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West Maitland, N.S.W.: E. Tipper, December 31, 1909

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THE AUSTRALIAN Bee Bulletin.

A MONTHLY JOURNAL, DEVOTED TO BEE-KEEPING.

Published by E. TIPPER, West Maitland

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

VOL. 18. No. 9.

DECEMBER 31, 1909.

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Published by : E. TIPPER, West Maitland, N.S.W. Aus.

MAITLAND, N.S.W.—DECEMBER 30, 1909.

EDITORIAL.

My heartiest compliments of the season to all beekeepers, and wishing you a prosperous year, the best of health and happiness.

Although the weather is very changeable, there is no doubt but that we are experiencing one of the driest seasons and hot spells. On the 14th inst. a north-westerly blew heat and dust in galore, and brought the temperature to 104 in the shade. Even in Sydney 102.8 was recorded.

BUSH FIRES.—These generally start in a season like this, and for three days my bees had the full effect of the smoke therefrom, as the wind just blew it that way. But, though the fire burnt all round me, I had anticipated such, and had the scrub around my place cleared. Many other residents were in more danger, but fortunately no serious damage was done, as plenty of willing hands offered assistance. Everything is dry, and even the scrub burns like straw. It is to be hoped that the damage in other districts will not seriously affect bees and beekeepers. Will you let me know?

A lot of interesting matter unavoidably held over till next issue.

BEEKEEPERS AND THE R.A.S.

In last issue I gave you an indication on this subject. Now I am directed by the Executive of this Union to submit the whole facts, and you will clearly see that the trouble arose from some not altogether unknown source, because the way I go about it would interfere with previous and to beekeepers uncalled-for arrangements. However, it is alright now, and it only requires your aid to make the Sydney Honey Pavilion what it should be, —exhibits of producers, not shopkeepers, and I firmly believe you will all aid in attaining our object. Let us show to the public that we are the producers.

Following is the correspondence in reference to the above:—

To the Editor "Daily Telegraph":—
On the 22nd ult. I received a letter from the Secretary of the R.A.S., dated November 19, 1909, as follows:—

I have received a circular issued in copies of the "Bee Bulletin," for which you appear to be responsible. This circular invites intending exhibitors to send exhibits to the Royal Show, and indicates that your executive, or you, are prepared to arrange for space. I must point out to you that this action is wholly unwarranted and unauthorized.

My council will not allow any person or persons to have any part whatever in the management of any section of the Show, and in issuing this circular you are distinctly misleading exhibitors. Such action has rendered you liable to disqualification as an exhibitor, and also to expulsion as a member of this Society.

I shall be glad if you can furnish me with some explanation of your action in the matter, and I would suggest to you that you take immediate steps to withdraw the circular, and to acquaint those who may receive the "Bulletin" with the fact that you had no power or authority to issue it.—(Signed) H. N. Somer, (secretary.)

As that letter contains serious matters, and is to me apparently contrary to the rules of the society, I replied:—

Yours of the 19th just to hand, and as said letter contains serious matters affecting myself, I beg to be informed by you whether your letter is authorised by your Council?

If so, I shall be happy to afford satisfactory explanation, and then leave it to their decision as to whether I shall be debarred from exhibiting in future, and be expelled as a member.

On the 24th I received the reply, thus:—

Replying to yours of the 22nd inst., I have to inform you that every official action of the secretary of this society is authorised by the council. I had hoped to have your explanation in hand to present to the council at the monthly meeting to-morrow, but I am afraid it will now be too late, and the matter will have to stand over for a month. I note that you say you will be happy to afford a satisfactory explanation, and I shall be glad to receive this to place before my council.

The secretary of the R.A.S. seems to have misunderstood the meaning of the circular, and I intended to reply to him, but my attention having been drawn to a

paragraph in your issue of Friday, the 26th ult., wherein the secretary is reported to have brought the matter before the Council, I now desire to give my explanation in the same public manner.

The Executive of the New South Wales and Commonwealth Beekeepers' Union has no object in view other than to encourage a larger number of exhibits from bona fide beekeepers—not shopkeepers—and the circular does not state that the executive or myself are prepared to arrange for space, etc. The aim is simply this: If beekeepers signify their intention to me to exhibit on their behalf, the secretary of the R.A.S. would be made acquainted with the fact and the matter be left in his hands. For that reason it is asked that beekeepers send their decision before January 15 next, a date long before the closing of entries.

Most beekeepers live a long way from Sydney, and if the executive's offer, being residents near Sydney, to take charge of small exhibits is inconsistent with the management of the show, now, then, all I can say is this—that such has been done repeatedly in this section, and, to my knowledge, has not been objected to.

I may add that I have been an exhibitor since 1888, when, largely through my endeavours, the bee and honey section originated, and I am a loyal member of the R.A.S. Ever since the inception of this section I have tried to induce country beekeepers to show their product in Sydney, and, according to the secretary's definition, have rendered myself liable to disqualification and expulsion years ago. My object has always been to aid and assist the industry, and to increase the exhibits at our show. Lately I have been appointed the editor of the "Australian Bee Bulletin," a bee journal of over 17 year's standing, and now I have a wider scope of usefulness, which I used for the benefit of both—beekeepers and the R.A.S.

This explanation is given to show that intending exhibitors are not misled, and to justify my position as a business man.—W. ABRAM.

Beecroft, Dec. 2.

The secretary of the Royal Agricultural Society brought under the notice of the council a circular letter from a Beekeeper's Association, inviting beekeepers to apply to an official of that association for space and other matters in connection with the Royal Show. It was pointed out that this association had no control whatever of the section, and no authority for receiving applications for space, and it was decided that the matter should be made public, in order that intending exhibitors should not be misled. All particulars would be supplied by the secretary of the society in the usual way to any intending exhibitors.

APIARISTS AND THE ROYAL SHOW.

Mr. W. Abram, of the New South Wales and Commonwealth Beekeepers' Union, writes:—Attention has been drawn to a paragraph in Friday's "Herald" under the heading "Royal Agricultural Society," wherein the secretary is reported having submitted to the council a circular from a beekeepers' association, and whereon comments were made and decisions arrived at "in order that intending exhibitors should not be misled." It is difficult to conceive how the secretary came to this conclusion, unless he misunderstood the meaning of the circular. Here it is:—

Will you exhibit in the bee and honey pavilion next Easter Show? If so, please state what space you may require. The executive will take charge of any small exhibits if previously arranged with the secretary or president of the Union. Post your decision to Mr. W. Abram, Beecroft, as early as possible, but not later than January 15, 1910. The prize schedule

will be published in due course, but it is practically the same as heretofore.

Mr. Abram has now been informed by the Secretary of the R.A.S. that his action in placing the matter before the public through the daily press, will be sufficient amend for any liberty he may have taken in the matter. (Note—What liberty has Mr. Abram taken? How did he mislead intending competitors? W.A.

RURAL VOICE.

THE BEE DISEASE.

To the Editor S.M.H.—In your issue of 7th inst., under heading "Dysentery in Bees," Mr. R. Beuhne states that the type of dysentery has been briefly described in your columns a few weeks ago, and further on he states "an organism resembling in all respects the nosema apis has been found by one of us acting under the direction of the Commonwealth analyst in bees from colonies affected by dwindling occurring at many bee farms in Victoria. Several cages of healthy live bees suffering from the disease were examined in October."

In his article on August 30 Mr. Beuhne attributes the losses of bees to various causes, but never to the only cause—namely, disease. I may here mention that I was the first to draw attention to this loss of bees, which originated here about 20 years ago, and I called it a disease. In later years Mr. Beuhne had great losses, but he attributed the loss to scarcity of pollen first, unsuited honey next, and insufficient food supply in the larval stage afterwards. Dr. Zander has now scientifically proved what my practical experience has taught me all along.

