question being raised to whether by this means his bees have not deteriorated, he answers, in the "Beekeepers' Review." "No, certainly not; why should they?"

"If we condemn the cells started by my plan, we must condemn every cell that is started by those colonies that are superseding their queens—they are alike in every respect. The desire to swarm is absent in either case, and we *do not want it present*.

"In requeening a whole yard, my plan has this advantage that all queens are reared in *heavy* colonies; and when we take away the queen from a colony, the bees start less than one third the number of cells they do in the colony that swarms; that is, where we do not take away the queens till the latter part of the honey flow."

Those who charge the bees with such poor judgment as to select too old larvæ for queen-rearing say that the right way is to destroy the first lot of cells started so that the bees may use better judgment the second time selecting, after they have got over their hurry. Possibly without having at all in mind such teaching, Mr. Chapman butts up against it in the following manner:

"Nature has so ordered that the best queens a colony can provide are those hatched from the *first cells started*; seemingly, they are better fed, more vigorous, and give better results. Such are the queens we have at the head of our colonies."—*"Am. Bee Journal."*



**BLACKING FLOUR.**—An Australian flower of the hibiscus species is often used as blacking, the juice squeezed from four blossoms giving enough liquid to coat a shoe with a fine lustre.—“Gardener, s Magazine in Calcutta.”

A. H. writes:—My bees came through the winter very strong. I had a look at some hives about a week ago. They had four and five frames of brood, and boxes full of bees. There were two with bees dying. They were very much swollen from paralysis. About four days ago I was out among the boxes, I noticed bees crawling in all directions, not only old bees, but also bees that hadn't emerged more than a day or so. These bees didn't appear to be at all swollen. If this keeps up, I think my home apiary of 60 colonies will soon be depleted of bees. I think myself it is paralysis. I shall be much obliged if you write me a line. Trusting your bees are doing well.

[Kill the queen and get another one straight off.—Ed.]

The best strains from the first source is what I breed from.

The all-important question for the up-to-date honey producer is: Are his bees the right strain?

For fifteen years I have been importing from the most reputable Queen Specialist in Italy, who has made a reputation as **A BEE FOR BUSINESS** with these Pure Three-Banded Italians.

I have queen mothers of last season's importation that have proved themselves equal to any I ever had, and am offering their stock for the present season, fully guaranteed, October to March.

Untested, 5/-; Tested, 10/-.  
—

**J. DRAGE,**  
**EAST ADELAIDE, S.A.**

## MARKETS.

*Leader* (Melbourne)—Honey: In this department trade is quiet. Prime clear garden samples are selling at up to 3½d., whilst medium grade is on offer at down to 2½d. Beeswax—Prime wax is quoted at up to 1½; holders ask 1/1 for medium and less is being accepted for inferior.

*S. M. Herald.*—Honey: Western, 60lb tins choice 2¾d to 3d; prime 2¼d to 2¾d; inferior and candied 2d to 2¼d. Beeswax—Prime clear 1/- to 1½; dark 1/- to 1/1.

## HONEY.—

Sales continue quiet with large supplies coming to hand, and we do not see any prospect higher prices for some time. Choice Western is selling from 2¾d to 3d, good from 2¼d to 2½d per lb.

## BEESWAX.—

Best bright 1½ to 1½ per lb, dark 1/- to 1/1.

Highest market prices obtained for  
Honey and Beeswax by

**PRESCOTT LIMITED.**

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—SYDNEY—

## FOR SALE.

**B**EEKEEPERS' Supply Plant, Consisting of Foundation Mill, Foundation Plates, Dipping Tanks, Dipping Boards, Barnes' Circular Saw, Sections, Section boxes, Enamelled glass on both sides. All in first class order. No reasonable offer refused.

STRAND,  
Longford, Tasmania.



## BEE PIRATES.

By C. W. MALLY, M.Sc., F.E.S.,  
Eastern Province Entomologist.

The terms Bee Pirate and Bee Tiger and the Dutch term *Malbij* are used in connection with certain "digger wasps" which prey upon hive bees. A banded species, *PELARUS LATIFRONS*, Kohl., is the one usually referred to; but a second species, *PHILANTHUS DIADEMA*, Fabr., with a bright yellow abdomen, is also responsible for the destruction of a great many bees during the summer. Complaints in regard to the depredations of of these two species are received every year, and it therefore seems advisable to record certain observations made by the writer during February and March, 1903. They throw some light on the work of these pests, and they are published in the hope that they will lead to more systematic observations on the part of all who have an opportunity to study them, and also that they will be of practical value to those who are striving to advance the interests of beekeeping—and industry which, though small at present, may ere long assume considerable proportions.

THE YELLOW BEE PIRATE (*Philanthus  
Diadema*, Fabr.)

I have designated this species the Yellow Bee Pirate because of the colour which predominates in the first impression one gets when the pirate is at work or on the wing. As will be described in detail, it makes its nests in the ground and provisions them for its young with bees which it catches on flowers.

## DESCRIPTION.

The female measures on an average about five-eighths of an inch in length and about one inch across the expanded wings. The antennae, head, thorax, and the basal portion of the femora and of the first abdominal segment, black; face,

pale yellow; first pair of legs, fuscous; abdomen, tarsae, tibiae, and the distal portion of the femora of the second and third pair of legs, bright yellow; thorax marked with three short transverse yellow bands, one on the anterior margin and two broader ones between the second pair of wings. Wings, transparent, slightly smoky in appearance, not plaited when at rest, but overlapping horizontally on the abdomen. The males are usually smaller than the females, but similar in appearance. The sexes may be distinguished by counting the number of joints in the antennae—there being twelve in the females and thirteen in the males.

The egg is white, smooth, four millimeters long and one millimeter wide, slightly curved, ends rounded. Just before hatching some of the segments of the larva can be seen.

The larva is white, translucent, about one-half inch long and one-eighth inch wide when fully developed.

