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The PRACTICAL

BEE-KEEPER

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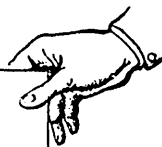
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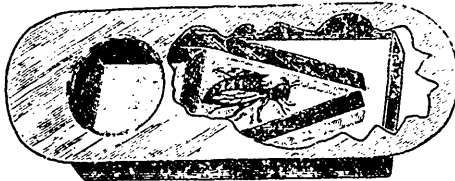
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The Practical Bee-Keeper.

VOL. 1.

TILBURY CENTRE, ONT., NOVEMBER, 1893.

No. 1.

SALUTATORY.

The advent of a new candidate for public favor in the field of bee-keeping literature necessitates a few words of explanation. Although well aware of, and under exceeding obligations to, the present apicultural journals of North America, we are of the opinion that there is room among them for our modest quarterly.

THE PRACTICAL BEE KEEPER will be devoted solely to the best interests of the bee-keepers of the country with a department intended for amateurs and beginners. Its aim will be to inculcate among the people a greater interest in apiculture, and indirectly to increase the number of apiculturists in the land.

It will be the aim of the management to conduct a journal of a high estimate, and at the same time make it as its name suggests, practical.

The months during which THE PRACTICAL BEE KEEPER will be issued—November, February, May and August—will make it particularly acceptable to its readers, and at the same time will be the best seasons for advertisers to make their announcements. Among its most salient features will be articles from successful bee-keepers of the United States and Canada, current items of interest to bee-keepers, and practical hints for beginners. Communications from our read-

ers on anything pertaining to bee culture will be gladly received, and "Answers to Correspondents" will be a column requiring our best and earliest attention. The low price of subscription should place THE PRACTICAL BEE KEEPER in the homes of all the apiculturists in Canada.

DIFFERENT KINDS OF BEE CULTURE

Bee-keeping may be practised in different ways, according to the end in view; that is to say, more or less time and capital will be devoted to the industry according to the manner in which it is considered as a distinct business or as a means of increasing an income.

It may be considered in the same light as other branches of agriculture, cattle raising, fruit growing, etc.

A raiser of fine stock will devote much more time, care and money to ensure the finest breed than the small farmer who raises cattle only for his own use. The professional gardener will take more pains to work and feed his land than he who raises but a few vegetables for his own consumption.

Cultivation of the soil is of two kinds, that which spares neither expense nor labor to produce from a given piece of ground products at once the best and the most abundant possible, and that other cultivation which works a piece of ground by the cheapest and simplest methods. Bee-keeping may be conducted in either of the above ways, with this difference, that the trouble and expense is a great deal less, and one runs

less danger of compromising his capital invested.

Those who make bee-keeping a business—that is to say, those who live from the product of their bees—can only carry on their industry with success in favorable localities in which the flora produce the finest quality of honey. All the appurtenances must be of the most improved pattern, and their bees of the finest race and adapted to the climate. They must have considerable experience, and must devote to their little charges the most painstaking and unremitting care.

The vast majority of bee-keepers, however, do not take up apiculture as the only means of making a living, but more as a side issue; to increase their incomes; as an interesting and delightful study of one of the Creator's most wonderful creations; and, perhaps, from a little of that pardonable vanity which every bee-keeper takes in the enjoyment of his own honey.

Whether the industry be considered in either of the above manners, the truth of the old adage, "the best is always the cheapest," is sure to be exemplified.

No bee-keeper can afford to be without the best modern appliances, considering their cheapness in this manufacturing age. Neither can he afford to keep poor stock, thus deteriorating from the quantity and quality of his yearly supply of honey.

Neither can he afford to leave the work all to the bees but must be prepared himself to exercise all due care for the comfort of the little creatures.

Bee-keeping, conducted on the above lines, is sure to pay, and the pleasure and instruction will enhance the value of the revenue four-fold.

ABRIDGED.

The Merits and Demerits of Wide and Deep Top Bars

MR. EDITOR: -

After congratulating you for giving birth to such a bee journal as your prospectus promises the Practical Bee-Keeper to be, I desire to briefly discuss the merits and demerits of wide and deep top-bars. I choose this subject for the double reason

that it is now agitating the minds of our practical honey producers, and further because about 18 years ago it was the one theme of my experimenting. Perhaps I cannot better impress upon the minds of your readers the extent of my experiments, than to state that I now have in my apiaries, in the Langstroth hives (which I still have bees in) several hundred top-bars of the following different dimensions, $\frac{3}{4}$ wide and one inch deep; $1\frac{1}{2}$ wide and 1 inch deep, and then the same widths with different depths varying from $\frac{1}{2}$ to 1 inch. Again, the reversible, suspended frames of which I made, sold and used several thousand, before I invented and adopted my divisible brood-chamber hive, with fixed frames, by its double top-bar, gives us $\frac{3}{4}$ depth. Results were very marked, and they are as follows: The deeper we make our top-bars the less burr-combs we have between their tops and the bottom of the cover of surplus receptacles above. But just where I differ with much that has been written as experience, but which I believe has been more of theory, is that brace combs are done away with by using close spacing between the top-bars. I found that a $\frac{3}{4}$ space between the sides of the top-bar, that is, between the top-bars, would give us less brace combs than would a greater or less space, and if I was going to change it I would have it $\frac{1}{2}$ inch rather than $\frac{1}{4}$ inch, as I would have less brace combs with that space, besides the fact that frames are easier to remove with the wider space between the top-bars. I know many will think it queer that bees should build more brace combs in a $\frac{1}{2}$ than in a $\frac{1}{4}$ inch space, but all who have ever made slated honey-boards, are very well aware of the fact that the bees put few brace combs between the slats which are $\frac{3}{4}$ apart, while those which have been moved up to a queen-excluding space, will be pluggled so full that nearly one half of the passage way is obstructed by comb. To conclude, I will say that according to experiments, a top-bar $\frac{3}{4}$ or $\frac{1}{2}$ deep and $\frac{3}{4}$ wide, is the best for the suspended frames.