Dr. Zander, who has studied this malady for years quietly, on August 9 last submitted his investigations to the convention of German, Austrian, and Hungarian beekeepers at Weissenfels, Germany, and aided by Professor Doflein,

Munich, named the disease "nosema apis." Dr. Zander also gave information how to treat the disease, and actually enumerated what I had advised many years ago. Thus, as far as my opinion on this subject goes, theory and practice combine, and this is always required if good results are to be obtained. I have contended for years past that it is a disease, and is infectious; that combs from infected stocks should not be exchanged; that building of combs was a necessity to bees, and if honey was not coming in sufficiently, feeding should be restored to; that the queen should be exchanged as soon as possible etc. Now, where does the pollen, honey, and larval food theory come in.—W. ABRAM.

Becroft, December 9.

BEE DISEASE.

The following has been brought under my notice:—

"A mysterious disease has broken out during the past few weeks. The bees affected are the old field bees (at least they all look old and ragged) are seen running about the ground and attempt to fly, but are unable, while others fly out of the hive, and after twenty yards drop. Almost every hive is affected, and bees are fast diminishing. There is abundance of honey and pollen. In fact the best honey producing trees are in full bloom."

Reply: The complaint is not new to me. I have seen it in Europe over thirty years ago, and several times in Australia. In Germany it was called the mad disease, because they act like drunk. It may be nosema apis. I do not know, but as it appears on hot days most severely, I incline to believe it is sunstroke. The air is devoid of moisture, the nectar contains very little, the heat penetrates the hive, and the bees rush out and are overcome. If there is much honey to be gathered, so much worse, because the bees want to get it. Moisture produces generally relief; but if it is a disease, then the matter

is more serious. According to Dr. Zander, the intestines of healthy bees have a pinkish colour, diseased ones are almost milk-white. It is thus easy to ascertain whether the bees are affected with nosema apis.

BEE DISEASES.

The fertile pen of Mr. Baubne is producing more material than that I can possibly check the lot. In daily, weekly, or monthly papers, there he is propounding that in October one of us found an organism resembling Nosema apis. This is very unfortunate, because the discovery was made in Germany long before October. The results of the investigation were given to beekeepers on the 9th of August last, and I had the report in my possession in October. It is unfortunate for the "one of us" it so happened that he did not find the organism before; it is more unfortunate that the "one of us" discovered the parasite now, because thereby all previous hypotheses are shattered, except mine, and much time, energy, and brotherhood is lost.

The disease has been with us—Victoria included—for many years; investigations were made, results were promised, but never eventuated until October; or rather December; whereas this disease is only new in Germany, and yet there they discovered the cause already. There is no use trying to skite about what "one of us" has found; it is too late. Dr. Zander is the discoverer. Honour to whom honour is due.

In America this disease has destroyed many large apiaries for many years past, yet nothing has been found to account for it. I wonder how they will take the pill.

INTRODUCING.

Dear Miss,

I note in the "A.B.B." that you have difficulty in introducing an Italian queen bee to a queenless hive of black bees, and, knowing how difficult it is, I hope

you will excuse me for stating how I was forced to proceed with the task in my first move to Italianize my blacks. Finding it useless to try and reconcile the mature bees to accept her, I had to resort to the extreme of introducing her to unhatched brood by caging her on the side of a dry comb placed in a top story which I separated from the bottom story with wire gauze. Of course the bottom story contained the best or strongest swarm of bees that I had. I selected one comb of pollen and honey and placed it with the queen, and also picked out the best combs of sealed and emerging brood that I could find amongst the few colonies that I then had and placed them with the queen, and relied for my future swarm on the young bees that would hatch out from the heat derived from the bees in the bottom hive body. The young bees so hatched fraternized with the queen and never interfered with her. On the other hand, so hostile were the mature bees to the poor Italian queen that I think it is an impossibility to introduce an Italian queen to blacks in the ordinary way. I understand that you have no Italian bees and wish to purchase Italian queens and introduce them to your black bees. My opinion is that you won't succeed in doing this. Your best plan will be to obtain one colony of Italians (pure), and Italianize all your "blacks." Or you can, if you wish to have all purely mated queens, make your original colony of Italians very strong by giving them frames of brood from your black colonies, and when strong enough you can divide it and you will find no extraordinary difficulty in introducing a purchased Italian queen to the queenless half. You can continue to strengthen both Italian colonies by giving them the strength from your "blacks," and by keeping this game going you would finally have all the strength given to the Italians that you acquire by repeating the above method of increase. If you proceed to Italianize in the usual way, your first lot of queens would most cer-

tainly produce hybrid brood, and I think they are too savage for a lady to be having anything to do with. If you adopt the above plan of increasing your Italians by dividing, it will greatly facilitate the matter of the bees accepting the new queen to cage her on the side of a dry comb as I did with my first queen; place her in the centre of the hive, and then add the bees and combs of brood from your strong Italian colony, and leave it within a few feet of the original colony with the entrance facing in the same direction. Leave it in this position for about three full days, and also leave the queen caged during this time. Then remove it to a new stand some distance away, and all the flight bees will enter their original stand, and, of course, be with the old queen. By this method you get rid of all the old bees as its the old bees that are hostile to an introduced queen after the bees begin to work in the newly-formed colony you may liberate the caged queen, the best time to do so being when bees are working at their best. If you prefer it you could leave the queen caged in the sender's cage and allow her to be liberated in the usual way. In manipulating bees by division or otherwise, care should be always taken to give the sealed brood to the part that is to be depleted of its field bees, and, of course, always try to get as many of the new bees in your new colony as possible, and never leave more brood with the new colony than they can manage to keep warm. Also supply it with an outside frame containing abundance of pollen which had best be obtained from another colony.

P.S.—In dividing swarms I mean that the original queen be left on the old stand and the old hive, and that the new colony be extracted as it were from the old colony. First find the old queen and place her comb and all in a spare hive. Then select the combs of brood to be given to the new colony; place those bees and all in their own hive. Shake and brush all or nearly all the bees from

the other combs into the new hive, and return the old queen to her old hive.

JAMES BROGAN.

Attunga, N.S.W.

THE NEW SOUTH WALES and COMMONWEALTH BEEKEEPERS' UNION.

The Executive of the above Union met on the 13th inst. Present: Messrs. W. Abram (in the chair), J. J. Branch, Henry Lord and J. J. Parker. An apology was received for Mr. D. W. Parker.

Minutes of the previous meeting were read and confirmed.

The president then submitted a letter sent to him by J. C. Hunt, Esq., M.L.A., from the Lands Department, acknowledging president's letter of the 4th of November, and Mr. Hunt added that he will send on further reply as soon as it reaches him. It was agreed to wait a while before further steps in the matter be taken should no reply be forthcoming in the meantime.

Discussion re further lectures took place, but owing to the irregular train and tram service, it was decided to postpone the matter. The Executive consider that these lectures assist the industry.

Then the president submitted correspondence from the secretary of the Royal Agricultural Society, and how he had dealt with same. On the motion of Mr. Branch, seconded by Mr. Parry, it was carried "that the whole correspondence, etc., be published in the A.B.B."

The president then suggested that beekeepers should be protected by law, the same as other agricultural branches are, and Mr. Branch suggested that all beekeepers should be registered. Both these suggestions were agreed to, and steps will be taken to carry them into effect.

At present anyone may locate a few diseased hives within close proximity to an established beekeeper, and thereby

make him liable to lose his livelihood by infection from others. This is a matter that must be guarded against, just the same as in every other industry or branch of agriculture, and the sooner it can be accomplished the better, but it will mean considerable energy on behalf of the Executive. Foul brood and nosema apis, as Dr. Zander calls it, are the two most dreaded diseases, and it will require one or more practical beekeepers, who have the confidence of beekeepers, to adjust the law. At present New South Wales is behind almost any other colony in matters affecting apicultural legislation.

AUSTRALIAN BEES THREATENED.

A NEW DISEASE.

In certain Victorian apiaries a peculiar disease, fatal to bees, was discovered last October. Bees affected by the disease were brought under the notice of the Commonwealth Analyst, Mr. W. Percy Wilkinson. Experiments were conducted and Mr. Wilkinson reported as follows to the Minister of Customs:—

"Microscopic examination of several of the dead bees showed that they contained large numbers of an organism which had probably been the cause of death. Inoculation experiments of healthy bees were carried out by Mr. Wilgerodt, and it was found that the disease was readily transmissible by feeding bees with inoculated food. The results of this investigation lead to the conclusion that the disease observed in Victorian bees is due to an organism known as *Nosema apis*, first described by Dr. Zander, of Erlangen, Germany.

