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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. 19. No 5.

AUGUST 30, 1910.

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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.

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

Editor : W. ABRAM, Beecroft

MAITLAND, N.S.W.—AUG. 30, 1910.

EDITORIAL.

Animals show emotion, such as sorrow, joy, faithfulness, spite and anger. What about the bees ? They have senses, but utilize them somewhat different to animals.

Sight. Bees are said to have five eyes; two large and three small ones; but if the three small eyes are painted over black and such a bee is brought into a room having a window, she will not fly direct to the window, but to the wall or the ceiling. The eyesight of the bee is different to that of animals or mankind.

Hearing. Can bees hear ? Of course they can; but different to animals. Shout at them as loud as you like, they take no notice of it. But just tap at a hive, or blow a breath into it, and lo ! there they are to find out what is wrong. If a swarm issues and the queen perchance cannot fly but drops to the ground and a few bees find her, ere long the whole swarm will settle there. How did they find it ? By hearing.

Feeling. Without feelers bees are absolutely lost. The best of food is of no use to them; they do not know how to find it. Cut the queen's feelers away and she cannot distinguish properly the cells in which eggs are laid or not. Several such queens put together will crawl one over the other; whereas otherwise they fight for life one with another.

Smelling. Are bees attracted by colour to the nectar in the flowers ? In scarcity of honey in the blossoms just place some honey where the bees can get at it, but from their hives, cannot see it. How quickly they find it, though no colour led them to it. It is thus not exactly the ornamentation of the blossom that attracts the bees.

Pull the sting out of a bee and lay it on your hand. Gradually that sting works its way into the flesh, deeper and deeper. The sting can work without the bee.

Cut off the head of a bee; then lay a little honey near its feelers. The head will cause the tongue to stretch out to suck it up. Of course it flows out again at the cut.

It will thus be seen that bees are not exactly like domestic animals.

* * * *

The Editor of "Gleanings," June 15, states :—

No Cause for Alarm.

He refers to Dr. Zander's investigations and report at Weizsenfels, and assumes that the Dr. was working with the well-known dysentery, and does not claim that he has discovered a new disease—that the organism of *Nosema apis* is responsible for other diseases is not proven." The Editor may have valid reasons for his safety valve, but his arguments are devoid of facts. How many thous-

ands of hives of bees have been lost in America, say, during the last fifteen years or so? Later on, Australia suffered immense losses. They imported queens from America. Then the Isle of Wight trouble. Lately, Germany, unaffected hitherto, felt the effect of the malady. Some beekeepers imported the golden queens from America before that. Is all this not cause enough for alarm? Dr. Zander stated that the disease is far more destructive than foul brood. So much for—No cause for Alarm.

Dysentery will disappear after a few fine bee-flight days; not so the other. I have seen it last almost all through the year, and bees, queen and drones become affected. Having kept bees in Germany and Austri-Hungary before coming here, I have a varied experience. The belief of some Australian beekeepers, that scarcity of pollen is the cause, is not correct, because the same trouble occurred where pollen was plentiful.

* * * *

In the same issue J. E. Crane says:—"I do not know which I admire Dr. Miller most for; the nice things he says or the mistakes he sometimes makes."

Who can say? Vide the following:

Dr. Miller says:—"Several times I have been credited with saying that the queen might convey foul brood. I never said that. Do not know whether she does."

Well, I can enlighten Dr. Miller. The queen of a badly diseased hive does convey foul brood.

Another remedy for foul brood has been published in German bee journals. Mr. J. Bollinger has found Reflorit the best cure. A few doses of the medication effected a cure of badly affected hives. Reflorit is more than three times as strong as carbolic acid, scentless, and very penetrating.

Import of honey into Germany, 1909:—Cuba, 3,010,000 lbs.; Mexico, 810,000

lbs.; Domingo and Hatti, 63,000 lbs.; Jamaica, 440,000 lbs.; Chili and Peru, 1,260,000 lbs.; California and North America, 225,000 lbs.; Brazil, 250,000 lbs.; Hawaai, 250,000 lbs.; Italy, 72,000 lbs.; France, 240,000 lbs.;

The time may not be so far distant when beekeepers of the various States will shake hands and join in one concern for the benefit of the industry. Much good could arise therefrom, and I have had in my mind for some considerable time. Australia is federated; therefore, it behoves us to be likewise. What hinders it? Distance? Hardly. The Commonwealth and N. S. W. Beekeepers' Union has inaugurated a system by which distance makes no difference in the voice of government of the Union.

Splendid bee-weather prevails, and indicates an early spring.

THE EDITOR.

The New South Wales & Commonwealth Beekeepers' Union.

EXECUTIVE MEETING.

The Hon. Sec., Mr. J. Rae, Eastwood, convened a meeting for the 22nd inst. Present—W. Abram, J. Rae, J. J. Branch and J. J. Parry. Mr. H. Lord came just before the meeting opened, apologising for his inability to remain, and was excused.

Minutes of last meeting were read and confirmed.

The President then made a personal explanation to the effect that owing to bad health he was unable to attend to the matters desired of him, as expressed at the meeting on the 29th of June.

Now Parliament is in recess, and members are busy at work re next election. Beekeepers might individually point out their grievances to them, so they will remember it when next in the House, and something appertaining to beekeeping

arises.

Of the correspondence, a letter from Mr. Benson, Aberdeen, published elsewhere, elicited considerable interest, and Mr. Branch stated a case of his own experience how his bees, at Enmore, had contracted foul brood. Some time ago he noticed his bees busy bringing in honey, though he could not discover where it came from; but lately they seemed to become inactive, so he opened them, and to his great surprise found foul brood in most of the brood cells. The bees evidently robbed some diseased lot, and thus contracted the disease themselves. This shows that some action must be taken to protect beekeepers against contagious or infectious disease. All other industry branches of agriculture, etc., have that protection—beekeepers have none. They themselves cannot make inspection of hives and registration compulsory.

The President stated that he had at once replied to Mr. Benson and advised him to put the matter into the hands of the police.

The Secretary divulged a scheme which ought to gain for beekeepers considerably more than the 5/- subscription. He suggests that the Executive arrange with some firms dealing in bee goods to obtain a reduction on all bee goods ordered by members of the Union, so long as members order through the Secretary. Also to ask concessions from honey-tin makers, and from reknown firms selling honey on commission. These items will convince beekeepers that they can save money by becoming members. Gradually further steps may be taken to advance the matter.

Another meeting will be held as soon as he Secretary has the replies, when members will be informed. The Hon. Secretary is heart and soul in bees, and he means business. He expressed the hope that before the year expires there will be fifty new members on the list.

Beekeepers ! The Executive do their level best for you. If you neglect your present opportunity—whose fault is it ?

CORRESPONDENCE.

Aberdeen.

Mr. Abram.

Dear Sir,—Kindly send me your price list for bees, etc., as I have to start off scratch again, as some kind "friend" poisoned my 20 hives on Friday night. On Saturday I went to have a look at them and found them all dead. When I lifted the cover the smell of Collinson's Ant-killer was very pronounced, and on the frames I noticed stains, as if it had been poured on the frames. 3 or 4 frames in every hive were stained. When I lifted off the cover I thought it came off easy, because at this time of the year the bees have the covers glued with propolis, and they are hard to open without the use of a hive tool. When I took another cover off it was just as easy. So I tried the rest and they all came off quite easy. I also noticed a few drops of a brownish liquid, which smelt like the ant-killer, in the rabbits near where the stains were. The bees were just the same as usual, not swollen or out of shape in any way. Some had their heads in the cells as if they had been disturbed. The brood was all dead, but it all was quite healthy. Some of the bees were half out of the cells, and I examined several of them, but could find no trace of anything. I showed them to two beekeepers here, and they said the brood was as healthy as anyone could wish for, and were surprised to see the hives so strong at this time of the year.