I am pleased to here put myself on record, and then wait for the verdict of bee-keepers, that verdict resulting wholly from practical usage,

Yours truly,

JAMES HEDDON,
Dowagiac, Mich.

For the Practical Bee-Keeper.

PREPARING FOR WINTER.

When shall I prepare my bees for winter? is a question often asked of me, and one that is of importance to every bee-keeper. Years ago it was thought that the month of October was early enough to fix for winter, some even deleying to do so until November or December, but of late our best apiarists have learned that if the best results are to be secured in wintering, August and September are the months when the preparation for wintering should be done, so that during the cool weather of fall the inside of the hive need not be disturbed. To this end all colonies are to be looked at as soon as the harvest of white honey is over, to see that they have good queens, and that there is plenty of brood in all stages, for this brood is to produce the bees that are to live through the winter months, and if for any reason there is not plenty of brood now, it is to tell what the result will be the following spring. If any colony is found short of brood, the queen should be changed for a good one, and brood from those which have an abundance be given them so that they can build up so as to be sufficiently strong before cold weather sets in. If by any means, after all our precautions, the 1st of October finds us with weak colonies, they should now be united, for it is useless to attempt to winter very small colonies, unless we have some special place to put them, which has proven in the past to be sufficiently equal to the wintering of such colonies. Again we wish to know that all have honey enough of good quality for winter. Good quality in honey has as much to do with the safe wintering of our pets as any one thing that can be named, and he who does not pay any attention to this matter cannot expect to succeed. But what is good quality in honey? may be asked. If we look to nature for an answer, we shall find that, as a rule, the honey which a colony left undisturbed possesses is that which has been in the hive for the greater part of the season, so that it is thoroughly ripened, having that rich, smooth taste we all so much like. Now, such honey as this cannot be gotten at the last end of the seas-

on, where the extractor has been used till the last thing, as many novices persist in doing, leaving only the thin, watery stuff which comes at this time of the for the bees to live upon. In my opinion, upon the injudicious use of the extractor, is chargeable much of the loss of bees of late winters, for where we hear of large yields taken with the extractor late in the season, we almost always hear of a corresponding loss of bees by the same parties the next spring. To overcome this difficulty it is better to set aside enough combs of sealed honey the middle of the season to winter our bees, extracting all that is left in the combs taken from the bees at the time of preparing for winter, if we so desire. In this way we are sure that the bees have such honey as they ought to have to winter upon.

These things properly attended to during the months above named will secure to the practitioner results that will be above that usually obtained by the old practice, and bring a consciousness to the apiarist that should the bees die he will not have himself to blame for being negligent along these lines.

G. M. DOOLITTLE,

Borodino, N. Y.

CELLAR WINTERING, ETC.

A REASONABLE ARTICLE BY G. M. DOOLITTLE.

We had prepared an article on Cellar Wintering, but after reading the following article in *Gleanings* we decided to publish it instead:

A correspondent writes: "I desire to try cellar wintering with my bees the coming winter, as I have not been very successful in wintering on summer stands. Will it do to put the bees in a cellar where persons are going in after vegetables every day? and how is it best to arrange the bees and cellar? Please reply through the columns of *Gleanings*."

A cellar which will keep vegetables will answer very well for the bees; and the going in to it every day need not disturb wintering bees if the persons entering are cautioned about jarring them, or needlessly disturbing the hives, especially if the bees are placed so that the light from the lamp does not strike where it will shine into the hives. If the cellar is kept dark during the winter, all that is necessary to do is to hang a thick

blanket in front of the hives to dim the rays from the lamp; but if the cellar is light, a place in one corner should be partitioned off so as to make the part which is to contain the bees dark. Bees have been wintered well in cellars where the light of day was allowed to enter; but as a rule, bees winter best in a cellar into which no light from the sun ever enters while they are in it. The hives should also be up one or two feet from the cellar bottom, the bench or platform on which they stand resting on the ground, instead of being nailed to the sleeper above, otherwise the jar caused by any movement on the floor above would disturb the bees, and make them uneasy, thus causing their loss. Rats and mice should also be excluded from the cellar where bees are to be wintered; for of the two I would rather chance the jar of children playing over bees than of rats and mice running about and through the hives. Many bees are lost each year from rats and mice in cellars during the winter. The full entrance to the hive should be given where fast bottom-boards are used; and with moveable bottom-boards the same should be left on the summer stands, and the hives raised two or more inches above the bench or hives on which they rest. Where honey-boards are used, I prefer to remove them, substituting several thicknesses of old carpet, or else a chaff or sawdust cushion two or three inches thick, through which the moisture from the respiration of the bees may escape, but still keep them dry and warm. The bees should be set in about the middle of November, and taken out about the time the soft maples and elms are in bloom. Some recommended setting in later and taking out earlier; but my experience has been that the sudden changes, both in the late fall and early spring, are very damaging to bees, whether wintered in the cellar or out of doors, and it is best to avoid them where we can as well as not, as is the case in cellar wintering.