Mr. Wilkinson says it is evident the disease is widespread in Victoria, and in the circumstances apiarists in this State, as well as those in other parts of the Commonwealth, will do well to exercise every care in combatting the evil effects of a development that might easily ruin

the industry. Attention is directed, therefore, to the following instructive paper on the subject, which has been compiled by Mr. R. Beuhne, president of the Victorian Apiarists' Association, and Mr. O. Wilgerodt, an officer in the Commonwealth customs laboratory, Melbourne:—

At a meeting of apiarists held in Weissenfels on 9th August this year Dr. Zander, of Erlangen, drew attention to a peculiar disease, which in recent years has created enormous havoc amongst bees. The disease is a malignant form of dysentery, caused by the invasion of the digestive tracts of the bee by a unicellular animal parasite of oval shape, which multiplies with great rapidity, and invades the intestinal cells in such numbers that practically nothing of the structure of the intestinal wall can be recognised under the microscope. Dr. Zander discovered the above organism during 1907 in the intestines of bees suffering from malignant dysentery, and believes that it is a member of the *Nosema* family, belonging to the group of *Microsporidiæ*. The words "malignant dysentery" are used here to distinguish this disease from a comparatively harmless malady called dysentery, well known to beekeepers, to which bees are sometimes subject during spring time. Several *Nosema* species are known occurring as parasites in different animals. One of the best known is *Nosema bombycis*, which invades the silk worm, and produces a disease known as "pebrine." This disease is said to have caused the French silk worm industry losses amounting to more than £40,000,000 up to the year 1867. The discovery by Pasteur of a successful method of overcoming this disease has proved of inestimable value to the world's silk industry. No means are at present available to enable one to decide with certainty whether the *Nosema* found in the bee is identical with any classified species. The name "*Nosema apis*" has been given to it by the discoverer in concurrence with Pro-

fessor Doflein (Munich), one of the best known investigators of this class of organism.

The different stages of development of *Nosema apis* are very simple, but it must be mentioned that this parasite, like the rest of the group to which it belongs, will only thrive on living tissue, and not outside the living body of the bee. After it has exhausted the intestinal cells of the bee, it becomes surrounded with a skin, which protects it from dessication, and enables it to remain alive for a long time outside the body of the bee. These resistant forms, termed spores, are seen in large numbers, either single or in groups, when the intestine contents of the bee which has succumbed to the disease are observed under the microscope.

The cells of *Nosema apis* are of oval shape, strongly refractive, and measure one-two hundredth mm. in length and one five hundredth mm. in breadth. While the intestinal contents of healthy bees are reddish and transparent, they become turbid and milky when the *Nosema* infection is well advanced. This turbid and milky coloration of the intestinal contents of the bees which have succumbed to the disease is an indication for diagnosing the disease, even without the help of a microscope.

The infection is spread to other healthy bees by the excreta of diseased bees coming in contact with the food.

This parasite is stated by Dr. Zander to be the worst enemy beekeepers have to contend with, as many thousands of swarms are destroyed by it annually in Europe. The loss caused by it is much larger than that caused by foul brood.

From hives infected by *Nosema apis*, bees may be seen to fall from the ground from the opening of the hive in large numbers; they are unable to rise from the ground again, and soon die. According to the degree of infection, they die either gradually or suddenly in an epidemic manner; the ground before the

hives may be frequently seen thickly covered with dying bees.

The ultimate fate of swarms thus infected is complete destruction, as the queen also becomes infected and perishes.

An epidemic which presented similar symptoms to those above described has recently caused tremendous losses amongst beekeepers on the Isle of Wight, and also in Brazil. In the diseased bees on the Isle of Wight, Dr. Madden discovered a bacillus which he named *pestiformis apis*, but has so far not succeeded in proving that the bacillus is the cause of the epidemic.

Dr. Zander laid special stress upon the following measures intended to counteract the spread of the disease caused by *Nosema apis*:—1. Swarms which are only slightly infected may recover if the queen remains healthy and a good natural increase takes place. 2. The combs, contaminated by the excreta of the infected bees, are the main cause of the spread of the disease. It is recommended to transfer swarms infected with malignant dysentery into clean hives and start them on artificial combs. Any brood combs are placed in such a manner that they can be easily removed after the brood has left them. When opportunity offers, a new queen is substituted, as the queens of these infected swarms frequently die in the following winter. As these hives usually swarm very late, it is best to prevent swarming.

The infected hives must be thoroughly cleaned with a solution of carbonate of soda in hot water. The combs should be removed, and the bees given every opportunity for building new combs.

The renewal of the combs forms the basis for successfully combating all diseases of bees.

An organism resembling in all respects the above described *Nosema apis* has been found by one of us, acting under the direction of the Commonwealth Analyst, in bees from colonies affected by dwindle-

ling occurring at many bee farms in Victoria. Several cages of healthy live bees and bees suffering from the disease were examined in October last. The intestines of the healthy bees were found to contain no parasite; in every diseased bee the intestines presented a milky appearance, their contents showing enormous numbers of an organism similar to *Nosema apis*. Experiments carried out with the object of infecting healthy bees by feeding them with honey which had been mixed with the intestinal contents of affected bees were completely successful; nearly all the bees so inoculated were found dead after two to five days, while a few succumbed in less than 24 hours after inoculation. In all of the bees which died after inoculation, the specific organism was found to be present in large numbers. In many instances the major portion of the intestinal contents of these dead bees resembled a pure culture of the organism. Without the help of the microscope, the disease can be readily diagnosed by the peculiar and milky coloration of the intestinal contents.—“Leader”

HONEY.—

There is no great deal of choice offering nor is the demand very good. Choice is selling at 3d. to 3½d. per lb., with medium qualities from 2½d. to 2¾d. per lb.

BEESWAX.—

Fair demand. Best bright is worth 1/2½ to 1/3, and dark from 1/- to 1/1.

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—SYDNEY—

FOUL BROOD AND BLACK BROOD.**HOW TO KNOW THEM.**

(By E. R. Root.)

During the warm part of the year we receive on the average from two to three samples of suspected brood a week from various parts of the country. These we are always glad to examine and render a report on, free of charge, providing that the specimens are sent in a stout wooden or tin box; but no ointment or cigar box must be used, as it destroys the odour of the comb.

Last fall we received a remarkably characteristic sample—a whole comb, in fact, showing an advanced stage of the disease. So perfect was it that we took a photo of it. But no photograph or engraving can adequately represent the various shades of colour, grading from that of a brown coffee berry to a bright yellow; so the reader will have to imagine this part from description.

The specimen is typical of an advanced stage of the disease, because it shows sunken and perforated capped cells, and those uncapped with the dead larvæ lying on one side. While we usually expect the larvæ to die in the case of old-fashioned or American foul brood after sealing, yet when the disease is very bad in the comb we find dead larvæ in almost all stages of growth, showing all gradations of colours, from a bright yellow to a deep dark brown. Just about as the larva dies it takes on a bright yellow. This turns darker and darker, showing next the colour of the coffee we drink with milk in it. The shade deepens until it is of the colour of strong coffee without milk. At this stage the larva loses its form, sinking down into a shapeless mass; and if a toothpick be introduced into this mass the dead matter will adhere to it, roping out some two or three inches like spittle. This has given rise to the term ropy foul brood, as disting-

uished from the type known as black brood, or as the Bureau of Entomology has it, European foul brood.

The cappings of the cells of the old-fashioned foul brood are very apt to be sunken. Somewhere over the surface there may be a small hole as if it had been pricked with a pin. This hole may be very minute; but as it enlarges it is apt to be angular, with ragged edges. It would appear that bees make an opening in the cells, knowing that something is wrong, and the mess within is so foul that they give it up in disgust. It would appear, also, that some of the bees go back, tear away the opening a little more, and then quit the job. By examining the engraving one may see the various sizes of openings in the cappings. Among the sunken cells and perforated ones will be found others that are perfectly normal. On opening up the same we find healthy grubs within.