This morning, when I was carrying the hives in the honey house, my sister noticed the same smell as the ant-killer has, and she always mixes it up when any ants are troublesome, so should know the smell.

Do you think the honey would be good for anything, as I am extracting it because it would candy in the frames?

Do you think the Union could do anything, so as everybody buying poison for insects, etc., would have to sign for it?

Yours faithfully,

R. BENSON.

* * * *

Airly.

Dear Sir,—Yours of the 5th to hand. I am more disappointed than ever to think you were waiting and I not to know you. I remember seeing 3 or 4 men standing near the door. I did not think they were the bee-men, as I expected to see 20 or 30 at least.

I do not know any of the men whose names are on the list, but know some others whose names are not on the list in the Bathurst district. I will send you their names and post town address. It would be to their advantage to join the Union. As the Turon River and Wattle Flat Goldfield reserves are just about to be cut up for grazing, now is their time to take action, as the bee industry will be a thing of the past in that part.

In regard to the Annual Report, I must say I think you have done very well indeed for the first year. You have had very little or no help from country members. I am afraid they will call out when their opportunity has gone by.

Wishing the Executive every success in their second year's office,

Yours truly,

T. MOW.

P.S.—Many thanks for jam recipe. It will be very useful.—A.M.

[A list of twenty beekeepers was given by Mr. Mow, to each of whom the Annual Report or a request to join the Union was sent. Many thanks for good intentions.—ED.]

When you want Honey Labels send for Samples to the "Bee Bulletin" Office.

Attunga,

4th July, 1910.

Mr. W. Abram.

Dear Sir,—Enclosed is 5/-, subscription fee to the Beekeepers' Union; also names of a few beekeepers that may join it. As to voting, I am quite in the dark as to whom I prefer, or who is desirous of the various offices, and refrain from voting on that account. I will write a longer letter later on.

Yours Faithfully,

JAMES BROGAN.

[Thank you for names submitted. The longer letter, however, has not yet come.—ED.]

* * * *

Windeyer,

July 30th, 1910.

Mr. W. Abram.

Dear Sir,—Please find postal note for 5/-, member's subscription to Beekeepers' Union. I hope you will pardon me for being so long-winded.

We are having a lovely winter here this year. Not very cold, and the bees, so far are in good order. I am looking forward to a good honey season, and hope you and all other beekeepers will have the same.

Yours faithfully,

E. S. TOMPSON.

SOMETHING ABOUT BUMBLE BEES

What Becomes of Bumble Bees in the Autumn?

I think I can answer the question satisfactorily, as I have had some opportunity to observe the habits and natural history of that interesting and useful member of the insect world. Some years ago I had a nest of bumble-bees under observation a whole season. In my back lot, among the apple trees, I discovered a large queen or mother bumble-bee making her nest in a bunch of dead

grass. I got a box that had been used for a cap on an old box-hive, having a hole in one side of it, and this I placed over the nest for its protection, and carefully observed the development of the infant colony. The mother bee gathered a ball of pollen-mixed honey, the ball being about the size of a large hazel-nut, and laid an egg in it. That done, she proceeded to form another ball, and so on until she had quite a cluster. When the eggs hatched the larvae fed on the pollen and honey until they were fully developed as larvae, when they spun their cocoons and in due time emerged as full-grown bumble-bees.

But these bumble-bees were workers. They were not much more than half the size of their mother, and were, like the worker bees in our hives, imperfectly developed and barren females. As soon as they were old enough they began to make balls of honey and pollen, and then the population of the colony increased more rapidly, and the mother bee probably ceased entirely to gather pollen and honey, leaving that work to her children.

Later in the season larger balls were made, and the eggs laid in these developed into perfect females, or queens, and into drones, about the size of queens—a little longer, perhaps, a little more slender and somewhat lighter in colour. But a practised eye will readily distinguish them. Like the drones of the honey-bee, they are stingless.

As with the honey-bees, the mating of the queens and drones takes place away from the nest. I used to see drones sitting on the outside of my bumble-bee hive watching for the young queens to come out, and as soon as a queen would come out and take wing a drone would give chase. But I could never witness the mating.

The drone bumble-bee is not helpless like his cousin of the beehive, for he can help himself to the nectar of the flowers

as easily as his sisters do. As the cold weather comes on, and the frost kills the latest and hardest of the flowers, the drones and workers of the nest perish, nearly all, but not quite all, dying away from the nest. The perfect and recundated females seek the most secluded and protected places they can find, and hibernate until the warm sunshine of spring awakes them from their winter's nap and at the same time brings out the earliest flowers to furnish them sustenance. Of course, very many of the fecundated females perish during the winter.—Rev. M. MAHIN, D.D., in "The New Zealand Farmer."

HEAT IN ITS RELATION TO THE GRANULATION OF HONEY.

Mr. E. B. Rood, a handler of large quantities of Florida honey, in a recent number of "Gleanings," gives his view upon the liquifying effects of sunshine upon honey. His experience indicates that honey may be kept in a clear state for long periods with very little trouble. Describing his method of treatment, he says:—"I put up for the fancy grocery trade some ten or fifteen pounds of honey annually. One of my serious difficulties has been granulation. I have attempted to teach my customers that this is an evidence of its purity, and that it may be easily liquified; but few of them want granulated honey, and consequently it sells slowly.

"Noticing the statement in 'Gleanings' several years ago that continued rather than excessive heat is important in so changing the honey that it will not easily granulate again, and having a jar of my own honey, extracted in the year 1900, that stood for months above the kitchen stove, that remained clear for years, I decided to put several five-gallon cans of honey in a large wax extractor,

with the pan removed, and leave them there for some time, and then use the honey for bottling. This plan was but partially successful, for only in the hottest weather could I get the honey in the bottom of the cans hot enough so that it would not soon granulate. After this I tried square glass jars, such as I use; but after they were waxed the wax melted and ran over the jars, and made an awful mess. I then began putting the honey in the jars corked, but unwaxed. This I found very satisfactory; and with a good solar wax extractor it is possible in this climate to heat the honey to such a temperature that in a week's time it will not granulate again; even when sold I have not yet learned how long it would take to make it granulate.

"In summer I can put honey in an extractor for a day or two, and it will not granulate, if it is not too cloudy, and at such a time the temperature of the honey often rises to above 150 deg., and remains there for many hours.

"I am adopting this plan more extensively every year, and am now planning one or two sun extractors for this purpose, the floors to be terraced to keep the jars from upsetting. My extractors are home made, and covered by one large glass—the larger the better.

"So far I have not lined the boxes with tin, but think I will do so in the future, as the reflection will greatly increase the heat. It is important that the boxes be only a little deeper than the jars, so that they will come up close to the glass.

"I plan to put many jars through the extractor in the fall and have them ready for the winter trade. In the northern States it would be necessary for the bottler to do this before the cold weather; but the heat of the extractors could easily be increased by a lamp underneath, as many use them for extracting wax.

"This method seems very simple, and may be known and used by many beekeepers; but, if so, they have not written it up for the bee journals. Had I known it years ago it would have saved me much time, trouble, and expense in returning jars of honey from my customers, re-melting, re-labelling, and sending them back again."—"New Zealand Farmer."

IMPROVEMENT THROUGH RE-QUEENING.

BY LEO E. GATELY.

Reasoning from effect to cause, it will be generally found that the unnatural difference in colonies in the same apiary can be traced almost invariably to a failing queen. As the slightest deterioration of the queen throws the colony into an abnormal condition, it is impossible to estimate the actual loss incurred by allowing colonies to queen themselves.