The cocoon consists of densely woven brown silk, and is formed by the larva in the same cell in which the bees are stored.

## DIGGING THE BURROWS.

So far as observed, the females dig the burrows and prefer to locate them in dry, hard, sandy soil. The breeding ground where the following observations were made is located in a neglected tennis court surrounded by tall pine trees, and about 100 yards away from a stretch of native veld.

In digging the burrow the female may start on the level surface of the ground, but she evidently prefers slight irregularities. The almost vertical sides of the holes which were dug in tracing the burrows seemed to be specially attractive. The soil is loosened and thrown back with the fore legs, the tibiae and tarsae of which, being provided with strong spines, serve to purpose of both pick and



rake. Although no direct observations could be made, it seems likely that the jaws are also used in loosening especially difficult bits. When starting from the surface, the burrow first slopes down gradually for several inches, and then more abruptly and irregularly to a depth of four to eight inches, sometimes attaining a depth of a foot or more. They are not at all systematic in digging the burrows, but turn off in all possible directions and angles—sometimes very abruptly up or down or to one side. So far as could be determined, there was no apparent reason for the sudden changes in direction. At other times they take a straight course downwards at an angle of about 45 degrees. Several burrows that were carefully traced were over two feet in length.

The female apparently digs along till she feels inclined to provision a cell, and then slightly enlarges the terminus, stores it with bees—three being the greatest number found in any one cell—deposits the egg, and then retreats an inch or more and starts off in another direction. The lateral cells are not very numerous, four being the most yet found along any one burrow. The soil was quite sandy, and hence it was difficult to determine the exact shape of the cell, for the sand was usually somewhat disarranged by the digging, especially as there was no telling when we would come to the end, the first indication being the appearance of a dead bee. There is no tendency to close the burrow leading directly into the cell.

No males were observed in the act of burrowing, although one was seen to enter a burrow and close it from the inside.

The females are not only unsystematic in digging the burrows, but irregular in other respects as well. In some cells the egg was deposited on the first bee, and in others apparently on the last one brought in. Apparently neglected cells are frequently found, and others contain

the remains of only one bee, but no trace of the pirate larva or cocoon—the larva probably having perished for lack of food. Several times while tracing a burrow in which the female was known to be working, a fully provisioned cell was found in which there was either egg or larva, the bees having dried up without any trace of a private larva having fed on them. This would indicate that—barring an accident to the female and the subsequent appropriation of the burrow by another—the female became confused in her work and failed to deposit the egg.

The females are strong fliers, darting about hither and thither so swiftly that the eye can scarcely follow them. They are very active on fine, warm days, and can be seen hovering about two or three feet above the surface of their breeding ground, the bright yellow abdomen glistening in the sunlight and greatly aiding the eye in following the sudden changes in the direction of flight. The female alights near the entrance to the burrow, and, without releasing her hold on the bee, enters at once, carries it down some distance, and then returns and closes the entrance with fine sand from within. They never close the burrows when they leave. About sundown the burrows are closed from the inside, and are not opened till between eight and nine o'clock the next morning.

When the bee-laden female does not enter the hole at once she may hover about for some little time as if to orient herself, occasionally resting on the ground, and finally approaching the opening, having kept a firm hold on the bee all the while. On one occasion a burrow had been traced for some distance, to what seemed to be its termination. Suddenly a bee-laden pirate darted down and hovered over the spot where the burrow had been. She darted about, stopping here and there, but could not locate the entrance. At last, as if becoming irritated, she settled about three feet away, released



her hold on the bee, darted about rather excitedly for a while, and then flew directly over the spot where the entrance had been. She evidently became confused, and alighted on the bank where I had been digging. In a moment she was on the wing again, ascended to a height of ten or twelve feet, circled about a few times and then went higher and higher, making greater detours, till at least twenty feet above the ground, and then darted down into the hole and explored it very carefully. She soon made strenuous efforts to work at a certain spot, but it was slightly receding, so that she could not gain a foothold. After a while she began digging a fresh burrow in the hole, but it evidently was unsatisfactory, and she started another one by a slight irregularity on the surface. The spot in which she seemed so interested a moment before was then investigated. The first bit of sand removed revealed the presence of a bee with an egg placed across the thorax between the first pair of legs and pressed close to the body, but not fastened in any way. Two other bees were found just back of this one, there being an oval cell slightly larger than the burrow. Several other eggs were found at different times, and they were all placed in the manner just described.

#### WHERE ARE THE BEES CAPTURED?

It was at first supposed that the pirates captured the bees at the hive. Continued observation proved that such was not the case so far as this species is concerned. It seemed evident that they must catch them on their return flight to the hive or while they were at work on the flowers. Observations were accordingly made in an open bit of native veld near by in which flowers of various kinds were fairly abundant. A pirate was soon noticed hovering about over the flowers of *Erica persoluta*. It settled quietly, and began working its head into the flowerlets, evidently feeding on the pollen. It was easily captured, and

proved to be a male. Several other rather small specimens were seen on the flowers in the same way. Thinking that possibly they were undersized females, they were not molested. They soon darted away, never to be seen again. Two other specimens captured on the flowers proved to be males also.

In another clump of *Erica persoluta* a bee was observed to be busily at work, when suddenly a second "bee" appeared on the scene, and they tumbled to the ground together. The second "bee" proved to be a female pirate, *PHILANTHUS DIADEMA*. She had caught the bee by the head from in front, and was observed to deftly curve her abdomen up, and no doubt inserted her sting into the bee's head from underneath, just back of the mouth-parts. Whether the bee was stung more than once could not be determined, but it was absolutely helpless, if not dead. On being disturbed the pirate darted away to one side, but soon returned to within a foot of her victim. She then crawled about on the sticks and leaves near by for a time, and gradually went up to the bee, turned it on its back, crawled over it—head to head—grasped it with all six legs, and darted up and away towards the breeding ground.