It is very seldom we find all the cells in the comb affected, even in an advanced stage. In the one before us, probably a tenth of them were in a healthy condition, and from them would emerge in the course of time healthy normal bees. Foul brood, then, seems to attack a comb in spots. This is due possibly to the fact that young larvæ are fed with the pap or honey contained in the disease germs, and others may be accidentally fed by other bees a food that in no way affected, and consequently they mature perfectly normal bees.

When the combs are badly diseased, like the one in the engraving, it will give off a strong odour, like that of a glue pot, such as one gets while the glue is boiling, except that it is worse. The stench is almost identical with that which emanates from a lot of dead bees piled up in a damp place in hot weather. Several times our men have been led to suppose there was foul brood in the yard by the peculiar odour, when examination showed that a lot of dead bees that had died during the winter were in front of the entrance.

But we have heard beekeepers say that they do not regard the odour from foul brood as so foul as the books have stated. This all depends on the kind of nose one has. Some odours are sickening to one, but endurable to another. This is particularly true of the odour that emanates from foul brood.

When a comb is like the one before us, the colony is pretty badly diseased; and it is also probable that other hives in the immediate vicinity are likewise affected; because when a case is so far advanced as this, the probabilities are that several colonies in the yard are involved; and it would be well to make a general search through the apiary. Colonies with entrances pointing in the same direction, and near by, will be almost sure to show some diseased cells. Possibly one will not find more than three or four affected cells, and those in only one comb, for the disease has only started in that hive. Sometimes one will not be able to find a single cell containing a dead larva. In one case, where we could plainly smell foul brood, we could not find any dead specimen in any cell until we had looked over the combs for something like half an hour, opening up here and there a cell, until we finally located a dead larva whose tissue would rope out as we have before explained. But as a general thing, before there is any pronounced odor a comb will be quite badly diseased. In that case one is not likely to notice it, even at the entrance. Something will depend on the direction of the wind, if any, and whether the bees are ventilating the hive.

BLACK BROOD.

So much for the old-fashioned ordinary foul brood. Black brood is much more difficult to diagnose. It may look very much like ordinary dead brood, or what is called "pickled" brood or "starved" brood. If the reader will imagine a slightly yeasty or sour smell, combined with a faint suggestion of foul brood he

will get an idea of the characteristic smell. But there is lacking the strong foul smell that one gets from ordinary foul brood that has been so often likened to that which we get from an ordinary glue-pot. Most of the larva have died before sealing, in the early stages; while in the case of the old-fashioned foul brood in the other stages, most of it dies after sealing. The dead larvæ do not lose their shape or form, neither does the matter rope except to a very slight extent.

In the case of either black or foul brood when one finds a comb affected like the one shown in the illustration he may assume, as a matter of course, that the disease has gained a pretty good start in his yard. If one hive is badly affected, there are liable to be a good many other grouped around it that will show more or less of the disease. If foul or black brood is in the vicinity one will do well to keep tab on every inch of his brood-combs, going over them every few days, especially when the bees are running short of stores, either before or after the main honey-flow. It is possible that one may catch the disease at its very inception. If he sees a cell or two that are ragged and sunken in one hive he had better go over his whole yard; but make these examinations when bees are not robbing. If it is during the robbing season, examine the hives during a misty rain or at night.

The greatest means of spreading the disease is by robbing. In spite of all we can do or say in our literature, many and many a beekeeper will be careless. He will attempt to transfer when the bees are inclined to rob; to open up hives, scatter the honey on his clothes, on the ground, and on his tools. When working over a diseased colony one should be careful not to soil his clothes; and if any honey is daubed on, it should be sponged off. If there should be any honey scattered on the ground, several pailsful of water should be poured over the place to

wash out any trace of sweet. The hands should always be thoroughly washed, and if any tools are daubed with honey or foul-

In the limits of this article it will not be necessary to go over the method of cure, as that is fully given in all of our standard text books and in our government bulletins. In this connection, perhaps it will be well to remind our readers that the Bureau of Entomology Department of Agriculture, Washington, D.C., is prepared to examine and report on any specimen of diseased brood that may be sent in. This service is free, and, what is more, the Government is willing to offer information on how to cure. The Department is endeavouring to get information regarding foul-brood districts in every part of the United States, not for the purpose of publication, but that it may keep in touch with the localities.

HOW YOUNG AS WELL AS OLD BEES GO TO THE FIELDS.

(By the late E. L. Pratt, in "Gleanings.")

During the National Convention at Harrisburg, I, among some others, was directed to observe closely the action of colonies storing honey in supers, with a view to ascertaining, if possible, just how the bees manage this important part of their domestic economy.

Having given considerable time and some study to the subject assigned to me for investigation I am now ready to make a report.

My observations have all been made with fairly strong colonies in normal condition; and it is my belief that the natural conditions prevailed during all the time of making my observations.

In view of my findings I am forced to believe, that, during a heavy honey-flow, bees of all the flying ages, even down to the nurse stage, are sent afield in as large numbers as can be spared from the brood during the warmer hours of the day. If cool, damp lowering, or windy,

however, the field bees carry on only the work of honey-getting, while the youngsters stay in the hive to keep up the temperature. It is the young bees only that store away the honey in the supers, under normal conditions. The field bees bring the raw nectar to the hive, and deposit it in the combs of the brood-chamber wherever cells are available. Some is given to the young bees, to be sure (more to set them on the right track to the field I believe, than for the purpose of storing); but it is mainly placed in the cells of the brood-combs to be later removed, when partially ripe, by young bees, to the store-combs. If the combs below are filled or partially occupied, The partially cured honey naturally goes into the super.

Some little ripening of honey progresses during the day by the heat of the sun and the bees; but the greater part of the ripening is done at night by vigorous and continuous fanning by the entire colony. I have visited my bees night after night to ascertain the amount of time needed to reduce honey to keeping consistency; but the time varies with the amount brought in during a given day. At times the fanning is continued until the morning while at other times it may stop at midnight or an hour or two later. I am convinced that the raw nectar is mainly placed directly in the brood-combs; for, go at any hour you may to a super, and only young bees will be found at work there, excepting, of course, the few old workers on the "gluing job"—they may be seen at all times. The young bees are constantly lifting the partially ripe honey from the brood combs into the super, and the field bees are constantly refilling the cells in the brood-chamber emptied by the young bees. The nectar gathered to-day is lifted as partially ripe honey into the super the next or perhaps the following day (this I demonstrated by coloring materials on several different occasions.) Many beekeepers have noted how much thinner the honey is in the brood-combs than that

found in extracting combs during any given flow.

During quite cool nights, few if any bees remain in the super much after midnight; but they reoccupy the super as soon as the sun is again high, which goes to show that the warmth of all the bees is needed in ripening the nectar below, and that the new honey above is at keeping consistency, or it would not be neglected. The heat of the sun and the constant fanning of the ventilators reduce the honey to that thick ripe consistency, after which it is gradually conveyed to the store combs; and, when thoroughly ripe, it is sealed by the wax-workers and middle-aged bees. When once stored, honey is not handled again by the bees, but is allowed to thicken in open cells.

To aid our bees in ripening the extracted honey, therefore, a back "paroid" roofing to draw the heat of the sun would seem an advantage in cooler climates. To hold the heat and to prevent its escape at night, a deep telescoping cover with black covering is an aid to bees in comb-honey production.

When sweets are available, those first finding it do not deposit it. They use it as a signal to the other bees, feeding it right and left to all at hand as they rush over the combs. If the flow of the sweet keeps up, every member of the colony is given a taste; then depositing begins, and will continue until the end of the flow from that given source. Slow colonies may be started on a flow by shaking some of the new honey of other colonies over its combs.

GRASS AND WEEDS.—Nothing looks more unsightly than long grass and weeds around the hives, to say nothing of the great loss of bees caused by such neglect. About six pounds of agricultural salt strewed around each hive after the ground has been stirred, will kill all such vegetation at the cost of about 2½d. per hive.