An important factor in the economics of honey-production is the improvement of our bees through the selection of breeding queens from colonies possessing the most desirable qualities, eventually bringing the entire apiary to a higher degree of permanent productivity. The apiarist who pays scant attention to the improvement of his stock will soon find the very foundation of his business a gradually sinking. Without systematic efforts in this respect, an apiary will deteriorate slowly but surely, and the process by which it can be built up is equally tedious.

To anticipate satisfactory results from breeding it is necessary to decide what points we are to breed forward. One race of bees must be selected, and our efforts confined to that race alone. A first cross may occasionally prove superior to either race of which it is composed, but such results are seldom permanent, and are made so only by a limitless course of thoughtful selection.

If judgment is exercised in selecting colonies for drones as well as for queens, Italians can soon be so bred that they will cap their product as white and neatly as average blacks. For increased yields simply select colonies giving the highest pound average, and breed from them exclusively.

Reasoning from a false analogy, many suppose that the propensity for swarming can hardly be bred out of any race. In this instance we are endeavouring to eliminate an instinct, and greater time is required to accomplish appreciable results. We can, however, produce, without delay, bees less given to swarming than were their ancestors, by simply breeding from those that swarm least.

Honey producers should learn to rear their own queens. If you are not passionately fond of this branch of your business, rear them in spite of yourself, until it becomes a habit. Once formed, the habit will be turned into a love for queen-rearing. In the average apiary the expense of requeening is about cents per hive. It should never exceed 10 cents, and all for labour.

The expense of requeening an apiary is preponderantly overbalanced by having colonies of the same strain, and all queens of the same age. Uniformity of work is thus secured throughout the apiary, which saves an endless amount of head-work and annoying labour. In connection with a system of wintering fitted to the locality, it amounts to the elimination of spring overhauling.

With the number of colonies the honey-producer has from which to make a selection, there is little difficulty in finding a few especially adapted to cell-building. Or, we can, directly after the swarming season or harvest is ended, go through the colonies of an apiary and remove their old and debilitated queens. In four or five days we come along with a comb of larvae from the choicest colony. Remove the larvae from their two

best cells, dipping into their places those of our own selection. Then destroy all cells except the best two. Further examination of colonies receiving such treatment is unnecessary, unless we wish to see if the young queens have begun laying.—“American Bee Journal.”

DO BEES STEAL EGGS?

Laying Workers Responsible.

BY SAMUEL SIMMINS.

In “Gleanings” for Aug. 1, p. 477, a correspondent asks how eggs in queen-cell cups are to be accounted for, when it is certain there has been no queen in the hive. The editor replied, “Bees in a few cases that seem well authenticated have been known to steal an egg or two from another hive.”

Now, to be well authenticated a case of this kind must be left until a queen may be matured and hatched from those stolen (?) eggs. But this is just the result I have not yet found proved to be the ultimate act. Various writers have stated they have found eggs in queen-cups where there has been no queen in the hive, and they could explain the (to them) mysterious occurrence only by declaring the bees must have stolen the eggs from another colony.

Most beekeepers are well aware of the usual way the laying workers have of apparently depositing any number of eggs in each of many cells. This does not prove that any one worker deposits more than one egg in a cell; for where a colony encourages them at all, there may be quite a number going around and adding their quota until there may be a dozen or more eggs in a cell. I have myself removed as many as three of these worker pests at one examination, while the late Mr. Frank Cheshire was looking on, and upon dissection he found the usual condition of developed ovaries. These were South African bees.

If no more than one or quite a limited number take to this unpleasant occupation, the eggs may be deposited more regularly, often not more than one to each cell, so that it is difficult for the owner to believe he has not a queen in the hive after all.

It may be taken for a fact, that, where bees are without a queen, and more especially if there are few or no drones in the hive, any mature worker may take it upon herself to lay eggs; though, as I have sometimes found, she will deposit in the cell cups the bees have started, may be a dozen or more, and in no other cells whatever.

I have been so satisfied in my own mind that workers have neither the will nor the power to steal, and thence transpose eggs to cells in their own hive, that I have always discredited such reports, more especially as quite a number of cell cups, each supplied with an egg, may be found in a hive; and until I have positive proof that such have been known to develop as queens, I can see no other possible explanation than that laying workers are responsible.—“Gleanings.”

WHAT A BEE-WOMAN CAN DO.

Miss Wilson asked in her Department, in January, “Why can’t we have more lady beekeepers at our conventions?” A pertinent question, truly, when we consider how many men beekeepers are indebted to their wives so much for whatever success they may have attained in their business. Of course this will hold true in any business, but it seems to the writer that the fact is more apparent with beekeepers than any other class, as the more I come in contact with members of the craft the more I am impressed with the fact that an unusual number have such efficient helpers in their own homes. Indeed, we might just as pertinently ask, Why do not more lady bee-

keepers write up their experiences for the bee-papers, for it looks as if in most cases the ladies are the silent partners, as we so seldom hear from them.—“American Bee Journal.”

HONEY V. SUGAR FOR FEEDING.

Is sugar as good for feeding bees as honey? That depends. Sometimes it is not so good: sometimes better. Let it be well understood that sugar and honey are not precisely the same. There are elements in honey that are not in sugar. Authorities tell us that young bees reared on sugar will be lacking in vitality, and those beekeepers who empty all honey from the brood-chamber replacing it with sugar may unwittingly be losing heavily thereby when they think they are gaining the difference between 20 or more pounds of honey and the same weight of sugar syrup.

HONEY.—

There is a good demand for choice at 3½d. to 3¼d., but medium quality is very slow of sale at 2¾d. to 3d. per lb. Candied is worth 2¼d. to 2½d., according to quality.

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—SYDNEY—

BEES IN RELATION TO AGRICULTURE.

On Monday, February 29th, a meeting of the Farmers' Club was held at the Whitehall Rooms, Hotel Metropole, London S.W., Major P. C. Craigie, C.B., presiding. An interesting paper was read by Mr. W. Herrod, F.E.S., of Luton, showing how the usefulness of the bee in connection with Agriculture has been recognised very little by farmers in this country until recent years; and even to-day by far the greater number of our agriculturists look upon the bees in about the same light as they do wasps, i.e., winged insects with a poisonous sting, to be avoided at all costs.

In some foreign countries the bee is held in high esteem for its usefulness in the production of seeds and fruit. It is one of Nature's silent workers; and this, no doubt, is the reason that the practical agriculturist and fruit-farmer has been unable to recognise the benefit derived from these interesting creatures visiting flowers. In more than one case I have had farmers accuse me of robbing them of produce by the keeping of bees; yet a little enquiry and observation would have shown them that in visiting the flower for nectar the bee repays a thousandfold by carrying out the work of fertilization, and so causing seeds and fruit to form.

Let us study the question thoroughly. The object of plants blossoming is to produce and perfect seed, and thus to perpetuate the race. Sir. T. Millington discovered two centuries ago that before seed can be produced, pollen, such as the abundant orange coloured dust of the lily, which is born by the anthers, must be placed upon the stigma. If the pollen is of the right sort and the stigma ripe, a delicate thread, called a pollen tube, will proceed from the grain of pollen and enter into the seed, by which it becomes fertilized, and, when

ripe is capable of germination. Most flowers possess both anthers and stigmas, and thus have the two sexes within themselves, which would lead us to suppose that such a form of flower would insure the transmission of its pollen to its stigma, so that the object to its blossoming might be accomplished.