A few still recommend taking the bees out during a warm spell in winter, to give them a fly, so they can void their feces; but if they are quiet, I consider it much better to leave them undisturbed. Bees can retain their feces five months in the cellar much easier than they can three and one-half months out of doors, providing the cellar is suitable to winter bees in at all. The right temperature of a cellar to winter bees well is from 42 to 45°; but if fixed as above given, they will do very well as low as 35 to 40°. If the cellar is one where the temperature goes as low as the freezing-point, and stays there any length of time, I should prefer to leave the bees on their summer stands, unless I had some suitable means of warming it which was easily controllable; for a continued temperature at about the freezing

point, or a little below, seems to be very injurious to the bees.

UNITING BEES.

Another correspondent writes, saying: "I have some weak colonies of bees which I fear will not winter as they are. How would it do to unite two of those weak colonies together for the winter?"

This is the proper thing to do, for two weak colonies kept separate will consume nearly twice the stores which both would unite, and very likely perish before spring; while, if put together, they would winter as well as any large colony. My way of uniting such colonies is as follows: If one of the queens is known to be feeble or inferior, hunt her out and kill her, so that the best queen may survive; otherwise pay no attention to the queens, for one of them will soon be killed after uniting. Having the queen matter disposed of, go to the colonies you wish to unite, and blow smoke quite freely in at the entrance, pounding on top of the hive at the same time with the doubled up fist. When both have been treated in this way, wait a moment or two for the bees to fill themselves with honey, when one is to be put on a wheelbarrow and wheeled to where the other stands, and both opened. Now select out the combs from both hives which contain the most honey, setting them in one hive. In thus setting in, it is always best to alternate the frames, whereby the bees are so mixed up that they generally have no desire to fight, for each bee touched by another is a stranger. After the hive is filled, arrange the quilt or honey-board, and put on the cover. Next put a wide board in front of the hive, leading up to the entrance, and proceed to shake the bees of the remaining frames, taking first a frame from one hive and then one from the other, thus mixing the bees as before. After all are in, set a board up against the front of the hive, sloping over the entrance, so that the next time the bees fly they will bump against it, thus causing them to mark their location anew, so that they will not return to their old place and get lost. Also remove all relics of the old hive, so there is no homelike look about their old location to entice them back. Put the remaining combs away in some safe place for the next season's use, and the work is done.

G. M. DOOLITTLE.

Borodino, N. Y.

Some of the beekeepers in Skagit county, Washington, will take 100 pounds from each of quite a number of their colonies this season. This means \$20 per swarm, gross, which is regarded as better than 100 per cent. interest on the investment.

ADVICE TO BEGINNERS.

DANIEL STEWART.

Advice of any kind has generally to be taken "cum grano salis," or at least with something to make it palatable, and young bee-keepers may console themselves with the fact that the something palatable is generally a natural sequence of successful bee-keeping.

ADVICE No. 1—Do not go into bee-keeping under the impression that it is a lazy man's job; that all you have to do is to get the bees and they will work for nothing and board themselves. They won't do it, but will require your attention as much as your horse, pet fowls, etc.

You must cultivate a liking for these interesting little animals, and show no fear when you enter the bee-yard. It is a matter of fact that the more one is afraid of being stung the more he is stung, and vice versa. A veil, such as you can purchase from any supply dealer, is a necessity for the novice, and enables him to summon up the necessary courage. If you are stung on the hands while working it will not improve matters to use strong language and fling things round with an insane desire to get even. No, quietly remove the sting by brushing it off, or carefully placing a knife blade under it and thus pulling it out. Be careful, however, not to squeeze the part, as the venom is thus discharged into the flesh and a bad swelling ensues. If the pain is very severe a little common salt, moistened, and applied to the wound, will give relief.

ADVICE No. 2—Supply yourself with some good practical work, or works on apiculture, and one or more bee journals. THE PRACTICAL BEE-KEEPER for one. I know no better book for a novice than "The A, B, C of Bee Culture," by A. I. Root, which you can obtain from almost any dealer in bee-keeper's supplies.

So much for the theoretical. The practical part will be the harder of the two, but vastly more interesting for you. If there is an established apiarist near you it will pay you to visit him and get a few hints.

You should start your yard with about three colonies, and these Italians, as in my opinion they are easier handled than the others and equally as good, if not better, as workers. If, however, you have black bees you can give them Italian queens, which you can purchase from your dealer and introduce in the following manner: "Lay the cage—after prying off the cover under the enamel cloth or quilt, on top of the frames directly over the cluster. If the weather is cold insert the cage between the frames in the clus-

ter. In 24 or 48 hours, by means of the opening to the candy at one end, the bees will eat through the candy and be ready to accept the queen. Unless the queen appears feeble do not examine again for twenty-four hours. If she is not released and in good condition close the hive again. The bees will shortly release her. The point is, the bees should release the queen themselves. This method gives general satisfaction, but there are others equally as good, and under certain circumstances, perhaps better. I strongly recommend the dove-tailed hive, which takes the standard frame, and is simple in construction, with square joints which make it convenient to tier up. It will pay you to get the best at starting, as a poorly constructed hive will be a source of trouble later on. You will also require a smoker, as it is a difficult matter to get along without them. Again, do not run to the other extreme and instead of neglecting your bees, pester the life out of them by constant observation. Having done your part you may depend upon the bees to do theirs faithfully and well.

(To be continued.)

OF GENERAL INTEREST.