EXTRACTS TAKEN FROM "THE JOURNAL OF AGRICULTURE" OF VICTORIA.

First Extract, taken from Vol. VII, Part 10, October 1909.

Orchard Notes.

J. Cronin, Principal School of Horticulture, Burnley.

"Respecting the application (i.e., of arsenate of lead sprays) which includes manner, time or period and frequency—variable opinions are expressed by fruit growers and others.

"The aim in spraying should be to cover the **fruit** with the wash, so that when the moisture evaporates, the poisonous substance remains where there is any liability to attack, and that is, in short, **anywhere on the whole surface of the fruit.**

The codlin moth is **popularly** supposed to develop into the perfect egg-laying stage **about the blossoming period**, and **to lay its eggs in the calyx** or eye of the young fruit, or as some few people assert in the blossoms. The practice of people holding this belief is to try and fill the eye of the fruit with the poison, whatever it may be, and to depend largely, if not altogether, on the one application. **The facts are that few eggs are laid during the blooming time, except in the case of late flowering varieties that are not specially attacked in the eye on account of being in flower when the moths are plentiful, and the majority of the eggs, at least, are not laid in the calyx, or even near it. Also, the calyx is often closed, and the fruit fairly large, before any evidence of codlin moth is present, and the first trace is the egg ON THE FRUIT, and the young insect attacking from the side. Many, if not all, of the supposed attacks from the calyx end of the fruit will be found on examination to be made from outside the calyx, and underneath its lobes, and not from the**

interior of the cavity. It is positive waste to spray apples and pears when in blossom; it is erring, possibly on the side of safety, to spray very thoroughly before the calyx closes. But it is absolutely necessary, in the writer's opinion, to spray very carefully when the first eggs are seen, and to repeat spraying periodically as fruits are swelling, after very heavy rains, or when by any reason whatever there is an untreated surface of the fruit exposed.

Vol. VII, Part II, November, 1909 of same journal says:

ORCHARD NOTES.

E. E. Prescott, Principal, School of Horticulture, Burnley.

"Codlin moth spraying should now be in full swing. The advice given in last month's "Notes" should be read and followed very carefully]"

A. A. Hammond, Inspector, Vegetation Disease Act, in an article on Dec., '07, of same journal, says re Codlin Moth, "Spray with arsenite of lead when fruit sets, and spraying should be repeated sufficiently often to keep fruit protected by mixture whilst it is on the tree."

THE 8-FRAME LANGSTROTH VS. DADANT HIVE.

(By J. E. Hand, in "American Bee Journal.")

In these days when the majority of the people are blindly following the largest crowd regardless of whither it is leading them, and when men of original thought and independent action are none too plentiful, it is very refreshing to meet a man who has the courage to stand by his honest convictions even though he stand alone. Such a man is my worthy and honoured opponent, Mr. C. P. Dadant.

While I have great respect for Mr. Dadant's opinion upon subjects pertain-

ing to apiculture, yet different people view things from different standpoints, and therefore see them in a different light. In this way a dignified discussion if conducted in the right spirit can result only in good, since it must reveal some points that can not be seen from one particular point of view.

Viewing the Dadant hive from the standpoint of the comb-honey producer in the average location, it is weighed in the balance and found wanting. Therefore, it does not possess the necessary qualifications that should recommend a hive to a class of beekeepers that represent by far the great majority of the beekeepers of this country.

Mr. Dadant is viewing his hive from the standpoint of the extracted-honey specialist, who represents a very small part of the beekeepers of this country. Viewing the Dadant hive from the standpoint of swarm-control, its claims can not be substantiated in the production of comb honey. An extracted-honey hive must have something besides its size to recommend it. Therefore the 8-frame Langstroth hive must ever remain what it is—a general utility hive—the hive that is best suited for the masses.

If a hive is made large enough to develop the fertility of the best queens, the average queen can not keep it filled with brood. Hence, it becomes a storehouse for honey. This condition of things is followed by a long train of evils, such as swarming, crowding the queen, loafing on the outside of the hive, refusing to enter the super, etc. And the bees will continue to crowd the queen until the breeding space is far more limited than it would be in an 8-frame hive. Thus the largest colony is quite as likely to be found in an 8-frame hive as in a Dadant hive.

Perfect control of bees is only to be found in a hive in which the size, shape, and methods of manipulation are cor-

rectly and scientifically balanced. Such a hive is the 8-frame Langstroth hive of to-day.

When beekeepers learn that bees can be controlled only through their instincts they will be in a position to understand that perfect control of bees is out of the question with a hive in which the room in the brood-chamber exceeds the fertility of the queen. Here is where the 8-frame hive wins out in an easy pace.

APICULTURE IN SOUTH AUSTRALIA.

South Australia seems to be the one State in the group where actual encouragement is given to the beekeeper. Under the fostering influence of the Department the industry is making rapid headway, and the product is gaining a considerable reputation in the Old-world markets. With the object of lending a further helping hand to the apiarist, the Government has now set aside an officer to tour the whole State, giving lectures and information to all who may enlist their advice. Already, through the efforts of Major Norton, the South Australian Commercial Agent in London, a good market has been obtained for South Australian honey, of which 500 tons are produced annually.—“Daily Telegraph.”

SCOUTS BEFORE A SWARM.

There are many evidences that a colony of bees that is preparing to swarm will select previously a location for a new home by sending out “scouts,” or a number of bees whose duty it is to go out and find a suitable place to which the swarm then proceeds later.

The writer has seen a number of instances to this effect during the sixteen or more years of his beekeeping observations. The first, years ago, was when I

thought I had discovered a swarm of bees in the wall of a building. Bees were issuing back and forth from a knot-hole right under the eyes. But after a few raps were made on the wall they soon dispersed. As a fore-thought, or fearing that some day a swarm might enter there, the opening was closed up with soft soap. Seven days passed by, when about noon a roaring noise near the building proved to be a very large swarm which was trying to enter that same knot-hole in the wall. They settled finally on a small tree and were hived.

Another case of this kind where scouts were mistaken for a colony of bees was in an oak tree in a woods. Upon examining closely the bees became frightened and flew away. Later, when passing the tree again, a swarm was in possession of the very same hollow of that tree.

Half a dozen or more swarms have been hived, or rather they hived themselves right into stacks of empty hives and supers right in my own apiaries, besides some I know of in other apiaries. Many times large numbers of bees would be around such stack “investigating” every crack and crevice, perhaps scouts that were later to be followed by swarms.

One day, about a year ago, my attention was called to bees “robbing” in a pile of entirely empty hives right in our city back yard. They acted in all respects the same as a bold band of some 100 or 150 robbers (the largest scouting band I had ever seen), only I remembered afterwards that they seemed very gleeful about finding the hives so empty and nice. It did not occur to me then what they meant, and in a few minutes they were off and all was quiet. This was right at our kitchen door.

Whether all colonies send out such scouting parties, or whether certain colonies always do, would be hard to determine. We know that they do this very often, however. These parties vary in numbers. While I have seen most of

them with only about two dozen bees (more or less) the one above mentioned was quite a large bunch of them, resembling very much a miniature swarm themselves, but their actions were very much unlike a swarm.

CHECKING ROBBING.

In spring and autumn robbing booms are frequently looked for as a matter of course in many apiaries. This should not be, as in general the instinct can be suppressed before it leads to mischief. This is one of the cases where prevention is of more importance, and in every way more effective, than cure. If I enumerate a full dozen causes for rousing the excitement and encouraging the predatory spirit I may be doing something to help many beginners to prevent it or nip the disease in the bud.

Honey is often left lying about the apiary, thus affording bees a chance of stolen sweets. Syrup is spilled or left exposed when feeding is going on. Ventilators and cone-cleaners are fitted so loosely as to allow bees readmittance. Hives should have no cracks or crevices, yet they often have. Weaklings and nuclei are generally left with two large entrances. The honey-house is frequently not quite bee-proof. Far too many weak, and sometimes queenless, lots of bees are kept dragging on a miserable existence. Untimely manipulations are often undertaken when prowlers are nosing about. Feeding at the wrong time works evil. Spring cleaning on a fine day gives robbers a start. Empty hives left open encourage the marauders, and simply invite their visits. Entrance slides fitting badly encourage robbers and often invite disaster. Outside feeding leads to it.