The older botanists, who thought so, were puzzled to understand the reason for the various forms of the blossoms which they found. Sprengel, who was a keen observer of Nature, pointed out towards the close of the 18th century that the structure of a large number of blossoms were contrived to prevent this simple arrangement. For many years no results followed and his observations were forgotten, but during the last 50 years experiments and carefully conducted observations by such naturalists as Hildebrand, Hermann, Muller, Delpino, and Charles Darwin have thrown new light on the whole question, and enabled them to discover the law bearing on the fertilization of flowers. We know that the structure of conspicuous flowers, generally speaking, is such as to entirely prevent, or at least impede, fertilization by their own pollen; while curious arrangements exist to secure pollen from some other plant or flower of the same species; for, generally speaking, there are but few real or apparent exceptions; while frequently the latter, upon examination, are found to be structurally adapted to cross fertilization. By this we see that the protest against continuous in-breeding applies no less to plants than to animals. But as blossoms are fixed, how is the fertilizing dust to be carried from one flower to another? For some plants the work is done by the wind, as when the catkin in the upper boughs of the willow is shaken. Countless millions of granules or pollen are found in such cases, and at the proper season are wafted by every breath of air to the

branched and hairy stigmas, which grasp it as it travels past. But most flowering plants depend on insects to bring those unions which could not take place without them. And, amongst insects, the whole family of bees are of the greatest use. Next come butterflies and moths, while flies, and even diminutive thrips do their share of the work; but it is more especially the hive bee that is the blossoms partner by carrying the fertilizing dust from one flower to another. As the visits of insects are necessary to the existence of most plants, the flower, by its attractive dress and sweet perfume, secures these visits. It is true the blossoms themselves require pollen, but the amount produced is much greater than what is required for blossom fertilization. The excess is the flesh forming food of the bee, while nectar, from which honey is derived, and which is the heat and force former, is principally produced as a reward for her services. Thus, insects and flowers are mutually dependent on each other for existence.

If the nectar is not collected it evaporates, and is wasted; if it is collected, then in all probability the flower will be fertilized, and in this way both the beekeeper and the farmer stand to gain—the former by obtaining honey which is made in the stomach of the bee from the nectar obtained, and the latter by the seed formed by fertilization of the flower.

We will now study for a few minutes the inhabitants of the hive and their work. A colony at full strength in the spring consists of three kinds of bees—one queen or mother, forty to fifty thousands and workers, and a few hundred drones. The queen is a fully developed female, and is the mother of every bee in the hive. She does no work except that of reproduction. The workers are the labourers of the hive, and the whole economy of the hive is carried out by them. The drones are the males. They do not work; their only use is the per-

petuation of the species. Each one is adapted for the work it has to carry on. We are concerned only with those organs in connection with the fertilization of flowers. The worker is the only one which collects nectar; therefore her tongue is the longest, so that it may reach to the bottom of the flowers. It is provided with a brush at the tip for the tiny particles of nectar. The body also, especially on the underside, is covered with feathery hairs, to which the pollen grains become attached, and so form a vehicle for the conveyance of pollen from one flower to another. The hind legs, also, have a pollen basket in which the surplus pollen is placed in pellets and carried home to the hive where it is stored, and eventually used for food.

We will now take some definite examples of the benefits resulting from the visitation of the flower by the bee. Firstly, the humble bee. Darwin says: "I find from experiments that humble bees are almost indispensable to the fertilization of the Heartsease (*viola tricolor*), for other bees do not visit this flower. I have also found that the visits of bees are necessary for the fertilization of some kinds of clover. For instance, 20 heads of Dutch Clover (*Trifolium repens*) yielded 2390 seeds; but 20 other heads protected from bees produced not one. Again, one hundred heads of Red Clover (*Trifolium pratense*) produced 2700 seeds, but the same number of protected heads produced not a single seed. Humble bees alone visit Red Clover as other bees cannot reach the nectar, except in some cases the second crop is visited by the hive bee. It has been suggested that moths may fertilize the Clovers; but I doubt whether they could do so in the case of the Red Clover, for their weight not being sufficient to depress the wing petals. Hence we may infer as highly probable that, if the whole genus of the humble bees became extinct or very rare in England, the Heartsease or

Red Clover would become very rare, or wholly disappear. The number of humble bees in any district depends in a great measure upon the number of field mice, which destroy their combs and nests; and Colonel Newman, who has long attended to the habits of the humble bees, believes that more than two-thirds of them are thus destroyed all over England. Now the number of mice is largely dependent, as every one knows, on the number of cats; and Colonel Newman says: 'Near villages and small towns I found the nests of humble bees more numerous than elsewhere, which I attribute to the number of cats that destroy the mice.' Hence it is quite credible that the presence of a feline animal in large numbers is a district might determine, the intervention first of mice and then of bees, the frequency of certain flowers in that district."

An experiment carried out by a friend of mine, Mr. G. Hayes, of Beeston, Notts., upon white Clover, is as follows: "One vigorous root in garden grown previous year. When it began to flower, I selected three of the most vigorous heads, just before the flowers were about to open. I supported the heads on small stakes, and put a frame of specially constructed wire work, balloon shape, over each head to give it plenty of room to develop, and over this spread some fine thin gauze, to exclude insects from above and admit light and air. I also prevented small insects such as beetles, from ascending the stalks by means of cotton wool. Each flower head had about three cubic inches of space in which to expand. On this single plant were twenty nine flower heads, and this shows it was very vigorous. The three heads protected flowered, and were the first to ripen; but there was a marked difference in the peduncles from those that were unprotected.

* * * * *

EXTRACTING DURING THE HONEY FLOWS.

Stacking up Supers vs. Extracting Frequently During the Flow.

By G. C. Greiner.

[Fortunately the number of beekeepers who extract honey before it is at all capped is growing smaller—many of the prominent producers even going so far as to do no extracting until the end of the season, stacking up the supers four and five high. The writer of this article represents the majority, probably, who, during the flow, extract all combs that are nearly capped over.—ED.]

The question which I am frequently asked, "Would you advise me to produce comb or extracted honey?" must be decided by every beekeeper according to his natural inclination and surrounding conditions. The main point that should decide the matter is our outlet or demand. If we have a ready market, and are fortunate enough to live in a locality that produces a fair grade of honey, the production of extracted honey is certainly advisable.

But, above all things, nothing but a prime article should ever be taken or sent to the market. The importance of this point is nicely brought out by Mr. Townsend in his "Two-can article," published in the "American Bee Journal" a short time ago. I fully agree with Mr. T. that a poor article will ruin our trade; but I have to differ with him on the management of producing a prime grade. My methods are so different from Mr. T.'s, with some important advantages thrown in, that a brief description of my *modus operandi* may be a help to others who are situated as I am. But before making the attempt I will make a few general remarks, lest Mr. T. and his adherents may get scared.

For years I have practiced extracting during the honey season, commencing

when my combs are capped three-quarters or over. Of course, I do not suppose that all my combs are in just that stage of progress. I may find some that are all capped, and occasionally one not quite three-quarters; but if such a one comes in rotation with the lot to be extracted, it goes into the extractor just the same.

I sell at least nine-tenths of all my crop direct to the consumer, which brings me in close contact with that class of people who actually use and test my honey; and if it did not give entire satisfaction, I would be very apt to hear about it. But, instead, I have, during the last eight or ten years, built up a honey trade, with a reputation for extra-fine honey, that any honey-producer might be proud of. In a sense, I am a professional honey-producer—that is, I depend on the product of my bees almost exclusively for my daily bread and butter, and I expect to do so as long as Providence permits. This being the case it would be very poor policy to produce an article that would spoil my own market.

Several reasons induce and compel me to extract early. First, if I should leave my honey on the hive until after the honey season, as Mr. T. advises us to do, it would be next to impossible to extract it. It would become so thick and heavy that a good portion of it would adhere to the comb and be lost as surplus. When I extracted last summer, early as it was, with now and then little patches of open honey, I had to do quite a little cranking to throw it out of the combs, and after it was out it was very slow to run out of the two-inch honey-gate of the extractor.