All of the bees found in the burrows or taken from returning female pirates were carefully examined. They had not been mutilated in any way, showing that they were intended solely for the use of the larvae of the pirate. If this species does mutilate an occasional bee for feeding purposes, it evidently discards it, and only stores the larval cells with perfect specimens. In no instance was a female pirate found in the the act of feeding.

#### LIFE CYCLE.

No definite statement can be made in regard to the length of time required to complete the life cycle. An egg found on a bee in one of the cells was placed in a cell of damp sand along with the bee.



About fifteen hours later it had hatched, and the larva was evidently trying to attach itself. It was still unattached after twelve hours, and was dead twelve hours later. On March 25th an apparently full-developed pirate larva was found along with the remains of a bee in one of the burrows. It was transferred to the laboratory and placed in a cell of damp sand along with two freshly killed bees, which were placed as nearly as possible in the same relative position as those found in the cells. The cell was then covered with a glass slide and darkened by means of a piece of cardboard, which could be easily removed for the purpose of observation. Although the larva worked its way over the bees, it did not feed. Several times it seemed to be trying to force an entrance between the abdominal segments of the bee, but failed. The next day, as there was still no indication that the larva had fed, a bee was mutilated and placed within its reach, but it showed no tendency to feed on the exposed tissue. It began to spin its cocoon March 23rd, and continued for over a week, but it failed to form a proper cocoon, and died a week later, having been under observation at least two weeks.

On January 24th a cocoon was found in one of the burrows, and when held to the light the larva could be seen within. It was left undisturbed till April 13th, when it was examined. It is probable that under natural conditions it would not emerge till the following spring.

#### NATURAL ENEMIES OF THE PIRATE.

On several occasions dipterous puparia were found in the cells along with the remains of the bees, but there was no trace of the larva or cocoon of the pirate. In one cell six dipterous puparia were found along with the remains of seven flies representing *Musca domestica* and a closely related species. These dipterous remains may possibly be a

coincidence due to a fly-catching wasp having tunnelled into a pirate's cell. On the other hand, it would be an easy matter for the fly-catching wasp to appropriate the unprotected burrow. This seems plausible, for once while tracing what was evidently a pirate burrow a small dark wasp suddenly darted out, and a little farther on a number of freshly killed flies were found. But if such is the case, one would expect to find the larva or cocoon of a wasp in place of the dipterous puparia. On another occasion a fly kept very close to a pirate carrying a bee into the burrow. The fly attempted to follow, but the pirate quickly drove it out and closed the burrow from the inside. Another fly was seen to dart close up to a bee-laden pirate in a way that suggested that it might be watching for a chance to deposit an egg on the bee, but if that was its intention it certainly failed.

While no clear case of parasitism was found, there seems to be nothing to prevent certain species exploring the unprotected burrows in the absence of the female pirate, and depositing eggs either for the destruction of the pirate larva directly or by devouring its food supply.

#### REMEDIES.

As yet no satisfactory way of dealing with the species has been found. The "plate trap" which was used for *PALARUS LATIFRONS* is useless for this species on account of its different habits. The females can be easily captured with a net as they leave or return to the burrows but this takes a great deal of time. There may be a number of breeding grounds scattered about in unexpected places, so that it would be difficult to do more than check them to a certain extent. Since they capture the bees on the flowers, it is hardly that there will be a serious drain on any one hive. A proportionate number of the bees will also come from wild colonies; but where a large number of bees are kept the



aggregate loss may be more important, because a larger proportion of the victims will doubtless come from the hives.

### THE BANDED BEE PIRATE (*Palarus latifrons* Kohl.).

The Banded Bee Pirate, is the pest usually referred to as the Bee Pirate or Bee Tiger. Whether it really is of any of more importance than the forgoing species is uncertain; but as it haunts the hives, and is therefore often seen at its destructive work, it is the one about which most complaints are made. The writer has no opportunity to study its habits, and cannot say where the nests are made. But like the members of its family (*Lerridae*) that have been studied, it probably burrows in the ground in much the same manner as the Yellow species, which, however, is of a different family (*Phlanthidae*), and it probably provisions its nest with bees.

It is claimed by some that this species captures the ("incoming") bee, literally "cuts its throat," extracts the honey, and then discards the remains. Others claim that it is the out-going bee that is captured and carried away. I cannot verify either claim from personal observation. That these species does frequent the hives is shown by the fact that the females are so often caught in traps set for them near the hive. As high as 400 pirates have been reported as captured around one hive. The bees are also said to realise their danger, and refuse to leave the hive while the pirates are about, thus losing a great deal of time.

The following means of destroying the have been suggested by correspondents at different times. Watch for the pirates and beat them down with bushes and crush them. Or treat the branches with "bird-lime," so that the pirate is held fast if you succeed in striking it. The branches which have been treated with bird-lime may be placed near the hive,

and when the pirates settle on them to rest they cannot escape. On first thought it would seem likely that this method would catch a great many bees as well; but it is claimed that the bees do not visit the branches, but go to the hive as usual. A white plate or basin containing a little water has been found to give good results, but a little oil should be added, so that the pirates will be destroyed as soon as they drop into it. Whether they are dazzled by the glistening white of the plate, or come on account of thirst, and mistake their own reflection in the water for a bee and dart down after it, or whether they are fond of resting on a white surface, is difficult to say. In the latter case it would be advantageous to place dark soil for some distance around the plate so as to make it more conspicuous.

Through the kind co-operation of Dr. E. A. Nobbs, who assisted me very greatly while making one of the above observations, I was enabled to get the daily records from several plates that were placed in front of hives that were said to be seriously molested by pirates. The following is a list of the captures:—

February 1st.—Plate 1, water and paraffin, 3 pirates.

February 1st.—Plate 2, water and paraffin, 6 pirates, 1 bee.

February 1st.—Plate 3, water and olive oil, 6 pirates.

February 3rd.—Plate 1, water and paraffin, 5 pirates, 2 bees.