The foregoing baker's dozen of causes leading to robbing may now be followed by as many preventives, checks, or cures; but it must be understood that several of them have to depend on the intelligence

with which they are applied to guarantee success. (1) Have all your stocks equal and as strong as possible. I know this is theoretically easy of attainment, although practically there is often a hiatus somewhere. But the nearer you approach to this ideal the more certain you are to have no robbing. (2) Leave your strong stock with as wide an entrance as the hive allows if you have a mind, but reduce the opening in touch with the strength of the stock. (3) Join up all nuclei and weaklings before the honey harvest utterly fails, because immediately this happens prowlers go prospecting everywhere searching for sweets; and by sight, smell and hearing they are quickly attracted to a centre where this source has been discovered by their sisters or neighbours. (4) Do not extract honey outside. In the height of the season that may be all right. With a honey-dearth it is quite wrong. Every crack and crevice in the honey-house should be made bee-proof. A spring window to throw out any bees which may find an entrance by the door or be carried in by the full supers should be in every honey-house. (5) Have all hives bee-proof. Every joint should fit tight. I know some factory hives even are not perfect in this respect. It is right to have roofs and lifts easy, but they should have no play. (6) Notice that all cone-clearers, while they allow bees out, hinder their re-entrance. This at times is not the case. (7) Clear out all racks of sections by means of some system of clearance connected directly with the brood-nest. In this way no shaking has to take place. No honey is thrown about out of unsealed cells, and no prowlers are attracted to the temporarily exposed honey. (8) On the least sign of agitation use carbolic acid liberally. Hang some rags saturated with it above the entrance and on each side, and paint the flight-board with the exception of a space near the entrance with a weaker solution. (9) Remove the attacked stock to a temporary site fully two miles from the apiary,

and keep it there for some weeks until the chillier weather of autumn confines the caterans to their own home. This, where possible, is the very best cure which can be recommended, and, as the attacked stock is generally weak and the bees not over numerous, they bear confinement nicely while being transplanted to the new site. (10) Almost an equivalent of this is the American plan of carrying the attacked stock "down cellar," where they are kept for some days until the attacking bees forget to re-visit their stand. (11) Clustering the robbed stock keeps out the robbers, until they give the assault up as a bad job. (12) Exchanging the weak lot to the site of a strong one and substituting the other allays the robbing-fever. But here there is possibly a danger to either queen at times. (13) One of the very best preventives that can be given is to have all hives well provided with stores in autumn; enough to tide them right over the spring until early fruit bloom yields well, or even until white clover supplies nectar. (14) As an extra means of stopping robbing I may conclude with the latest plan given across the Atlantic:—When the attacked stock is removed place on its stand a similar hive provided with a robber trap, affording the marauders easy access, but no means of exit. All these bees are now prisoners, and as they generally come from one hive, these being all trapped effectually hinders any further attack. The weakling may then be restored to its former position, and the trapped robbers can be carried to an out apiary or otherwise disposed of. — D.M.M., Banff., in B. B. Journal.

OWNERSHIP OF BEES.

CURIOUS LEGAL DECISIONS.

A very interesting legal point was recently determined by the police magistrate at Singleton with respect to the rights of the parties in a case where bees

from a hive belonging to one person escaped, and settled on trees in the grounds of his neighbour. The facts of the case in question are as follows:—It appeared from the evidence that a swarm of bees escaped from the plaintiff's hive, and swarmed on a grapevine growing in defendant's garden. Before defendant would allow plaintiff to re-take them he asked for 10s., which he proposed to donate to the local hospital. In the meantime the bees vanished, and were not seen again. Plaintiff thereupon proceeded against the defendant for the unlawful detention of a swarm of bees, valued at 15/0. The magistrate gave a verdict in favour of the defendant, and, in the course of his judgment, said that bees were property of a kind; the owner however, having only a possessory title, and, when they escaped, they ceased to become his property.

This is not the only case on record where bees have been the subject matter of litigation, and the points that have arisen are both curious and interesting. In one case, for instance, which came before an English County Court some years ago, it appeared that a swarm of bees escaped from one man's land on to that of another. Their owner (the plaintiff in the case) saw the bees leave the hive, and settle on his neighbour's trees. The latter (the defendant in the case) at first refused to allow the plaintiff to attempt their capture, but, after some altercation gave his permission, subject, however, to the right to bring an action for trespass. During the controversy, the defendant's son had shaken the bees to the ground, and, on the plaintiff approaching them, they all flew away. The plaintiff subsequently sued the defendant for their value, and it was held by the Court that no appreciable damage had been shown, since it was admitted that, had he acted in the first instance as unskilfully as he did later on, the

swarm would equally have evaded him. The defendant succeeded thus far, but his victory was barren of costs; and this on the ground that he had illegally interfered in the plaintiff's property in the bees. Neither side had really caused or suffered any appreciable damage, and each side had the pleasure of paying its own costs. It is important to notice in this case that the hive-owner never lost sight of the swarm, and could readily identify them as being his bees.

The law on the subject has been laid down on the authority of two ancient law writers, and their dicta is followed by the Courts to the present day. In effect, it seems to amount to this, that to constitute property in bees, or for that matter anything coming within the designation of wild animals, it is necessary to show reclamation; or in other words, to acquire possession and keep under control. To use the words of one of these law writers: "Though a swarm lights upon my tree, I have no more property in them until I have hived them than I have in the birds which make their nests thereon, and therefore if another hives them, he shall be their proprietor; but a swarm which fly from and out of my hive are mine so long as I can keep them in sight, and have the power to pursue them, and in these circumstances no one else is entitled to take them." Under this authority, the likelihood of an owner of an escaped hive of bees following them so as to exercise his ownership is a fairly remote one, for bees, like other winged insects, can travel, especially when in company of the queen bee. And this view, to a great extent, was adopted by a Scotch Court, which held that reclaimed bees remain the property of the owner so long as he is pursuing them where he is entitled to go, and that, if they come upon another person's land, that person is entitled to prevent pursuit on his land, and becomes the owner of the bees provided in the interval he hives them.

In another English case it appears that the owner of the hive had first seen the swarm on a neighbour's chimney, but failed to capture them, and had then gone away. He subsequently returned to make a second attempt when access to the land was refused him by the owner, who in turn hived the swarm and kept it. The facts in this case are again peculiar, inasmuch as a further swarm on the chimney, and were, it was alleged, inseparable from those claimed by the one who had lost his bees. It was held by the Court that the owner of the land on whom the bees had taken refuge, and who had hived them, could keep the bees.

Whether the bees are or are not a nuisance is probably an open question in the eye of the law. In the event, however, of the city fathers passing an ordinance forbidding the keeping of bees, as was done recently with respect to the keeping of fowls within defined areas, beekeepers would have to seek pastures new. In declaring an ordinance which made the owning, keeping, or raising of bees within city limits a nuisance, was held by one of the American State Courts as being too broad, and by reason of this, invalid. But the States are not unanimous in their legal decisions, as in another State Court, where the evidence showed that the defendants were keeping a large number of hives of bees in a plot immediately adjoining the plaintiff's dwelling house, and at certain seasons they were a great source of annoyance to him and his family; and also that they could be removed without material difficulty to a place where they would not disturb the neighbours, it was held that the case was a proper one for a permanent injunction or order of the Court to remove them from the place in question elsewhere.

It is somewhat strange that the law is not more often the subject of dispute in our Courts, for in the country, beekeeping is a common industry. Probably the uncertainty which frequently attaches to the identification of swarms of bees, and the

latent possibilities present for those who seek to hive a swarm, make both parties in these cases willing by mutual concessions, to facilitate a rapid removal. "Evening News.

COLORADO BEEKEEPING.

(By R. C. Aikin, in "American Bee Journal.")

I closed article No. 6 with the details of swarm control as applied to getting the best results in surplus honey. Here we will go further into the management following, when we have gotten the bees where the apiarist can say he is in control. It is now to apply the energies of the bees where the most will be gotten out of them.