Second, my customers are always anxious to get some of my first honey. Whenever I am in the city during spring or early summer, my customers frequently hail me on the street: "When will you bring some of your honey to he market", or, "Haven't you any honey to sell yet?"

or, "Bring me some of your first honey you have to sell," etc. These are expressions I hear time and again. If I should wait until fall before I extracted, my customers would lose their patience and supply themselves from some other source, and I would lose my trade. As it is, a large share of my crop is sold, and the money in my pocket before Mr. T. thinks of extracting.

Third, I believe the use of one extracting-super, instead of tiering up, increases my honey crop. The constant changing and shifting of combs which is necessary with my management, seems to have an energy-producing effect on my bees. The shaking-energy-into-bees theory, which some of our friends advocate, seems to find here practically application. On the other hand, if the forces of a colony are scattered through three or four sets of extracting-combs, empty or filled, idly taking care of uselessly spread-out premises, how can they be gathering and ripening honey? They can not do as effective work as when all forces are concentrated in one super close to the brood-nest.

It may be well enough to say a few words about my appliances, and why I use them. As I am a strong advocate of perfect uniformity in every thing where possible, I use the Jumbo frame, both in brood-chamber and extracting-super. I am thereby enabled to change frames back and forth. It is sometimes very desirable to move combs of brood from the brood-chamber to the super, and at other times combs of honey in the opposite way. It is the same with the super and the brood-chamber. At a minute's notice one can be used for the other. By simply hooking or unhooking the bottom, as the case may be, one is the other whenever desirable.

Then I use to each hive one extracting-super only. I am partly compelled to do so. My physical condition, as a consequence of advanced age, prevents me

from practicing the tiering-up plan. One of my supers, when ready to raise, weighs between 75 and 80 lbs., which is more than I care to handle right along. I am, therefore, compelled to remove my crop by the single comb.

Another item that should be taken into consideration is the additional expense of getting stocked up. It would require quite an amount to furnish the necessary outfit for the season's crop if left on the hives until fall, besides the handling and taking care of so much more paraphernalia.

In brief, I manage my extracting in the following way: As soon as the season is far enough advanced to show signs of incoming honey, all better swarms are supplied with their supers. This generally takes place during fruit bloom, about the 20th or 25th of May. When the white-clover flow begins, or a little before, all the rest that promise fairly well are also supplied to make sure that all have room for storage. As the flow advances, and the strong and best-working colonies are filling up, I take from two to four of their heaviest combs and exchange for empty ones from the weaker colonies that have not started yet. The bees that adhere to these full combs, I try to shake in front of their hives; but I am not very particular if a few bees are left on the combs.

Two or three days after the first exchange was made, the inserted combs in those strong colonies are probably full again, and need exchanging a second time. When this is done, all the bees are left on the combs taken from colonies that are overly strong, and exchanged for empty ones of the weakest swarms. In this way I hit two birds with one stone—I control swarming with one lot and build up another to proper working condition.

About this time I have no more empty combs in weak colonies to draw from, nor storage for full ones over weak col-

onies. All need their empty combs for their own use, and the extractor has to be called into requisition to help out. The combs that were not exchanged, but were left in the strong colonies from the opening of the season, are now more or less capped, and have to be extracted to provide storage where needed.

With a comb-basket full of empty combs I go to the first hive that needs more room and exchange all the combs of honey, fit to be extracted, for empty ones. The full ones are taken to the honey-house, and exchanged as before. In that way all crowded supers are relieved of their overplus.

When the comb-baskets of the extractor begin to drag in the honey, the latter is drawn off and emptied into tanks. No strainer is used at any time. It is not necessary with my management.

The next round, two or three days later, brings the whole yard to that state of perfection which I consider ideal in every respect. Every super has sufficient storage to accommodate the incoming nectar, which controls swarming; and every super, with, perhaps, the exception of a very few of the weakest that have not caught up yet, has honey ready for the extractor, and that enables me to extract whenever I desire to do so.

In the honey-house, conditions are as favorable for the progress of my work as they are outdoors. By the time my tanks are full, or nearly full, the first one has clarified itself and is ready to be drawn off into retail packages. Thus I always have storage for the honey from the extractor, and honey ready to be canned.

During the rush of the honey-flow I make it a point to extract daily, but only during the middle of warmest part of the day. Mornings and evenings I spend my otherwise leisure hours canning. Cleaning, labelling, and filling cans keeps me busy. It takes me about three days to make the circuit; and when the

flow is at its best I can begin again at one end when I am done at the other.

In giving the foregoing outline of producing extracted honey, as I practice it, I am well aware that the same management would not suit everybody, nor could it be followed by everybody else; but it is the plan that is best adopted to my own conditions, and I can say I have been quite successful in the past.—"Gleanings."

FURTHER DISCOVERIES IN BEE DISEASES.

Warning to New Zealand Beekeepers.

The necessity for exercising the strictest precautions in the matter of importing bees, lest we import diseases with them that are not yet in the Dominion, is becoming more evident every day. I have, in these columns, from time to time strenuously advocated official supervision over all imported bees by the Department of Agriculture, but in the light of further knowledge I go beyond this and earnestly suggest that no hive bees enter the Dominion from outside under any conditions whatever.

Every season queens with their accompanying bees are imported from America and Australia, two countries in which more virulent bee diseases exist than art yet known in New Zealand, and though some of the queens and bees may be dead on arrival, the risk is just as great as though alive. The germs of disease may be there and only lying dormant, but ready to become active again as soon as they reach a suitable medium. In America the dreaded "black brood" exists, and in Australia a new disease is prevalent popularly known as "spring dwindling," which is described by experienced beekeepers as the "worst disease at present," far worse than foul brood. I have

already (in the November issue of this journal) gone fully into the matter of "black brood," and I shall now give particulars of the new disease which is causing such disastrous effects at the present time in Australia.

Some two or three seasons ago two or three apiarists in Victoria noticed for the first time a sudden and rapid dwindling in strength of some of their colonies. So rapid was the loss that in two or three days strong colonies were reduced to vanishing point, and hundreds have since succumbed in what was an unaccountable manner. All sorts of theories were put forward in explanation, but the one that seemed most feasible, and generally accepted, was a dearth of pollen—the want of sufficient nitrogenous material in the food of the bees. There still existed, however, a doubt as to whether this shortness of pollen was the real cause, and until quite lately the whole matter was most puzzling to those who were suffering and doing their best to counteract the evil.

I have kept close watch on this matter ever since the trouble commenced, and have been in communication with the secretary of a leading beekeepers' association in Victoria, who has himself suffered from the scourge. In a recent letter to me he gives some interesting particulars. Quoting from it he starts off by saying that the "spring dwindle" is worse than all other known bee diseases combined, destroying whole apiaries in so short a time as a fortnight or three weeks.

In describing his experience he says: "Early in September last I heard of heavy losses in other apiaries. I was congratulating myself upon being more fortunate as my bees were breeding up nicely, but in the last week in that month there came a change, my colonies seemed to be growing rapidly

weaker, although there was plenty of brood emerging. The combs were moist and sticky, there were no dead bees about the hives that I saw then, but in keeping a closer watch I discovered some bees struggling amongst the grass as though in great pain, and would eventually roll over and die in convulsions. My colonies rapidly dwindled down till there were only a few bees and a queen left in each hive, and these either swarmed out or perished during the cold nights."

My correspondent saved some of his colonies by shifting them to a new location some five miles distant, but he is in doubt as to whether it was the removal or not that saved them. Be that as it may, there can be little doubt that the trouble was caused by a most virulent disease, the same as is prevalent in other parts of Australia, and from all that is known up to the present time the symptoms point to its being caused by a germ lately discovered by Dr. Zander of Germany and named by him *Nosema Apis*.