February 3rd.—Plate 2, water and olive oil, 3 bees.

February 4th.—Plate 1, water and paraffin, 2 pirates, 1 bee.

February 4th.—Plate 2, water and paraffin, 1 pirate.

February 5th.—Plates 1 and 2, water and paraffin, 11 pirates, 10 bees.

February 7th.—Plate 1, water and paraffin, 1 pirate.

February 8th.—Plate 1, water and paraffin, 4 bees.

Total, 35 pirates, 21 bees.



Of the 35 pirates, 31 were females, and the remaining 4 males. Since the great majority of the pirates were females, it indicates that they are responsible for the destruction of the bees, and that the males were present perhaps by chance. The bees may have been attracted by the water, or they may have been captured by pirates, which then dropped into the plate; but this would not hold for February 3rd, plate 2, and February 8th, plate 1, when bees only were taken. The number of bees destroyed by the plates as shown above is no doubt small in comparison with the number of bees that would have been destroyed by the 31 female pirates in the same time. The plates were kept in order up to February 15th, but as no pirates were taken after the 7th, the observations were discontinued. Whether the failure was due to the colony of pirates having been stamped out, or to some other cause, it is impossible to say.

From the above test I am inclined to believe that the "plate method" is the simplest and most effectual way of fighting the banded pirate. *P. latifrons*, because it requires the minimum of time and the materials needed are simple and available everywhere. After the plates have been placed in position they need only be examined in the morning to remove the dead specimens and replenish the oil and water, if necessary. Paraffin is better than olive oil, because it spreads over the water more easily, and does not become rancid.

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### THE HONEY TRADE.

The "British Bee Journal" of 16th July last contains the report of an address delivered by Mr. Norton (Commercial Agent in London for South Australia) before the International Bee Congress. Lord Avebury was in the chair. Mr. Norton, in the course of his remarks, said:—"Like several others that were at

one time considered minor industries, beekeeping is fast becoming one of considerable commercial importance in South Australia. The time is not far distant when it was thought that owing to the supply of honey being greater than the demand the bee industry must be crushed out of existence by its own weight, our market being limited to the Commonwealth. Shipments of honey had been sent to England, but unfavourable reports were sent back to the effect that the eucalyptus flavor characteristic of Australian honey would for ever exclude it from the English market—in short we were told that the British public would not have it at any price. However, South Australia is blessed with a progressive Government and an enterprising Beekeepers' Association, and a small rebuff like this did not daunt them. It was determined to exploit the home markets in a thoroughly practical way, and a consignment of honey was accordingly sent here about eighteen months ago. Exhibits were made at various shows throughout the country, where small samples and pamphlets setting forth the merit of our honey were given away. The honey referred to being supplied by the Beekeepers' Association, the necessary funds for preparing and distributing the samples were supplied by the Government, and as a result four of the most important retail firms in London are at the present time stocking South Australian honey, one firm alone having a standing order with the South Australian Beekeepers' Association for seven tons monthly. Now it is possible that some of my English and French friends here may look upon this new source of supply with alarm, but I maintain that the more we can popularise honey as food, rather than let it remain as heretofore as a luxury, the better it will be for all concerned in the industry. In Australia honey is already looked upon as a necessary and healthful article of diet, but from what I can gather in England it would appear that it was a luxury only



for the few. I am told that we in Australia, with our four millions or so of population, use more honey as food than is consumed throughout the whole of Great Britain. The beekeepers of South Australia, like most of the primary producers in that part of the world, are intelligent men, and are ever ready to learn what is going on outside their own little sphere, and for that reason I am pleased that you have permitted me to be present, because I shall forward through my Government to the Beekeepers' Association much of the valuable information I shall hope to gather here. To my mind, the opportunity of an international exchange of ideas is a most important factor in any industry, and no doubt many points in connection with beekeepers that in the past have been undecided will be settled satisfactorily. On behalf of the State I have the honor to represent, I wish this congress and the beekeepers' associations of England and France every possible success."

### Averill's Plan with Foundation Splints.

B. F. Averill has been wiring combs for 30 years, and using foundation splints for 23 years. He likes splints better than wiring, and they require less time. His plan has some advantages well worth considering. He says in "Gleanings":

"My plan of using the splints incorporates them with the frames as well as with the foundation; and thereby I secure a more substantial comb than if incorporated only with the foundation.

"The first essential part of the plan is to have top and bottom bars grooved in the centre to receive the ends of the splints. A saw-kerf 1-16 gauge and 1-8 deep is the most suitable dimension to adopt. The splints should be 1-16 x 1-16 or 1-16 x 3-32. The latter dimension is better for splints properly built into combs on a good flow of honey.

"The splints are  $\frac{1}{4}$  inch longer than the distance between the top and bottom bars, inside measurements. Waxing is best, but may be dispensed with in a good honey-flow.

"To wax the splints, take a dozen or two at a time between the fingers and twirl them in a vessel of hot wax. A little practice will develop the requisite skill. It is not necessary to wax the *entire length* of splints. There will never be any gnawing of foundation around the splints *near the top-bars*. It is at the bottoms of combs being built that all the cutting out is done.

"So you can leave two inches at one end of the splints safely, and the waxing is a small job comparatively. Just stand the splints on end in a leaning position until you have enough supplied for the foundation to be used that day, or a week or month later.

"Now, in putting in the foundation you have two inches of unwaxed splint to handle them by. Take hold of this portion and insert the waxed end in kerfs in the bottom-bars, and *spring* the splints into the top-bars. That is the whole process. Now, by using eight splints there is no need of *fastening* foundation to the top-bars. This saves much time, and all that is requisite to success is to be *sure* the foundation fits *close* to the top-bars. If bottom bars are not of good thickness to support the weight of heavy combs, there is going to be sagging sooner or later. I would advise gluing in a splint to the top and bottom bars through the bottom of each frame. This unites the top and bottom bars at the centre of the combs, and no sagging of combs is possible.