Most people suppose that no bees work so hard as a newly hived swarm, and possibly there is some ground for such relief; but I think I can dispel some of such relief when I have analysed conditions, and have also shown some other conditions under which bees do most excellent work.

When the swarm is hived not much is done the first day or two but clean house and get comb started. What apiarist but has noticed that when he hived a swarm, say at noon, and went in the late afternoon to look at them, that very few bees are going and coming, and often he will tip up the hive or otherwise investigate, thinking his swarm is lost. He finds them apparently idle. Nor is there much activity until sufficient comb is built to receive eggs, nectar and pollen; when this time comes there is work for every bee, and they get to business; there is lots of room and a division of labor that calls into play every energy. Contrast with this a colony with just about bees enough to cover 4 or 5 combs, and with brood enough to keep every nurse at work and every fielder in the fields searching and getting necessary stores. I said contrast, it is not a contrast, but more strictly a

parallel. There is almost no possible perceptible difference in the energies put forth by weak but healthy normal colonies with plenty of room as compared with a natural swarm. I will give another parallel that any apiarist should observe.

Colonies worked for extracted honey where plenty of store-comb is present and in the most convenient location, and where sufficient ventilation and other conditions make for the comfort and best opportunity to employ every bee—there we almost invariably find a colony that gives a good record of itself. It is the common claim that extracted-honey colonies produce more honey than those run for comb. In this case the credit is not given to its being **natural swarms** that do the work, but usually that there is no comb to build. Go into a yard where there are natural swarms at work alongside of colonies of equal numbers or working strength, and you cannot tell which works the harder, or which gets the most stores or accomplishes the greater amount of work of all kinds in the hive. It is the colonies uncomfortable from over-heat, overcrowded with a mass of workers like an unwieldy mass of individuals, always in each other's way, no place in which to store, a queen that is not laying enough eggs to keep all the nurses at work, etc. A lot of bees that are thoroughly demoralized as by smearing with honey; if they get out of stores within and nothing without, anything and everything that tends to disgust, discourage and disconcert will retard in energy put forth.

It is but the most natural thing that a colony being annoyed by robbers, or those excited by the presence of strange or more than one queen, cease more or less for the time to attend to the regular business. Shake a colony, making a forced swarm, and there is unquestionably for the next few hours, and often for even the second day, but a small amount of work done, just as in a swarming colony when the excitement is on, almost all field work

ceases. But, just as the natural swarm soon rights itself and gets to business, so any forced swarm of equal bees in all respects and same opportunities will get right to business and make work count. And I will again repeat, and wish to emphasize, that it is the colonies normal in numbers and having the opportunities that get the most honey per capita of bees.

An average natural swarm in a big hive in an average honey-flow will not do good work in section honey. To get the finish desired, and as well the quantity, we find almost every writer advocating the doubling up by some plain method. This doubling will add to quantity and finish by the given colony that is the product of the doubling, but the same bees in two more nearly natural or normal ones will accomplish more in gross production of all products. That is why small hives are used more for comb-honey work, because a normal swarm must be squeezed up to super-work by a contracted brood-chamber.

What About Queen-right vs. Queenless Colonies?

There is little difference between a natural swarm with a normal queen, and one with brood in all stages from which to rear one, so far as working energies go. The amount of brood present will use more or less, in proportion, of the energies and time of the workers; but if a small portion of brood be given to a swarm in lieu of a queen, work will proceed just about the same as with a queen just as soon as the colony becomes settled to conditions and accepts the situation and starts cells. But of course in all the manipulations and changes and in the varying conditions, we must keep in mind to have the end in view always before us. If you have bees, and want all possible from them, you must always have present with that colony, whether a swarm or one that has not swarmed, a queen or the material by which to produce one. If all is to be centered in honey, sacrifice other interests as wax,

comb, brood-rearing, and even the future life of the colony, for they can not possibly do big work in all lines with the same resources, at the same time.

On one stand put a colony with everything favoring the greatest amount of honey in the best marketable shape and specialize that colony to that end, and that only, at least when the honey is to be had no matter what change may come later and what can be made of it even 2 weeks off. You can have colonies so arranged that you have robbed them of the fielders and of all workers except just enough to care nicely for the mother-queen and all the brood she can get when not crowded out of business by honey-logged combs, and a host of workers that nature would lead them through instinct to get dissatisfied and swarm—here you are specializing this colony to the getting of a normal queen for winter, and whose sole business is in getting that brood-chamber into proper shape, it is just in the most natural condition you could get, as bees are found in their one-room houses as in trees, etc.

And should the propagating colonies get too full for best results, divide. Or, if it is early enough in the season so that another honey-flow is yet to be harvested, so manipulate as to keep the honey stores out of the way, centering their efforts with the honey specialists and not crowding out the queen from her laying. Just as the farmer grows wheat in one field, corn in another, potatoes in another ad libitum; so should the beekeeper divide his field of bees, for if he attempts to make every colony a "jack of all trades," or try to do all the things at once, he finds they are masters of none. The business of the bee-family in a state of nature is not to do such work as man sets them to, so just as soon as the conditions are unfavorable to the making of a colony of bees in that particular home, when they have become unbalanced they divide and take up the same work in a new location. They have but one business specialty.

When it comes to the discussion of comb honey in comparison to extracted, note that with the latter there is by no means so far departure from the natural and normal conditions that influence the bees, for with the large hive and the fact that it is not nearly so cut up as if it were separate compartments, the bees being in such condition that they can continue to store freely without hampering the queen and nurses; in fact, the colony being in a more easy normal functioning condition, they just plod along, and almost anybody, whether he knows much of the whys of bee-nature can handle them with fair success. But our little boxes, our demands for fancy finish, our trying to make the bees do things contrary to instinct promptings, run us into snags when comb in these little chunks is attempted, and requires skill and knowledge.

So, then, the first and foremost thing in the time preceding a honey-flow is to plan what you will strive for; whether it will be increase of colonies, or to get the most in honey and wax or to get the most of both, the special thing first is to favor getting the greatest number of workers. When the honey season is on and also the season for increase, use the material at hand as you desire specializing, as above indicated. Those colonies run for honey must be put under special conditions where you have absolute control and can defeat nature through instinct, and you do this not by fighting instinct, but by making conditions that stir up instinct to do the thing you want.

EXTRACTED vs. COMB HONEY.

By Leo. E. Gateley in "American Bee Journal."

Nowhere in the history of modern Apiculture can there be found a time during which the acquiring of distant out-yards and the producing of extracted honey ever became among all classes of the fraternity so universally popular as just at present.

Unfortunately, certain aparian publications claiming indiscriminating devotion to the general subject of bee-culture, have unconsciously no doubt, become so engrossed in this one question that matter pertaining to other no less important interests have of late been woefully lacking. To the comb-honey contingent who are if at all, but casually interested in the lengthy discussions relative to the production and handling of extracted, such a journal is both disappointing and tantalizing.

From the perusal of such journals the uninitiated are naturally led into the fallacious belief that the production of comb honey is always a matter of unremunerative secondary importance, which is chiefly responsible for so many rushing precipitously into this already fully occupied field.

Plainly, this prevailing sentiment against the production of section honey is going shortly to effect materially the supply, and, consequently, enhance the market value of that commodity. Comb honey is, unquestionably, destined to become, as never before, a delicacy commanding a corresponding fancy price. Beekeepers equipped for the business if situated in a locality at all suitable to the production of section honey, will make no monumental mistake in sticking to it.

Generally speaking, the production of extracted necessitates the maintenance of a series of expensive out-apiaries; while with section honey the majority of localities can be made to support in one home yard a sufficient number of colonies to suffice.

In former years, when the honey extractor was a comparatively new and untried aparian appliance, enormous yields of green and inferior honey were sometimes secured by its agency; but by present methods in which only thoroughly ripened and sealed honey is considered fit for extracting, very little more is obtainable than when running for comb. Twenty-five per cent more extract-

ed than comb should be a generous allowance for estimating the relative proportional amounts possible to be produced of the two classes of honey, and never more than 10 per cent.