Mr. Percy Wilkinson, Commonwealth Analyst, and Mr. O. Willgerodt, of the Commonwealth Customs Laboratory, have each been investigating the trouble independent of the other, and the results of their investigations 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.

It is now believed that the "Isle of Wight diseases," that killed nearly every bee on that island was due to that germ *Nosema Apis*, which is closely related to *Nosema Bombycis*, which caused the disease among silkworms known as "Pebrine," and which cost the French silk industry up to 1867 more than £40,000,000.

SYMPTOMS AND REMEDY.

The disease produced by the germ, *Nosema Apis*, is referred to by Dr. Zan-

der as "malignant and contagious dysentery," and is altogether difficult to the dysentery resulting from poor food, etc., which in comparison is a harmless disease:—The *Nosema Apis* is a parasite which lives in the middle portion of the bee's intestines, devouring and destroying the tissues. If a spore finds its way into the bee's intestines its shell bursts and the little animal parasite comes forth. It fastens itself to the wall of the intestine, living thereon, and multiplying with astonishing rapidity, entirely consuming and destroying said wall. In four days its work is accomplished, and it again enters into the spore state."

Bees from infected hives may be seen to fall to the ground near the hive in large numbers and soon die, and the ground may be thickly covered by dying bees. The ultimate fate of infected colonies is complete destruction, as the queen also becomes infected and perishes with the rest. Fortunately there is an easy way of diagnosing the disease caused by this parasite.

"A healthy bee's intestine is semi-transparent and flesh coloured; that of an affected or diseased bee becomes and remains milky white and opaque. The discolouration or change is a sure sign of the disease, and may be observed without the assistance of a microscope."

Dr. Zander in his method of treatment, lays special stress upon the following measures to counteract the spread of this disease. (1) Colonies only slightly affected may recover if the queen remains healthy, and a good natural result takes place. (2) The combs contaminated by the excreta of the affected bees are the main cause of the spread of the disease. It is recommended to transfer infected colonies into clean hives fitted with comb foundation. When opportunity occurs give a sound healthy queen in place of the old one as the queens of infected colonies frequently die the following winter.

The infected hives must be thoroughly cleaned with a solution of carbonate of soda in hot water.

The renewal of the combs forms the basis for successfully combating all bee diseases.—BEEKEEPER, in "New Zealand Farmer."

Working for Increase—and Some Honey.

By S. P. Taylor.

I shall make my increase first—about 150 colonies, so that is about all that my cellar will hold. After the increase is made, future operations will depend entirely upon the season. I shall have in readiness an upper story for each colony, the frames being wired and filled with medium brood foundation. If the honey flow continues, so often as I find a colony strong enough I shall put on an upper story, raising half of the combs from the lower story, thus the two stories will contain both combs of brood and honey and sheets of foundation, placed alternately. At the close of the honey flow, I shall confine the queen to the lower story by means of an excluder. At my convenience, later in the season, after the brood in the upper stories has all hatched, I shall remove the upper stories. I shall sort out and save two full combs of honey for each colony. This honey will be kept over until next spring to use in supplying any colonies that may be short of stores. For early feeding nothing equals a full comb of honey. If there has ever been a time when I have taken solid comfort, derived downright satisfaction from an act, it was this spring when, in looking over my colonies, I found one short of stores, and simply hung in two solid combs of honey and said "There, that ends that."

Whatever honey is left after saving out these spare combs will be extracted. Any colonies found short of stores will

be fed. With me, the work of doing this is no more than would be that of sorting over the combs and putting in those heavy with honey, while the sugar syrup is cheaper and really superior as a winter food.

Delayed Fertilization and Laying Workers.

A beekeeper reported in *Praktischer Wegweiser* a case in which a virgin began work as a drone-layer, and then when 6 weeks old began laying worker-eggs. From this he concluded that after she failed to be fertilized promptly she began laying drone-eggs, and after laying thus for a time she was then fertilized. Herr Dobbratz explains that a wrong conclusion was drawn from the facts. Under special circumstances fertilization may be long delayed. He has known cases in which virgins were still capable of fertilization when 6 weeks old. Only in the rarest cases will a virgin become a drone-layer under that age. If within his time one finds drone-brood present, and then later—say at the end of the 6 weeks—the queen turns out to be laying worker-eggs all right, it is a clear case that the drone-eggs were not laid by the queen. He and others have had cases in which workers laid eggs while a virgin or a queen-cell was present, and these laying-workers continued until the queen was fertilized and began laying.

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SPRING FEEDING.**Stimulation Usually Detrimental Because
of Cold Weather that is Likely
to Follow.**

By Leon C. Wheeler.

The advent of spring brings up again the mooted question of spring feeding. A few years ago, before I had tried it extensively. I was an enthusiastic believer in stimulative spring feeding; but as I began to make use of it in a general way I soon made up my mind it is largely a question of locality whether it would be a success or failure, and that in my locality the latter was the case.

When it was apparently settled warm weather I introduced my feeders and began feeding warm syrup, about half a pint daily. In a short time I could see quite a perceptible increase in the brood-rearing, and each hive contained all the brood the bees could cover, and I patted myself on the back. Conditions around the hive seemed to be about the same as during a light honey-flow; and as I watched their rapid up-building my enthusiasm for the system waxed high.

But my enthusiasm was destined to be short-lived, for there soon came a miserable cold spell of weather; and the bees, attempting to cover all the brood, lost down to a smaller amount than they would have had had there been no stimulation. When the cold spell was over, the dead brood was all dragged out unceremoniously by the bees, and deposited in front of the hives. Somehow as I examined those piles of dead brood my hopes of a bountiful harvest, which had been running high, suddenly dropped to zero. My enthusiasm for the system of spring feeding gradually oozed out. I was not entirely discouraged, however, but went on with the feeding until the beginning of the honey-flow. This honey-flow found the bees in as poor condition to gather it

as any season since I have been in the business.

I have since tried it to a limited extent on a few colonies, beginning late in the season; and, while I have never had quite as bad luck since, still I have never been able to see that the colonies so fed showed any perceptible gain over those given sealed stores, if, indeed, they did as will. The last two or three years I have made a practice of saving a lot of combs filled with honey gathered from the late fall flowers. This honey is not fit to use for winter stores, neither is it of any account to extract for sale; but for spring feeding it is excellent. Much of it is gathered so late that the bees do not cap it over, and will, for this reason, make use of it much more readily when set in their hives in the spring. As soon as the weather will permit, all colonies are examined and supplied with these frames of honey, each colony being given sufficient to last it until the honey-flow. Since using this method I have never experienced any difficulty in getting my bees in prime condition for the flow. Even colonies appearing to be very weak when opened up in the spring will usually, if given plenty of stores, be ready for the flow when it comes. If a few colonies do not appear to be building up fast enough to be in condition at that time I begin about two weeks before the flow, exchanging hatching brood from some of the overstrong colonies for eggs and unsealed larvae from the weak colonies. This brings them to the required standard, and also helps to prevent the larger colonies from getting too crowded before the season.

Many writers have made the claim that a frame or frames of sealed stores would act as a sort of division-board in the hive, and that brood-rearing would be carried up to them and stopped. Now, this has never been the case with me; and, in fact, it very often happens that the best colonies I have are those which come out in

the spring with a hive crammed full of sealed stores.

As I said at the beginning of this article, I believe that locality plays an important part in this discussion, and I can readily believe that, in a locality similar to that of the late E. W. Alexander, for instance, or in any other place where the main flow comes on after a long spell of settled weather, stimulative feeding can be carried on with profit to the apiarist.