—T. C. Kelley relate in the American Bee Journal that he never loses a swarm if the sun is shining brightly at the moment of their leaving. He uses a mirror of average size to reflect the sun's rays on the spot where the bees are the most numerous. For three years a swarm commenced to settle on the top of an elm about 50 feet high. He directed the sun's rays above and the bees left the spot, descended, and bunched on a little bush about six feet from the ground. This process has been recommended for years by a German apiculturist, M. Barnack, and is always employed with success.

Daniel Stewart, of Tilbury North, will clear between \$400 and \$500 from his honey this year.

HONEY PLANTS.—

The following plants are found to yield honey in greater or less abundance. They are named in the order of their maturity. The willows of several species, the silver and red maples, the aspen poplar, the dandelion and strawberry, the blossoms of fruit trees, locust, the clovers, the raspberry, basswood and buckwheat. The last four are the most important to the apiarist. Later on in the season, the motherwort, figwort, teasel, honeysuckle, sunflowers, smart weeds and golden rods are also visited by the bees.

The Introduction of Queens

ARMAND GAÏLLE IN REVUE INTERNATIONALE.

(Translated).

Without wishing to give the following method as infallible, I can guarantee it as the easiest of all methods which have yet been proposed.

Twenty-four hours before you wish to change a queen that is too old or not sufficiently prolific for a new one, make the following preparations, at the same time choosing a fine day. Lift up from your hive (which I will designate by the letter A), the two racks of sealed brood, and place them together with the bees that cover them in an empty hive, B, while taking great care that the rack which contains the old queen remains in the hive A. The next day the greater part of the old bees will have returned to A, and the young bees remaining, finding themselves orphans, will easily accept the new queen, which you will introduce in the following manner:—Sprinkle all the racks and the bees with a solution of sweetened peppermint water: do the same with the new queen, and leave the latter on a rack loaded with bees. Then enclose the hive, B, and close up its ingress. The next day make sure that your queen has been accepted; and then, AND THEN ONLY, abolish the old queen of hive A. Twenty-four hours later reunite your two hives after the customary sprinkling of the above solution and the operation will be finished to your entire satisfaction. It may be said in passing that there is an inconvenience in using syrup in place of the sweetened water for to sprinkle bees which frequently remain in great numbers stuck together by their wings at the bottom of the hive. For this same reason the sprinkling should be done lightly, and with a weak solution.

HONEY IN SIAM.

We had honey in the comb and I remarked, by the way, that there was a large comb of honey among the things that were sent on board the steam launch for our journey to Ayutthia. I asked his majesty why it was that the bees of Siam laid up stores of honey in a country where the flowers bloom every day in the year; he frankly replied that it was a conundrum he could not answer.

DOES BEE-KEEPING PAY?

PETER BUSSEY.

The question at the head of this article may be simply and truly answered by the monosyllable, yes; that is to put the matter in its briefest form. To prove the truth of this statement, and to tell how bee-keeping may be made profitable, would require an article of considerable length. The inexperienced bee-keeper should not begin by keeping too many colonies, for bee-keeping is not run by guess work, and I would strongly advise the novice to begin with one or two hives. I would prefer to have them in old box hives and then transfer them into the best movable frame hives that can be purchased. Purchase two good Italian queens to replace the blacks, buy in the spring and make your transfer during the season of apple blossoms.

When the white clover is in bloom, place above the hive supers, filled with sections, each section provided with a starter, and as soon as the bees have nicely started to work raise them off the brood nest and put on empty supers, placing the partly filled one above the empty one, keeping this up in this order as long as the honey flow lasts, always keeping the empty section next the brood chamber, and the nearest filled on top. In order to make a success of bee-keeping the swarming fever must be kept down. The failure to do this is the cause of failure in this industry, compelling the apiarist to purchase new hives and giving them no honey for the market. In my next letter I will give you the results of my experiments in the "Prevention of Swarming." To conclude I will give a few rules for guidance which, coupled with the above, can scarcely fail in a good season to make bee-keeping profitable:

1. Keep nothing but young queens, they will lay so much better.
2. Allow little or no drone comb in your hives.
3. Keep all colonies strong.
4. Pack well in winter; dry chaff or sawdust is preferable for winter packing.
5. Put your honey up in attractive cases.
6. Grade your honey and sell accordingly.
7. Gain the confidence of consumers by fair, square dealing.

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A special discount of 10 per cent. on first \$50,000 orders, also on first \$25,000 order for Sections, received before 1st December, for January delivery. C. A. OUELLETTE.

BEE-CULTURE IN THE COUNTRY.

With the advent of a new style of propaganda in the county by means of the Beevan, the Berks Bee-keepers' Association hope their continued efforts in the extension and transmission of knowledge on the subject may be further extended to a class that they have not been able to reach by the ordinary methods, and it redounds to the credit of our County Council, who doubled the grant of previous years to enable the Association to purchase the "Van" and carry on the work amongst our rural population. That great interest is taken in the matter, the numbers who attend the lectures prove beyond a doubt. The methods by which the Association works are different from those followed in conveying instruction in some of the other subjects taught by the technical schools. If a working man decides on starting bee-keeping, the Association advises him to become a member of the Bee-keepers' Association, for which he pays 2s. 6d. per year, and for this 2s. 6d. he receives the Bee-keepers' Record monthly. This publication costs the 2s. 6d., so that the member gets the full value of his subscription back at once, and he is also entitled to receive gratis two visits per year from the expert of the Association, who looks through his hives, and gives the best practical advice on how to proceed. Then all over the county there are district advisers, bee-keepers who are old hands in the craft, who will and do give beginners the benefit of their practical experience. So that to any one who really wishes to add a few pounds to his yearly income at a small outlay, I would say as the poor curate said to the Bishop, "Keep bees!" If more hives were kept there would be a better stock of fruit, a larger crop of seed for the farmers; so that every one benefits by the extension of the industry, and I believe that there is no more profitable stock among the minor industries than bees, and no stock that can be kept at less expense and labor. If I pass a garden that has a few well-kept hives in it, I know the owner is one of the best men on the farm. This fact has been proved to me many times during the past twenty to thirty years. The Association was established with the primary idea of helping the cottager and teaching him a better system of bee-keeping than that followed by his forefathers, who smothered their bees with brimstone to secure the honey. All this is now changed by those who adopt the modern system with bar-framed hives, and the bee-keeper would