"For imbedding splints I use a small wooden roller. Imbed the foundation by placing the splints on the bottom of the foundation and the roller at the top. It is easy work compared to wiring, and a much greater amount of foundation can be stayed in the same length of time."

"Am. Bee Journal."



## Artificial Heat for Extracting.

It has been the general practice to extract at different times throughout the course of the harvest, but there seems a growing tendency to wait till the harvest of the honey. Another advantage is that the work can be done more leisurely than when the time is fully crowded with other work. But to extract when the weather is cooler, and when the large mass of honey is no longer kept warm, is quite a different thing from extracting combs that are fresh from the hives on a hot day. To overcome this difficulty artificial heat may be applied, and the combs may be heated to such a degree that the honey shall be even thinner than when taken fresh from the hive on a hot day.

W. Z. Hutchinson has been following this plan, and says in "Gleanings":

"The first year we warmed up the honey with a base-burner hard-coal stove. This gives a very even, steady, desirable heat; but it is too expensive, and not very practical, to have a hard-coal stove at each apiary in the woods of Northern Michigan so, last year, we used a Perfection oil-heater, costing about 5.00 dollars, capable of burning a gallon of oil in about 8 hours, although much less can be burned. This is the first oil-burning stove using a wick, that I ever saw that could not be made to smoke. It has a cylindrical wick, and just above the wick is a round plate of iron called the "flame-spreader," and the wick is turned up until it strikes the spreader, when it can go no higher, and it won't smoke, and can't be made to do so

"One end of the honey-house or cellar is partitioned off, making an 'oven,' as we call it, large enough to hold 50 or 60 supers. We fill this up at night, for instance; light the stove before we go to bed, turning the wick up part way so that the temperature in the upper part of the room will stand at about 100 degrees. In the morning we refill the stove, turn it on full blast, and go to extracting,

taking the first supers from the top of the room. As some of the piles are lowered, more supers are taken from other piles and added to these, thus bringing more honey up into the heated 'zone.' As fast as there is vacant room, more supers are brought in, and a sort of routine is followed whereby one always has hot honey to work on while more is heating.—"Am. Bee Journal."

## Honey as Cure for Diseased Eyes.

Some time ago in Menard Co., West Texas, a poor pilgrim was on his way to Austin, to have his eyes treated. He camped for the night at a refreshing stream and reposed under the canopy of heaven. Some time during the night his team got loose and wandered off. In the morning he made an effort to find them, but his eyes were in such a painful condition he could see but a short distance. During the day a passer-by hailed him. He related his story, and that he was on his way to Austin to have his eyes cured. The good Samaritan informed him that he could cure him, and that he could return home. "How I beseech you—quick?" replied the pilgrim.

"I am on my way to market with a load of honey for sale, and if you thoroughly bathe your eyes in honey it will cure them," replied the passer-by.

"Apply the remedy for me, I humbly beseech you," pleaded the pilgrim. The bee-man bathed his eyes well, allowing the honey to get into them and under the lids; he even went so far as to improvise a sort of honey-poultice for the eyes for the night.

The next morning the pilgrim's eyes were not well, but so much improved that he returned to his home, after the good Samaritan had given him enough honey to cure his eyes. At his home the pilgrim applied the honey until his eyes were entirely sound and well.—"Am. Bee Journal."



## Franco-British Congress of Beekeepers.

(Continued from Aug. issue.)

The New Zealand Government has also given attention to the breeding of queen bees. A race of first-class honey-gathering bees, possessing disease-resist-qualities, is being bred on one of the Government experimental farms. These queens will be available for distribution amongst the beekeepers of the Dominion.

I think from these few remarks that it will readily be understood that the Government of New Zealand is very closely concerned in the particular work which is of interest to this Congress, and it is therefore with very great pleasure that I am here to-day in order to offer hearty support to the *entente cordiale* with which this great Exhibition is so closely concerned. Any particulars I can afford will therefore be freely given, and at the same time such information as I may be able to gather from the Congress will be heartily welcomed as being of assistance in furthering the work of bee-culture in New Zealand.

Mr. F. R. Reuhne, president of the Victorian Apiculturists' Association and representative of the Department of Agriculture of Victoria, Australia, expressed his pleasure in being present, and his thanks for the opportunity afforded to meet so many prominent British beekeepers under the presidency of so great an authority on insect life.

Lord Avebury then left the hall, after calling on Mr. T. W. Cowan to take the chair, the latter presiding for the rest of the meeting.

The second subject on the programme was

### ON THE CHOICE OF A HIVE,

introduced by Mr. W. F. Read, F.T.C., F.C.S., who said:—One of the first considerations in choosing a hive must necessarily be the climate of the neighbourhood in which it is to be placed. This

brings us at once to the question of the material of which the hive is constructed. Probably the original material in which bees made their dwellings was wood, and some of the earliest artificial hives of which we have accounts were made of the trunks of trees. The Romans, before the Christian era, used hives of this kind, with adjustable ends, by means of which the cavity could be adapted to the number of bees or to the quantity of honey, and by removing which the comb could be extracted. Roman beekeepers also had hives made of cork, and these are specially recommended by Pliny. Where timber was scarce, hives were made of twigs plastered with clay, and such hives are used in Servia at the present day. From very ancient times hives have been made of pottery. In Egypt these have been in use for several thousand years; and they are common in the East. The combs are removed from the ends or from either end alternately, the hives being cylindrical, and placed horizontally. An ordinary drainpipe of about 9 in. or 1 ft. diameter makes a fairly good beehive, and the outer combs containing the surplus honey may be removed with very little trouble and without injury to the bees. Materials of the most varied character have been at times suggested and used as habitations for our busy workers, and the choice which they themselves sometimes exercise shows that they are by no means prejudiced. Like their near relatives the wasps, they will accommodate themselves in holes in the ground, especially where trees and houses are scarce. They will even establish colonies in such apparently uncongenial places as the skull of an ox; in fact, every beekeeper of experience can relate instances of swarms establishing themselves in the most unexpected positions. The bees themselves therefore, are not particular in the choice of their dwellings and the beekeeper has a wide range of materials with which he can construct his hive. Two properties are essential in any material used for hives: it should be



nearly impervious to moisture and a bad conductor of heat. Metals, for instance, although they satisfy the first condition, fail in the second; and, although under favourable conditions a stock may be wintered in our climate in a hive made of galvanised iron, yet a colder climate would render this impossible. Wood, the original hive material, appears to possess special advantages, but we must not forget that these are allied with certain defects which often cause the beekeeper trouble. It is prone to decay and easily warps and cracks if exposed to the weather. Although cheap in the first instance, the necessity for protecting wood by means of coats of paint, which are themselves perishable, and require constant renewal, renders this original cheapness somewhat illusory in the long run.