But where one is liable to have cold raw spells of weather, and even snowstorms, sometimes right up to the beginning of the honey-flow, the system is worse than useless.—“Gleanings.”

SPRING CLEANING.

A Handy Device for Holding the Frames While They are being Scraped.

By Sidney S. Stabler.

It may be worth while for beekeepers who make it their duty to scrape all brood-frames each spring to have one of these little “frame horses.” They are just as big a help in scraping frames as the “wood-horse” is in sawing wood, and perhaps more, because the wood does not mind jarring as the bees do.

The construction is so simple that almost any beekeeper can make one in a short time. Perhaps the best lumber to use is 1 x 3-inch poplar or oak for the legs and braces, and just a thin strip of pine for the top-bar.

In using it I have a stool or box to sit on, and a hive-tool in my right hand and the horse in front of me. I sit at the back of the hive and take a comb from the hive and place it on the horse. I hold the top bar with the left hand and scrape with the hive-tool in the right hand. Before I had this device I used to scrape over a box, but I like the horse much better. It will be noted that there is not much chance for bees to get mashed, as all

the edges are purposely made sharp to prevent large points of contact.

With it we scraped all the frames from 20 colonies last spring, and intend to do the same this spring. We do not know how many beekeepers make a practice of “spring cleaning” of frames; but we do know that too much of it can not be done, and that it can be much easily done with some such device as this.—“Gleanings.”

A JAPANESE BEE-PAPER.

If Japanese beekeepers do things wrong side foremost, as their bee-journal is printed, it must be a confusing business. This office is in receipt of “The Friend of Beekeepers,” now in its second volume. Besides the name, there is an advertisement of queens in English, the rest being in hieroglyphics worse than Greek. A picture of Langstroth occupies a full page, and he appears to be in the English language. The last page is the first, the lines on the page run from top to bottom instead of from left to right, and even the numbers seem to be wrong end to, for 10 is written 01. Yet doubtless honey tastes just as sweet in Japanese as in plain English.

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Conversations With Doolittle.**EMPTY COMBS AS FEEDERS.**

"It is only an occasional season that it seems to pay me to feed. I live where basswood is about the only surplus I can count on; and after apple-bloom there is little the bees can get between; and when they fail to secure enough to keep brood-rearing prosperous through June I believe it pays to feed. I did not want to go to the expense of buying feeders, so I thought I would fill a lot of empty combs I have with syrup; but on trying to do so I failed to get much into the cells. Can you tell me how it is done?"

"If you lay an empty comb flat and pour liquid on it, instead of the liquid running into the cells, as you would think it would do, it simply stays on the surface or runs off at the sides, very little entering any of the cells. But should you hold the liquid three or four feet above the comb you will succeed better than by pouring it on in the most natural way, with the vessel containing it near the comb. But even at the height of four feet, if a portion of the syrup falls in a compact mass it will not enter the cells, as it can do this only by forcing the air out. Where the syrup presses with equal force over all parts of the mouth of any one cell there is no chance for the air to get out, and the cell remains empty. The drop or stream of syrup must be smaller than the inside of the cell in order to enter it readily, therefore the smaller the drops we can have, the better our success. To this end, if we take, instead of a dipper, the watering-pot we use in the garden during a drouth, fill it with syrup, and hold it up from the combs three or four feet we shall be able to fill most of the cells as we desire. Syrup as thick as we often want to use for feeding will not readily pass through the rose of a watering-pot unless hot; and if hot enough so it becomes thin it will melt the combs so as to destroy

our feeders. But we can use "one-to-two" syrup as warm as 110 degrees without danger to the combs, and this will be just the right heat to be comfortable to work with.

If you do not have more than ten or fifteen combs to fill, lay one of these flat down in the bottom of a large dish-pan or wash-boiler. Hold the watering-pot filled with 110-degree syrup, a few feet above the comb, trembling the rose a little as you pour, so that not all strikes in the same place. As soon as one side is filled, turn the comb over and fill the other side in the same way. In this way keep on till your combs are all filled. If syrup accumulates in the bottom of the boiler, pour it back into the watering-pot, being careful that you do not spill any outside the dishes you are using, and thus make a muss sufficient to make you wish you had procured feeders different from frames of comb."

"But these combs, when filled, make feeding easy by setting them in colonies lacking stores, do they not?"

"Yes. I have thousands of such, and consider this the very best way to feed unless I can have frames of sealed honey to set in, instead of these frames filled with syrup."

"But how about the drip?"

"By setting empty hives over a wash-tub, and hanging the frames in these as fast as filled, the tub will catch all drip so it can be saved."

"But I wish to use several hundred of these combs of syrup. I judge the watering pot is too slow for so many."

"Years ago I used a tin pan the size of one of my frames, and four inches deep. In the bottom of this I punched holes (from the inside) about the size of those in a rose used for garden-watering. There were in rows $\frac{3}{4}$ inch apart, and the holes $\frac{1}{2}$ inch apart in the rows. This dish was set on two strips which were fastened to the top of a bench so that the dish rested on them at each side,

and came out over the floor below, sufficiently so that a large wash-tub could be set underneath. On the bench, a honey-extractor can be installed, so that the gate was over this pan, punched full of holes as I have described. This can, minus the extractor-reel, was filled with syrup of proper temperature, a wire-cloth herb-strainer being fastened to the faucet, so that the holes in the pan would not be clogged by any foreign substance which might get into the syrup. Some sheets of tin were fastened on a trough made of boards set on a little incline, the lower end of which came so that all drip would run into the wash-tub, and over this trough were set hives to take the frames of comb near the bottom of the tub. The assistant opened the faucet just enough so that the syrup would run from each hole in the dish, when, by moving the frame about a little from side to side, the cells were all filled instantly, the frame turned over, and the other side filled as quickly. The assistant then handed me another empty comb, taking the filled one and hanging it in one of the hives standing on the trough, carrying it along over the trough and hives so no drip would get on the floor. In this way I would have the frames filled as fast as he could hand them to me, and put the filled ones in the hives, often filling over 100 an hour. The drip, and whatever fell into the tub, was emptied into the extractor-can as often as necessary, the strainer catching all particles of comb or dirt that accumulated, so that with this and the necessary feed the can was kept full as long as we had empty combs; the cost of all feeders saved, and the feed put right in the hive among the bees just where I wished it, with no danger of robbing in times of the greatest nectar famine by setting in these filled combs in the twilight."

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Selling the Honey Crop to the Best Advantage.

"Did you ever stop to think that you spend all of your season producing your crop of honey, and then sell it in about fifteen minutes?" I came across the foregoing sentence in a circular just sent out by the energetic, enterprising secretary of our Michigan, State Bee Keepers' Association. It is true that we bend every energy to the successful wintering of our bees; we make chaff hives, or protect the bees with some kind of packing, or we put them in the cellar and then watch the temperature as a mother watches her sleeping child; we feed the bees in the spring if they need it; we coax them into the supers by means of "bait" sections; we life and sweat and suffer stings; and, finally, crate up our beautiful product with loving care; and then, as Bro. Tyrrell says, some of us sell it in about fifteen minutes.

The difference exhibited by some producers in disposing of their crop is certainly exasperating. We can't all peddle our honey; we can't all sell it to retailers; we can't all build up a mail order trade; some of us must sell to wholesale dealers, or consign to commission men; but, in any case, there is no excuse for the lack of interest, the indifference, the "I'll-take-whatever-you'll-give-me" spirit.