as soon think of cutting down his trees to gather his fruit as of destroying his bees to take the honey. Neither does he want his bees to swarm; what he would like for them to do would be to work straight away through the whole season, and not attempt to swarm, as strong, populous colonies of bees are those that fill the biggest supers, and store the heaviest lump of honey. The publication I mentioned before teems with information for the novice in bee-keeping—what to do and when to do it, all written in an understandable style, that he who runs may read.

Then another point of even greater importance, to many than the production of honey is the disposal of the same. There the Association steps in with a helping hand to its members, and is still opening up outlets for honey by establishing agencies for the sale of members' honey in every centre of the county, so that there is scarcely a respectable retail establishment in the county that will not shortly, if it has not already taken hold of the commodity. I know the great bar to starting cottagers in bee-keeping on modern lines is the initial expense of hive and swarm; but these same cottagers manage somehow to raise the wind to start pig-keeping. Now, comparatively, the pig costs, with its sty, trough, tub, and pail, quite as much as the useful modern hive and the swarm of bees to stock it; but, after establishing the hive, the cost of maintenance is comparatively, vastly in favour of the bees. These industrious little creatures stock their own hive, board and keep themselves, and, even in the first year, if a good honey season, furnish a surplus for the bee-keeper, whereas the pig requires constant attention, and, if food happens to be dear, he metaphorically eats his head off before he gets fat enough to kill; even with the best of luck, piggy only results in a small margin of profit to the keeper. With the same investment in bees the profits would be cumulative, as there would be the natural increase by swarming, and this increase could be sold as stock to start another bee-keeper, or the bees driven and united to the bar-frame colony, thus leaving the hive strong in bees to go into winter quarters, ensuring success the following season, and the contents of the hive appropriated by the bee-keeper, the best parts retained for consumption in the winter, the combs soaked, and the liquor made into mead (once the principal beverage of the island), while the wax can be sold to the chemist or grocer. Therefore, to the poor cottager who would like to live rent-free, I say keep bees, and, if kept intelligently, I say, without fear of contradiction, that the bees (but not piggy) will pay the rent.—W. WOOLLEY, World's End, Newbury, in "Newbury Weekly News."

LETTER FROM W. F. CLARKE.

EDITOR PRACTICAL BEEKEEPER :

SIR,—You have done me the honor of asking me to write an article for your initial number. When *The Honey Producer* was started I received a similar invitation from its editor, who is now the Editor of the *Canadian Bee Journal*. I declined, assigning as my reasons that it was undesirable to multiply bee journals, and that we should all do our best to sustain the one *Canadian Bee Journal* already in existence. My declining gave offence, and caused a grudge not forgotten or forgiven, I think, to this day. The party whom I offended by declining in the former case, can hardly object to my taking the course now which he considered I ought to have pursued then. It was concluded that I declined on personal grounds, which did not do an injustice, for I acted sincerely, trying to carry out the golden rule of doing as I would be done by. My well-intended line of action in the former case was misjudged, so I will trim my sail on the other tack this time. If the worst comes to the worst, I can only be misjudged a second time. Even being misjudged is nothing when you are used to it.

Your invitation to write an article for the *Practical Bee-Keeper* is peculiarly worded, and I propose to make that my present theme. I am asked to write "on any of the open questions of the day on Bee-keeping." Does this imply that there are some questions on bee-keeping that are not open ones? I hope not. But the fact that some of the leading bee journals of the North American Continent refuse to permit discussion on certain subjects, among them the vital question, "What is honey?" makes it very desirable that we should have a clear understanding at the outset of this point. I am an old editor, having been at the business forty years. I think I am the patriarch of apicultural editors. My principle has been to permit and contend for the fullest liberty of speech, within the bounds of courtesy. Of course an Editor must use his best discretion, and not allow any discussion to become over-done. He must try to preserve the symmetry of his journal, and

give all topics their due relative prominence. But to take the ground that any topic of interest to bee-keepers must not be discussed at all, is disgraceful in this nineteenth century. Long ago the celebrated Junius wrote, "The liberty to argue freely I prize above all other liberties." The *American Bee Journal*, *Gleanings*, and even the *Bee-keeper's Review* ("tell it not in Gath"!) entered into a compact of silence, cowardly silence, on certain topics. How long is this demon of dumbness to have possession of these distinguished journals? "I'd rather be a kitten and cry 'mew,'" than a dumb dog of an Editor, wearing a muzzle put on me by my subscribers. With this spectacle of craven subservience before us, the myth is upheld that Editors mould public opinion! That's what they should do, but as a matter of fact many Editors are but slavish mouthpieces of public opinion, daring only to say and do what they think will be popular with their subscribers.