The advances or modern science have rendered accessible several mineral materials which have the advantage of not being liable to decay. First among these may be mentioned glass, which has the additional advantage of being transparent, and of allowing the beekeeper to watch the proceedings of his bees, as is so often done in observatory hives. If, however, sheet glass be used, the durability of the hive depends upon that of the wood which forms the framework. Glass vessels can now, however, be obtained moulded in one piece with sufficient accuracy to fit the standard frames, and Mr. Reid mentioned that he had several such in use. A word of caution is, however, necessary in the case of glass on account of the facility with which moisture condenses on its internal surface. Provision must be made for draining off this moisture from the bottom of the hive; otherwise great loss of bee-life may ensue. A layer of two or three inches of peat dust at the bottom of the hive is an excellent absorbent of such moisture, and at the same time acts as a disinfectant and prevents mouldiness.

Pottery has the same defect as glass in this respect if glazed and impervious to water. The porous variety, however, is more suitable for a bee-dwelling, and has stood the test of many centuries. The difficulty, however, is to secure sufficient accuracy of shape to suit the standard frame.

Another material which has proved serviceable is uralite, which is made of sheets of asbestos hardened by means of a solution of salica. It is made in sheets which can be sawed and nailed like wood and possesses sufficient porosity to prevent condensation. Like glass, it requires a frame-work of wood, but is itself quite indestructible, and is the best material for covering floor-boards and alighting-boards as well as roofs.

Hives of brickwork, masonry, &c., have been used from time immemorial, and the bees themselves often choose hollow walls for their abode, and live in them for many years. The Latin author Columella refers to brickwork hives, but does not recommend them, as they are not portable and cannot be sold like other hives. We have, however, a substitute for brickwork which in its most modern form is well adapted for hives. Concrete made with Portland cement can be moulded with accuracy into any desired shape, and is quite permanent if the cement be of good quality. In the form of armoured concrete it is light and portable and worthy of the attention of modern beekeepers.

Whatever may be the material of which the body of the hive is constructed, the roof must be absolutely watertight. Against cold bees can protect themselves by clustering closely, but against moisture they are powerless. Wood keeps out the wet so long as it is sound and does not rot or crack, but it requires painting at regular intervals, and even when well painted outside may rot inside from the condensed moisture. Fabrics painted with oil paint are sometimes used to pro-



fect the wood, but no linseed oil paint is permanent, and such roofs only remain watertight so long as the painting is repeated every two or three years. Perhaps the best covering of those in common use is thin sheet zinc fastened upon wood. In winter much moisture may condense underneath the zinc and may rot the wood unless provision be made for carrying it off.

Having considered the materials of which the hives may be constructed the next question that suggests itself is the relative positions of the surplus and brood-chambers, and the size of the latter. In this country we have the inestimable advantage of a standard frame, and, although there are many who favour larger dimensions, and many foreign frames are actually larger than our own and give good results, yet this subject is too wide for discussion at present, and we will assume that a hive should be so constructed as to take frames of standard dimensions. Increased space may be obtained, if desired, by increasing the number of frames, and in this way a hive may be constructed of one story, and the surplus removed from the sides. In former times many different kinds of hives with side-chambers have been introduced; but in this country the overwhelming majority of beekeepers place the surplus-chamber above the brood-chamber, and most of them use a queen-excluder to prevent brood-rearing in the upper chamber. This position has the great advantage of easy accessibility, and duplication of the upper parts can take place with a minimum of disturbance to the bees.

These appear to be the main points to be considered in the choice of a hive, and there are so many hives in the market that conform to most of the conditions that it would be invidious to select any by name, the more so as they are fully described in the excellent guide-books which every beekeeper has available.

It is to be hoped that our French colleagues will give us their experience as to the best conditions under which bees may be kept in their climate, which differs so materially from our own.—  
"British Bee Journal."

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## How to Rear Better Queens

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BY A. W. YATES.

So many different methods of queen-rearing are expounded that no wonder the beginner is confused in trying to follow them, but every intelligent person keeping bees, should know how at least to rear enough queens for himself, and let no stone go unturned until he has mastered the situation.

The methods in use half a century ago are still in vogue, with more or less variation, and the up-to-date breeder, as well as the novice, should not overlook anything to shorten the work or improve his bees, and whatever system is adopted, it must perfectly harmonize with the natural instinct of the bees if he expects improvement.

Beekeeping is carried on much differently in these modern times from what it was 50 years ago, when any old box or tub answered as a bee-hive, and all young swarms, because the honey and comb was new and white, were "taken up" in the fall. By this method the old queens were killed and the young queens were left for the next season. To-day, with our modern hives, all are kept over, both young and old, until they die of old age, and no wonder one colony gives us a large surplus while the other has to be fed to survive the winter, if survive it does.

All live stock has its time of maturity and usefulness, and when that begins to fail, the first thing we do is to get rid of it for younger stock. "It is a poor shoe that won't fit both feet," and if we expect to succeed we must see that our working stock is young and vigorous.