In any market the disposal of section honey is less difficult. Its market value is considerably above that of extracted often double, and, occasionally, liquid honey, as in our own case, can scarcely be disposed of at any figure.

Though no doubt it is possible to manage more easily a large number of colonies when run for extracted, an additional number are required and outyards can be successfully managed for section honey.

The apiarist who is an expert in its production might find the matter worthy of the most careful consideration before abandoning it for extracted. On the other hand, there are, perhaps, localities in which one kind has, from a financial point of view, slight advantage over the other. In such a case the question really becomes one of taste or preference only.

The kind one aims to produce, whether section or extracted, should be settled upon in the beginning. The hive best adopted to producing one is generally more or less bunglesome for producing the other. For extracted a brood-chamber of no less than 10 or 12 Langstroth frame capacity is necessary if one is to avoid too close robbing of stores; while one of 8-frame capacity is admirably adapted to the production of section honey. Occasionally it may be found advisable to produce both in the same yard, but not ordinarily.

Recently considerable has appeared in these columns to the effect that comb honey, if not actually injurious, must, on account of the indigestible beeswax it contains, be, as an article of diet, less desirable than that in the liquid form. Contrary to such a view, the very fact that such wax is indigestible

is precisely the reason for the superiority of comb honey.

The frail and delicate comb into which commercial honey is stored is, when properly masticated and mixed with other food, reduced to small and innumerable particles. Though, of course, the wax is absolutely unassimilable, each of these tiny particles surrounds itself in passing through the digestive apparatus with a bit of the filth deposited by the decay of other foods which are digestible, thus removing poison from the body.

Comb honey might also, in cases of chronic constipation, sometimes be considered in one sense laxative. This is not at all because it is in any manner an irritant; but rather because it cleans and tones up the digestive machinery, thus putting it in a condition properly to perform its natural functions.

There is probably nothing which will give one so clean and delightful a sense of healthfulness as will a diet composed plentifully of comb honey. The nearest approach to it would be corn-bread in which the meal has not been closely bolted. In both instances beneficial results are derived from the identical source—unassimilable matter.

SELLING HONEY DIRECT TO THE CONSUMER.

(By G. C. Greiner, in "American Bee Journal.")

After the honey-producer has succeeded by intelligent management and persistent hard labour in getting a crop, the next question, How to dispose of it in a profitable manner, has to be decided. If he fails in this, all his efforts to make beekeeping pay, will prove a delusion.

The question, Does it pay to sell direct to the consumer? all depends upon circumstances; if he favours that part of the business, it certainly does, but, if not, it may be advisable to let others take it

upon their shoulders to see to the retailing of our products.

Years ago when I was living on a farm some 12 miles east of my present location, I had to send all my honey (section honey, which I produced then exclusively) to the city markets, depending entirely upon the discretion and generosity of the commission firms. Conditions were against me to manage my own retail trade. Being engaged every minute when I could leave the bees, I had not the time to peddle honey, and, if I had had, it would have been a rather lengthy job. My surroundings were comparatively sparsely settled, and being a rural district many of the farmers kept bees of their own, not only to supply their own wants, but in some cases to give and sell to their neighbours.

On this account no regular market price for honey could be maintained. Farmers in general were not informed on the country's honey-trade; they would offer what little they had to sell, below the price the dealer would ask, and, in fact, take anything they could get. Under such conditions, a peddler could not obtain living prices.

The nearest villages, and small ones at that, were from 6 to 8 miles distant, and even there only an occasional sale of a case of 24 sections, seldom more, could be made.

To sell a load of honey I would have been compelled to drive many miles, taking me so far from home that I could not have reached my own premises for my night's feed and lodging, adding another expense for board to the already unprofitable venture. Being thus situated, I was compelled to pack my honey, send it to the city, and take whatever I could get for it.

Things are very different now. Making the production and sale of honey my main business, I have the time to be my own retailer. My present location is in or near the thickly settled portion of Niagara Falls industrial district. The city market

is about 5 miles from my place of business, on a good, level road, easy to travel summer or winter. By starting out early in the morning, I can make this trip both ways, sell and deliver my honey and take my dinner at home a little after noon.

For years I have made it a point to be on the market once a week. Through strictly honest dealing, offering for sale a genuine, pure article only, I have built up, I am proud to say, an unquestionable reputation, so that my rig alone, when it appears on the market, is taken as a guarantee for pure honey. I will say right here that I produce now extracted honey almost exclusively, for the very reason that a large portion of my customers prefer it. I make about four sales of this to one of comb honey, and as my honey is all put up in regular pint and quart Mason cans, which can be used for canning after the honey is taken out, my goods are desired and called for. It is an easy matter to make sales if you have to sell what others wish to buy.

Outside of my weekly market trips I have several routes in other directions, which I supply, to use a phrase, "between meals." Being obliged to go from house to house and farther to travel, it takes me a little longer to make the circuit, but I always get home for my night's lodging in good season.

In summing up the financial part of the question, I find these facts: When shipped to the city markets, my fancy and No. 1 white clover and basswood honey sold generally for about 15 cents per pound, leaving me, after deducting commission and express charges, 12 cents net; and buckwheat honey 9 to 10 cents net. Since I manage my own retail trade, I get for fancy and No. 1 white clover, 18 and 16 cents respectively per section, and 14 cents for buckwheat, all in 4 x 5 x 1½ bee-way sections.

It is plain to be seen that the difference in these prices leaves quite a margin in favor of selling direct to the consumer.

besides paying fair wages to the seller. But to obtain these prices, I put up my section honey in neat, attractive style; all propolis is scraped from every section, and every one is wrapped in white manila paper, with a piece of cardboard the size of the section on each side to protect the cappings. It takes a little time and material to prepare the honey in this way, but it makes it so much more convenient to handle, it keeps it so much cleaner, and makes it so much more attractive, that it more than pays for the trouble.

And after all, it is not an extra expense; it saves the cost of shipping cases, which we would have to furnish if our honey had to be shipped.

In regard to extracted honey, I can not draw a comparison. I have never shipped any to the city on commission. But I am well satisfied that it could be made a paying occupation, if a person were so situated that he could spend his time on the road, selling his own products.

SOUTH AUSTRALIAN BEEKEEPERS.

The Secretary of the South Australian Beekeepers' Association (Mr. John Norton) reports continued success in his efforts to form a co-operative union of beekeepers for the better regulation of the markets and the improvement of the honey supply. It is the intention to float the union as soon as 500 shares have been applied for. Already 55 beekeepers have signed requisitions for about half that number, the districts represented being Highbury, Houghton, Inglewood, Kersbrook, Williamstown, Lyndoch, Sandy Creek, Tanunda, Angaston, Springton and Mount Pleasant. Mr. Norton has yet to visit some of the most important agricultural neighbourhoods, such as Cudlee Creek, Blumberg, Mount Torrens, Mount Barker, Meadows, Ashbourne and Wirraba, and from the reception he has already met with is confident of success.—"Leader."

PRIZE COMPETITION.

The Publisher of the "Australian Bee Bulletin" offers Prizes for competitive contributions on subjects appertaining to Beekeeping, under the following conditions:—

1. The prizes are:—1st, 7/6; 2nd, 5/0; 3rd, 2/6.
2. Competitive articles to be addressed to Mr. W. Abram, Editor A.B.B., Bee-croft, headed "For Competition." Write full name and address, but also affix a sign or mark, as it is intended to omit full name on publication, but to publish name of all competitors first issue after judging.
3. Entries for each month close on the 20th. Any subject may be chosen.
4. One judge will be appointed by the Editor, to act as single judge, but each month there will be a different judge, and his name will be published together with the results. The judge's decision is final.

5. Postal notes will be sent to winners on receipt of the judge's decision.

Our aim is to encourage juniors and amateurs to exercise their skill in beekeeping and in writing, thereby assisting one another. (The editor's son does not compete.) The most efficient beekeepers will be selected to act as judges. A copy of the A.B.B. will be sent to the one selected each month, and the results published next issue. Competition starts now, and prizes will be offered for your work. Who will win?

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