"Is it now the burning question, in this age of vaunted light;
As to every mooted subject, 'Is it true and is it right?'"

Rather do not men and women in our much-enlightened day :

Ask on every mooted question, "IS IT SAFE AND WILL IT PAY?"

I have reason to write strongly and feelingly on this matter, for at a meeting of the Oxford Bee-keeper's Association, held at Woodstock, June 1, 1893, I was made the victim of a virulent personal attack, not by an individual but by the whole Association, which passed a resolution to the effect that my writings "are doing great injury to the industry of bee-keeping," and calling upon the proprietors of journals to "discontinue publishing anything from the pen of the said W. F. Clarke, upon the subjects of bees and honey!"

Mr. Editor, I send you this as an item for your first number, the publication of which will give you much notoriety among the bee-keepers of this continent. In view of this volcanic eruption of wrath from Oxford, perhaps you had better re-consider

your request for contributions from me, and not ask for any more in time to come.

WM. F. CLARKE.

Guelph, Oct. 20, 1893.

Mr. Clarke, in the above letter, has certainly taken a meaning from our words, "Any of the open questions in bee-keeping," that was not intended. When we used the word "open" we meant the questions that are at present of paramount importance to bee-keepers and the subject of discussion in bee-keeping journals. As to the difference of opinion and the "little unpleasantness" apparently existing between the Oxford Bee-keepers' Association in particular, and the North American bee journals in general, and our friend Clarke, we are in a state of blissful ignorance. Mr. Clarke evidently has a grievance, and his long experience as a practical bee-keeper entitles him to a fair and just hearing. The columns of the PRACTICAL BEE-KEEPER will always be open for the fair minded discussion of questions of vital interest to the bee-keeping fraternity. The word fraternity is used advisedly, for there seems to be a large amount of good-fellowship, *bonne camaraderie* among bee-keepers, and may its shadow never grow less; The PRACTICAL BEE-KEEPER, does not propose to be *muzzled* by anybody or anything. Neither will it accept the responsibility of nor *father* any articles from its correspondents. All must stand alike on their own merits, if deserving, if not, they must fall.—EDITOR.

NOTES FROM LINDEN APIARY

This is another bee journal. How do you like it?

The North American Bee-keepers' Association, which met at Chicago, was well attended, and was said to be the largest meeting ever held by the Association.

The Honey exhibit at the World's Fair was a credit to the bee-keepers. Illinois had the largest exhibit, but Ontario has no reason to be ashamed of their exhibit. It was good, and the Canadians have reason to feel proud of their exhibits generally.

The editors of *Gleanings* seem to be very

enthusiastic over their success in mailing queens to Australia, but more credit is due Mr. Frank Benton, who mailed queens and guaranteed safe arrival to almost any part of the world eight years ago. Queens that were in transit forty-two days, arrived at destination in perfect condition. Are we making very much advancement in this direction? Mr. Benton is surely entitled to the honors in regard to mailing queens long distances.

The editor of the *American Apiculturist* has decided not to breed any more Punic bees. The Punic have made a short stay, and have found very few friends.

Bro. Alley still continues to condemn the five-banded Italians, and in the same issue claims to have bees in his apiary that will compare with any in the world in regard to beauty; and also claims the other good points that are characteristic of the five-banded bees. He is getting on the right track now, for the five-banded bees have gained friends and a good name wherever they have been given a fair trial. But why not own up and acknowledge they are of the five-banded strain?

The honey crop this year is not generally a large one, and it is hoped the price will be good.

CHAS. D. DUVALL,
Spencerville, Md.

Rothschild's Rules.

The elder Baron Rothschild had the following rules posted upon the walls of his bank. They are certainly good ones:

Shun liquors.
Dare to go forward.
Never be discouraged.
Never tell business lies.
Be polite to everybody.
Employ your time well.
Be prompt in everything.
Pay your debts promptly.
Bear all troubles patiently.
Do not reckon upon chance.
Make no useless acquaintances.
Be brave in the struggle of life.
Maintain your integrity as a sacred thing.
Never appear something more than you are.
Take time to consider, and then decide positively.
Carefully examine into every detail of your business.

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*Honey from this Super is Clean, free from travel stains,
glue and propolis*

The nice, clean sections, beautifully filled with honey, command a higher price than any other. One man can easily crate 1000 lbs. of comb honey produced in $4\frac{1}{2} \times 4\frac{1}{2} \times 1\frac{1}{2}$ sections in a day because the labor of scraping sections is almost done away with. If you wish to be in the lead use our Super. See what a few unsolicited testimonials say:

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C. A. OUELLETTE, Esq.,

Detroit, Mich., Oct. 7th, '93.

We are pleased to say that the honey bought from you is the best sample we ever sold. Its freedom from stains, bee glue, etc., make it a very superior article and command for it the very highest price. Will be pleased to handle more of it.

Yours truly,

J. A. LEITER & SON.

Montreal, Oct., 11th, '93.

C. A. OUELLETTE, Esq., Tilbury Centre.

We find your honey well and carefully put up, and a very superior selling article, and we are getting more than market price for it.

Yours truly,

VIPOND, McBRIDE & CO.

Detroit, Mich., Oct. 9th, '93.

MR. C. A. OUELLETTE,

Your honey is the most perfect we have ever handled.

G. & R. McMILLAN & CO., 131 Woodward Ave.

Detroit, Mich., Oct. 17th, '93.

C. A. OUELLETTE,

DEAR SIR:—We have found the honey purchased from you to be the best and cleanest packages we have ever handled.