Our first requirement will be a breeder or mother queen, and as she is to be the foundation of the apiary, we must see that she is as good as any money can buy. Money spent for a queen because she is cheap, is thrown away, especially so for this purpose. If honey is desired she must be strong and prolific, and her offspring large and vigorous, working early and late. We like beautiful bees if we can have them just as well as not, but should not sacrifice anything for beauty.

About April 1, 1906, I received a dozen queens from a breeder in the South. All were very handsome goldens, and reared, as I found out afterwards, in queenless colonies, and whether from the manner of rearing or weakness in the stock by imbreeding for colour, I do not know, but they were all dead except 2 within 2 months, and not one was able to build up a good colony.

I use queens of my own importation from the North of Italy for nearly all my breeding, that I have had in my yard for a year or more, and thoroughly tested. But plenty of home-bred ones can be easily found, probably just as good, and the severe strain on an imported queen during passage is avoided. Out of the 6 that I imported last season the last one arrived with only one live bee in the cage for company, and probably all would have been dead in a few hours more.

The relation of the breeding queen to the rest of the colonies in the yard is such that what characteristics she shows, whether good or bad, in the bees of her own colony, we must expect to see transmitted to the others, and we must breed by selection, so as to retain these good traits and discourage bad ones as much as possible.

There are several methods of getting queen-cells started, most of which are by queenless colonies, and some breeders rear by this system also, but in my opinion this accounts for a good many

short-lived queens, and unless reared in the flush of the season, when royal feed for the young in the larval state is plenty, I would not care for them. The best cells we see in a hive are those built at swarming-time, and in superseding. Both are built with a queen in the colony, and queens hatched from such cells are seldom anything but the best. If therefore, we want this class of queens we must do what we can to bring about one or the other of these conditions, for this is nature's way and we must adhere to it. After we have a colony queenless 6 or 8 hours and have taken their brood away, give them a frame of brood from the breeder, and in 24 hours more there will be probably 20 cells started—enough for an ordinary colony to finish. This frame of started cells should then be taken away and the queen introduced; otherwise she would be killed like a stranger.

It is a well-known fact that if a hive be so constructed that the queen can not have access to all parts, and if some eggs and brood be placed in such parts, the bees often build queen-cells on it, and such cells are natural supersedure cells. Now if we can divide the brood-chamber with queen excluding zinc, with the queen on one side and the frame of started cells on the other, we have things just as we want them, and the bees will finish such cells to perfection. Such cells when hatched, if taken and examined as soon as the queen emerges, will be found still to have royal jelly left, showing that the larvæ were not stinted. A strong colony with 2 brood-chambers and an excluder between answers the same purpose, and nothing but a strong, large colony should be used in queen-rearing anyway. This, I think, is as good a system to rear first-class queens as there is, and follows the natural tendency of the bees to build queen-cells when otherwise they would not do so. No colony is queenless but a short time in starting the cells, and we have nothing to do to interfere with the cell-building colony



until ten days from the start, when the cells should be separated and one given to each full colony or nucleus, as the case may be.

Any one who would like to see the difference between queens hatched in this manner and by queenless bees should try it and see. A short time ago I received a letter from a man that had reared a few queens, and he complained about their being small and dark, and looked liked 30 cents—so small, in fact, that they would go through the Root-Tinker zinc. He reared them in a colony without a queen, but since he has tried this system he is better satisfied and has no more trouble.

Another thing: I have noticed such queens often fail to mate, for some reason, and if not lost in their mating flights will, after a short time, go to laying drone-eggs. If these directions are followed carefully, the mere novice can rear his own queens, and as good as money can buy; and those reared at home, not shipped through the mail, are undoubtedly the better. A good many complaints of poor queens could, if possible, be traced to rough handling in the mails.

There are several modifications of this system, but none better. Of course the brood to start the cells should not be over 6 to 10 hours old, or so small as to be difficult to see without a glass. I use colonies 2 and 3 stories high, and sometimes with 2 or more queens, for cell-building, and the more bees I can have the better. Queens reared in weak colonies or nuclei are likely to be poorly fed and unprotected from cold, usually look dark and small, and seldom are worth anything. They are only a detriment to the colonies they occupy, unless used in the plural queen-system, and I would rather have one good queen in a hive than a dozen poor ones. We hear a good deal about this 2-queen business, but like all other fads, it is liable to die

out shortly, except in cases of queen-rearing or something of a kindred nature. Bees were created with one queen to the colony, and we have yet to hear of the man who has beaten "Dame Nature."—*"Am. Bee Journal."*

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## WORKING WITH VICIOUS BEES.

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A correspondent writes, asking that I tell the readers of "Gleanings" how I master "awfully cross bees." I take it that he has bees which need more than the usual means to subdue them. Where I find a colony (as I do sometimes when others wish me to do some work with certain colonies in their apiaries) that will not yield to a few puffs of smoke blown in at the entrance, and then a little smoke blown over the tops of the frames when opening the hive, I always treat such "awfully" cross colonies as follows;

With the smoker burning nicely, and full of fuel, I step to the entrance of the hive and send into it a few puffs of smoke, blowing as strongly as possible so that the smoke may reach all through the hive as nearly as may be, when the entrance is closed, and the hive strongly jarred by being pounded with the doubled-up fist or a stick of wood. But the doubled-up fist is better, as one will not be likely to pound it hard enough to break down any combs, which may happen when striking with a heavy stick. This jarring, together with the smoke, causes the bees to fill themselves with honey, which can be hastened by opening the entrance in about a minute, puffing in more smoke, and then shutting and pounding again. If many bees from the fields have collected at the entrance it is better to let them run in before smoking the second time, as they will add to the hubbub by being greeted with smoke immediately after entering. In about three minutes from the time of starting, one can open up the worst colony of bees ever seen, when thus treated, without any of the bees offering to sting. But if



the bees are of the black or hybrid variety they will run all over, out of the hive, down under the bottom-board, or almost anywhere instead of staying on their combs. For this reason, when treating black or hybrid bees I generally take some old box or cap to a hive, or in absence of these an empty hive, and set this on top of the colony to be treated, after first having removed the cover from over the frames to the colony, using smoke while doing so, and the smoking and pounding will cause the bees, after filling up with honey, to run up into the hive or box provided, in which place they are out of the way, and there is no danger of losing the queen. In this way bees will remain quiet for the time desired, after which they may be shaken down in front of their home, into which they will run like a swarm. Even the worst Cyprians I ever saw can be mastered in this way; but it needs about five minutes to put these into a thoroughly submissive state.