In other lines of business, production is looked upon as only one-half the problem. Selling-plans are studied over, worked out, prosecuted, and regarded as of as much importance as those of production. For each beekeeper there is some particular plan of selling honey that is best for him. It is quite likely that many men are now following the plan that is best for them; but it is equally evident that thousands of men are not; men who might materially increase the revenue from their crops of honey by some change

in their plan of selling; or by giving more care and thought to the plan already employed. The majority of beekeepers are good producers. That end of the business has been studied from every possible point; but the selling-end has been shamefully neglected. As already remarked, not every producer can become to a successful retail salesman. A man might possess the necessary, personal requisites, but other circumstances might not favour the plan. A Western beekeeper who produces comb honey by the car load says that the most profitable plan for him is to sell his honey all in a lump, and then turn his undivided attention to the production of another crop. This is undoubtedly true; but I notice that he always gets the highest, wholesale market price. He investigates, studies the markets, crop reports, etc., and no buyer gets his crop for less than its value. Right in this line it is safe to admit that men who are now retailing their honey might find it much more profitable to increase their production until it reaches the car load stage, abandon the retail trade, and turn their whole attention to production. In short, selling should be only a part of a plan that is the most perfect for some particular man and his environments.

What I am pleading for is the proper recognition of the importance of the selling-factor. Let each man most thoroughly study himself and his surroundings. The wholesaler may find it to his advantage to develop a trade among retailers, and the man who sells to retailers may find it to his profit to retail his crop to actual consumers. Of late, many producers have developed a mail order trade that is very profitable and satisfactory. And so it goes. The great difficulty is the heedless, thoughtless, manner in which so many honey producers keep on selling their honey, year after year, in the same old way, with no

thought as to whether this plan is best for them or not. Right here let me give an illustration: Last winter I visited a beekeeper who each year produces from 10,000 to 20,000 pounds of extracted honey. About half of his crop is white honey, and other half is dark. There was no difficulty in selling his white honey at wholesale for a good price, but it always hurt his feelings a little to let the dark honey go at such low prices as he was offered. Finally he tried putting up some of the dark honey in pails of such a size that he could sell one for a dollar, and realise about eight cents a pound for the honey. He loaded up his cutter with these pails of honey and started out among the farmers, where a surprise awaited him. It seemed as though those farmers were just waiting for him to come along and offer them the honey. Then he tried going into a small village, where he found he could sell the pails of honey almost as fast as he could hand them out. It was not unusual for him to sell several dozens of pails in a day. The honey was all gone before he scarcely knew it. This may be an exceptional case, but it shows what can be done. The most important point, the beginning, the foundation, of this profitable change in marketing, was to think of it. That is what I am writing this editorial for, to set my readers to thinking upon this all-important subject.

Perhaps I ought not to criticize too severely, as market conditions are vastly superior to what they were years ago, and are continually improving. I can remember when about the only way to sell honey was to consign it, and then wait weeks, perhaps months, for it to be sold. Extracted honey was practically a drug in the market. Now, salable honey can be sold for spot cash any day in the year. Co-operation has helped wonderfully in a few localities by securing lower

freight rates and higher prices. Unity of action in regard to prices in a certain state or territory helps greatly in holding up prices. White extracted honey may be worth ten cents put up in 60-pound cans, but, if a few beekeepers are offering it at eight cents, it is difficult to hold the price up where it ought to be. The Ontario, Canada, beekeepers have taken a step in the right direction towards securing uniformity of prices. They have a committee whose duty is that of gathering crop statistics, studying market conditions, and deciding upon what is considered a fair price for the different grades of honey. This scale of prices is not binding upon any one, but it furnishes a basis upon which to establish prices. The buyer says "What do you ask for your honey?" Often, I might say, usually the ordinary beekeeper doesn't really know how much he ought to ask for his honey, but how easy for him now to say "The honey committee decided that we ought to have ten cents for our white extracted honey." This plan helps to give confidence to the buyer, as he feels that some competitor will not be likely to buy much, if any, honey at a lower price than that set by the committee. At our last Michigan, State Beekeepers convention, it was voted that the executive committee should meet early in the fall, take into consideration the production of honey for the season, the conditions of the markets, and then advise each member as to what, in their opinion, would be a fair price for their honey.

The quality of the honey, and the manner in which it is put up, while not coming under the head of marketing, have a wonderful bearing upon its sale. If beekeepers could only see the dealer's end of the marketing problem it would open their eyes. Some of them would understand why their honey was of slow sale at a low price. I think there are

few beekeepers whose methods of preparing their honey for market would not be improved by working one season in some house that deals largely in honey.

Returning again to the marketing question, the time was when low prices were laid to the beekeeper, all rushing their honey into the city markets at once, at the close of the season, thus causing a glut, and the bee journals all united in advising the holding back of the crops until the rush was over. It is possible that such a condition did obtain years ago, but it is far from being true at the present time. As a rule, the man who "gets left" now is the one who holds his honey until after the holidays. Of course, prices may go up or down as the season advances, and it is difficult to always sell at the time of highest prices, but I think Mr. Facey of Minnesota, gives the best advice on that subject. He says that when the price is above normal, and going higher, sell. It is below normal, and falling, hold on. The theory is that prices tend towards the normal. If unusually high, they are likely to drop; if too low, they will come up again.

Last year there was a short crop of honey, and I see, by looking over the reports, that the markets are practically bare of honey; with prices pretty well up. The first honey on the market will probably meet with ready sale at a good price. Perhaps prices can't be raised this year, but I certainly think that they ought to be maintained, considering the high prices at which other commodities are sold. Of course, the size of the crop that is harvested will have a great bearing upon prices. Virgil Weaver prognosticates a big crop this year from clover, and I'm inclined to his belief, but the extent of the Western crops will also have an influence. Certain it is that the man who puts his crop on the market early this year will not make a big mistake.—"Beekeepers' Review."

TREATING FOUL BROOD IN A HONEY DEARTH.

Boiling Hives more Effective than Steaming.

By P. C. Chadwick.

In the East I never had foul brood; and when I met it face to face in this country I was somewhat nervous as to my ability to cope with it. However, as I was associated with Mr. J. K. Williamson my fears were soon over, he being a very careful observer. This article is largely due to his headwork.

In the spring of 1903 Mr. Williamson had his bees rented to two parties, one of whom, I am sorry to say, was not as careful with the disease as might be after having been warned of the possible existence of foul brood. The result was, in the spring of 1904 the disease had been spread by the interchanging of combs to such an extent that it was difficult to deal with it. The season was very dry, with no honey-flow; and with the usual tendency in such cases for bees to rob, it would have been absolutely ridiculous to have put these diseased colonies on foundation, as it would have meant starvation. We just watched them closely, and if any showed signs of being overcome by disease we melted the combs, scalded the hives, and counted the colony lost save for the hive and wax.

Right here let me say that we have never had any trouble with hives used again after being properly scalded. Some of these colonies were carried over until the following spring with very little indications of trouble. Some we were compelled to melt up to save them from being robbed out, and the disease thus spread again. A few in which only a few cells appeared were "carved out"—that is, a small piece of comb was cut out around the diseased cells, and carefully destroyed; and, strange to say, most of the

carved-out colonies are still intact, with no sign of the disease having reappeared after four years.

One colony, however, that was carried over during the dry year and put repeatedly on foundation the following season, and given nearly every known treatment for cure, during the following season was finally, as a last resort, sulphured at night, and bees, frames, brood, and honey were burned, after which the hive was scalded and used again. The wax from this colony might have been saved; but so many failures make one desperate, and thus it ended.

I do not believe Mr. Scholl's way of disinfecting is equal to thorough scalding, as this method does not reach the cracks and crevices as thoroughly as scalding water; neither do I see the object in scalding frames with lye and corrosive sublimate when hot water is just as effective, in my mind, and cleaner; besides, one can then save the adhering wax.—"Gleanings."

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