Yours,

JNO. BLESSED & SON.

WINTERING BEES

N. H. SMITH.

When the cold north winds have passed and we hear the sweet songs of our feathered friends, and the hum of the busy bee once more, then gladness is seen in the countenance of the bee-keeper that another winter has passed; that is to say, this gladness is seen on the face of the bee-keeper who has successfully wintered his bees either on summer stands or in winter quarters, and finds that his loss is not over two per cent.

But oh, what a long-drawn visage is seen on him who, neglecting proper precautions and leaving his bees to take care of themselves on summer stands, finds them in the spring almost a total loss. And yet this latter class will frequently be heard to say, "I don't see how it is, but I never have luck with my bees." He don't deserve any luck.

If a farmer were to allow his stock to run all winter without proper food or shelter, what appearance would they present in the spring?

Yet this is practically what the bee-keeper does who does not provide for his bees in the fall, and as a natural result he finds himself in the same boat as the improvident farmer.

The question of "How to winter Bees?" is almost synonymous with that of "How to make Bee-keeping pay?" Few rise to eminent success in any business, the majority preferring to plod along in the old rut. This is not as it should be, for it is just as true today as ever, that "It is the man who makes the business, not the business that makes the man."

A glance at the landscape in autumn, with the variegated colors of the foliage, and the general evidence that all nature is preparing to go into winter quarters, should be a sufficient hint to the intelligent bee-keeper, and if the readers of this journal have not already prepared their bees for winter, either on summer stands or in winter quarters, it should be done at once.

I will here describe the method of "Wintering Bees," as successfully followed by me for the past twenty-five years. Pack on the summer stands as soon as the honey harvest

is over, which is about Oct. 1st in this part of Canada. I raise comb honey only. All supers, whether full or not, are removed. Then be sure that the hive has a queen, a young one if possible. Next see that the hive is strong in bees, and contains at least (30) thirty pounds of honey, well sealed. If any hives are found to be weak in bees it is a good plan to unite two together, or if some are lacking in honey and others have a surplus, the honey frames may be exchanged. When all are properly supplied both as to bees and honey, take an empty super and place it on the hive, the same as when sections are in. Then take a piece of canvas such as merchants use to wrap goods in, cut it the proper size and spread it over the bees; the tin rests will keep it up from the bees so that the bees can pass under the canvas. This acts similar to the Hill plan. Next fill the super with dry sawdust, well packed down; then put on the cover as tightly as possible. A rough, cheap outside case is now required, one that will leave about four inches all around the hive, bridging the entrances so that the bees can fly out any time they choose to, when the weather will permit. Now pack sawdust all around the hive. About ten inches over the top put on a good cover to keep out the rain, and leave till warm weather in the spring, or about the time the apple blossoms are out. Be sure and do not take the packing off too soon in the Spring, as there is danger of chilling the brood, which is sure to be well advanced, the queen having commenced to lay early owing to the bees having been properly and comfortably housed during the winter. There is no danger of a chill after the apple blossoms are once out. I have wintered my bees as here described and brought them through ninety-nine out of a hundred, strong in bees and with plenty of brood. I raise comb honey only, and keep only the five-banded golden bees, and find them superior to the three-banded, being better workers and capping the honey very white, thus causing it to command a better market price.

—Read our "Special Premium Offer."—Remember the first name received will get the first queen, and so on in rotation until all are supplied.

PRACTICAL HINTS.

It is my firm opinion that a good colony, in a very spacious hive, and surrounded by flora producing honey, will, of its own accord, independently of swarming, replace its failing or non-prolific queen. I have too frequently met with colonies having new queens, or wish two laying queens, an old and a young one, for to believe that this replacement may be an exception; and I believe also in the truth of supposing that the queens of large hives grow old rapidly. I look upon a good productive hive as a capital which, with a minimum of care, gives me a good income for several successive years; my principal trouble is to watch myself and keep from fussing, in other words, to let well enough alone. I increase the size of the brood chamber in spring, during the season I take out only the sections that are full and well capped, in the autumn I decrease the size of the brood chamber, and that is all. The worst enemy of a hive with moveable frames is the man who wishes to make the honey himself instead of letting the bees do the work.

DR. J. METELL

STAMPEDED BY A BEE.

A woman sitting in an elevated train car quietly got up and stood in the aisle. After she had been standing there for about half a minute everybody began to look to see why she did it. Then they discovered that a large bumblebee had taken possession and was sailing around contentedly in the vacant space.

The woman near by looked anxious, and those at the other end of the car looked amused. Several of the men looked as though they would like to do something, but did not know just what.

Then the bee concluded to move on and try some other seats. In less than another half minute every one on that side of the car had vacated and was standing in the aisle.

Some of the people looked silly, others looked annoyed, and others had a broad grin, evidently enjoying the fun of the sit-

uation.

One man took off his hat to strike at the bee.

"Don't try to fight him!" shrieked another. "You'll get stung sure."

A tall, dignified looking woman in black satin executed a deliberate Delsartean curve at that moment to evade the bee, and a fat man stepped back on a small woman's corns.

Then a stout, good natured looking man, in a tall gray hat, who had been sitting on the other side, quietly got up and opened one of the closed blinds, and Mr. Bee sailed out with the utmost composure.

No one said anything but the woman who had first stood up, and she thanked the man in the gray hat right out loud and with considerable emphasis.—New York Recorder.

FLASHER

Keeping everlastingly at it brings success.