Now having told how the thing is done I wish to say that it is rare that as harsh treatment as this has to be resorted to, for 499 colonies out of 500 will allow of being handled without showing unreasonable temper with a few puffs of smoke at the entrance and a little over the tops of the frames when the hive is first opened. Yes, further, with 99 out of every 100 of my own colonies which I handle, I never think of blowing any smoke in at the entrance—simply raise the covering over the frames as quietly as possible; and as the cover rises gently, draw the bellows of the smoker together so that a little smoke may float over the tops of the frames when I do what I wish with the bees without further smoking. Many colonies can be handled without any smoke whatever; but without it the bees will be more or less in the way, so I use smoke very lightly, in this way, on every colony opened, even if I know they do not need it to keep them from being angry at the rudeness of the light being

suddenly let in upon them. In all operations with the bees the motto should be, "Use as little smoke as possible, but never be stampeded by any colony."

Another correspondent wishes me to tell why his bees are so cross, but gives me no data to go by. The Italian, Carniolan, and Caucasian bees are not cross without cause! but hybrids and Cyprian bees, as well as the Syrians and very many colonies of the blacks, are easily aroused—in fact, ready for "war" on the least provocation. Then if any hive is being robbed, or honey has been left out till robbing of the same has gotten well under way, the whole apiary, during a time of scarcity, may be suddenly turned "from lambs into tigers." The remedy here is very obvious. Tearing off the covers hastily, or bumping the hives while opening, before using any smoke, often exasperates the bees so that ten times the amount of smoke is needed before we can go on with our work which would not have been needed had we worked quietly and given a little smoke gently, just as the cover began to be raised from over the frames. Such a mode of treating the bees is much like the bad parent who gives the word and a blow, genererally giving the blow first. Always treat the bees humanely, and give the smoke first. Where ants have formed their homes about the top of the hives, so that they are ready to run in among the bees at the first crack being made between the hive and the cover as it is lifted, it often irritates the most peaceable colony, so that a severe smoking has to be given them before they will yield to the apiarist. Remedy—don't open the hive until you have stampeded the ants by killing or otherwise. I do not suppose many have trouble with snakes; but at our out-apiary there are quite a few small snakes—small enough to run in at the entrance of the hives. The bees do not seem to be able to sting the snakes, but they lay hold on them, when the snake will "thrash



around," hitting the frames and causing an uproar sufficient to drive every thing away from the apiary for some hours unless the bees are subdued by a vigorous smoking and pounding. When working one day, a snake about fifteen inches long wriggled itself out from the hive with two or three hundred bees hanging on it hissing and trying to sting. I marked where it stopped, and, after subduing the bees (I came near being driven from the yard), I went and killed it; but an examination did not show a single sting about it anywhere. I got off much better than I did (save the killing), for I received forty or fifty stings, although I did the best I could short of running away. Then on cold days, or at times when honey is not coming in from the flowers, the old bees do not like to be disturbed, and occasionally will sting with a vengeance. I have worked at the bees during a pleasant forenoon, when the bees were busy, without a single cross bee hovering about my head, only to be greeted with hundreds of them hanging to the veil of my hat and singing that very interesting song; they can sing when maddened, four hours later, after an unexpected three hours of rain. All of these things should be taken into consideration, and the beekeeper be governed accordingly. When, from former experience, you know that the bees are likely to feel ugly, or are easily disturbed, use smoke till you see them "doff their hats," and at times which point toward good nature a little smoke over the tops of the combs is all that is needed. — "Gleanings."

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### SAVE THE BIRDS.

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One of the finest collections of bird-pictures we have seen appears in the October issue of "The New Idea." They are the work of Mr Mattingley, and are used to illustrate an appeal by the Prime Minister of Australia to women, to save the lives of thousands of innocent birds. All over the world there has been

a great outcry against the slaughter of birds for millinery purposes; but scarcely one reader in a thousand in Australia witnesses some of the most repulsive scenes of butchery in the interests of fashion. On the Murray River are certain swamps, in which the egret builds her nest. When the brooding season is on, the egret grows a beautiful spray of feathers from her back, and this is the aigrette coveted by the milliner. Then came the plume-hunters, and a scene of desolation follows. The mothers are shot on the nests and flung aside, sometimes only half-dead; the young ones are left to starve. Mr. Mattingley found as many as 300 dead birds in a single patch. No wonder Mr. Deaken appeals strongly to Australian women to stop this sort of thing; and "The New Idea" deserves praise for its outspokenness on the subject. It is a rather gruesome topic; but by its side, in the October issue, is a collection of short, bright stories, and the first chapter of a diverting series of "Experiences of a Mother." Indeed, the fiction element is very strong, and as bright and wholesome as ever. On the practical side, the advice to girls who want to make their own dresses and toilet accessories may be recommended, whilst a score or more of pages are devoted to making life for the average housewife brighter and better. We are glad to notice a number of contributions by young Australians, notably some excellent verse by a promising youngster of sixteen. It is worth noting, in conclusion, that an amusing picture-puzzle competition that has been running for ten months is drawing to a close, but any reader may enter at once, and have the opportunity of winning a trip to Japan and back, at the expense of "The New Idea."

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Many reports as well as repeated observations year after convince us that, early in the winter, the cluster of bees will be found up in front of the hive. As the winter advances and the stores are consumed, the cluster works backward.



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