Subscribe now for the PRACTICAL BEE-KEEPER. Each copy will be worth the year's subscription, 40c. Send us on a postal card the names of your bee-keeping friends, and we will mail them at once a sample copy.

Read our "Special Premium offer." Remember the first name received will get the first queen and so on in rotation until all are supplied.

Do not take it for granted that your bees have plenty to winter on. Make sure by a personal examination.

Don't wait until the last moment to order your supplies and then kick up a rumpus if they are not forthcoming for the honey flow.

Many bee-keepers who live on farms or near waste land could add largely to their income by sowing sweet clover or some other plant in every waste place on the farm.

PROGRESSIVE BEE-KEEPER.

The Practical Bee-Keeper

A QUARTERLY JOURNAL DEVOTED TO APICULTURE

PUBLISHED BY C. A. OUELLETTE, TILBURY CENTRE, ONT.

T. N. LEIGH, EDITOR.

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Rockingham, Ont., Oct. 20, 1893

Gananoque, Oct. 11, 1893.

C. A. OUELLETTE, Esq.,

The Queen I got from you is satisfactory and a prolific breeder

I think all of my Queens have brood out except one or two, and I like them splendidly.

DR. JOS. KINDER.

J. W. McALPIN.

Harley, Oct. 4th, 1893.

C. A. OUELLETTE,

The Queens I got from you are excellent, the best I ever got, and I have bought from thirteen noted breeders in the United States.
A. STERDMAN.

COLONIES NOT SUFFICIENTLY PRODUCTIVE.

DR. J. METELLI.

Translated from the Italian.

The extent of territory worked by the bees of a large apiary gives them each year a certain quantity of *nectar*; this quantity varies from year to year according to the season, and has also a pronounced variance in localities not widely separated, for it depends everywhere on the nature and variety of the vegetation growing naturally or cultivated. It is possible, however, after a close observation, continued during a sufficient number of years to estimate an annual average harvest. This is a rather delicate operation which can only be made by a practical apiculturist of long experience, having at his disposal an apiary almost isolated, of sufficient importance and well provided with complete frames of worker cells. Regarding the honey producing resources which an average extent of flight affords, an apiary may be found in two very different conditions: either the cultivated colonies are inferior in quantity to what might be expected from the possible average resources or on the contrary, they are notably superior in quantity (over-stocked.) In this second case the struggle for existence among the colonies of the same apiary is carried on in a very severe manner, and this is the reason that the observations which have been made in two kinds of apiaries give very different results, and it is necessary to bear this circumstance in mind if we wish to deduce practical results therefrom. Without doubt in days in which the honey is abundant, there is sufficient honey in the country for all colonies, the weak as well as the strong; but these days are, as a rule, limited in number, and only the populous colonies properly profit by them; the weak, the indolent receive scarcely any benefit. To the few days of abundance succeed long periods of scarcity and even absolute want; then the strong colonies gather all that is to be found and consume a part of the stores already garnered, whilst the weak succeed only in finding water and again lose all am-

bition.

The signs indicating that in a certain extent of territory the number colonies is inclined to exceed the possible amount of honey to be gathered are the following:

1. Even the strongest colonies, provided with a large number of frames, do not like to finish the honey-comb; if they work at it they do it with difficulty, irregularly and imperfectly.

2. The natural swarming is delayed in a marked manner in comparison to the little apiaries situated on the borders of the territory covered by the large apiary.

3. Natural swarms, even the strongest and the first, placed in hives upon the most tempting of frames do absolutely nothing.

4. Natural swarms aided only by a single empty section do little or nothing.

5. The common-hive apiaries and the small apiaries with moveable frames not much observed, situated very close to a large apiary, end by completely perishing.

6. The colonies which in spring appear weak in population for any reason whatsoever, do not increase or are scarcely productive during the year, no matter what system of management is followed; while the colonies situated on the confines of the territory covered by the large apiary and which were feeble in spring, will recover sufficiently to gather enough for themselves and for the apiculturist.

This latter observation is important because if it is sufficiently repeated in different directions it will give a correct idea of the common length of flight, and consequently of the total superficies visited by the pilferers of sweets. I think that in a level country the extent of flight necessary for an apiary is much less than many apiculturists even of long experience think.

There was a time when we believed that it sufficed to fill a hive with bees and to change the queen when necessary to obtain a productive colony. I will even say that my apiary has been constructed after this fashion; it will give me annually several hundred brood sections, and always place at my disposal breeding queens at will, and for my part I have been accustomed to re-

place them without ever losing one. In spite of all this I have seen my error, and for the last two years I have adopted an entirely different system.

It is possible that the existing method of reinforcing weak colonies and of changing the queen may succeed in the small apiaries having great honey resources within the extent of flight; but in the larger apiaries, or those which tend in some measure to exceed the resources within their bounds of flight, it is necessary to bear in mind above all the character of the colonies. The tendency to overstocking shows itself, so to say, and notably marks all the defests of the colony.

In any apiary, even the most neglected, it may be observed that whatever happens a certain number of colonies may prove themselves very productive for a series of years. In well observed apiaries these colonies, with more or less variation, reach a proportion of 85 %. These good colonies have scarcely any need of intervention on the part of the apiculturist; to supply empty sections in spring, to raise up the fall sections in autumn, to store away the surplus honey at the proper time, to carefully winter them, seeing at the same time that they are well provided with food; this is all the work that is necessary to give them. They themselves look after all the rest with a regularity, ease, activity and mildness that is admirable. If misfortune happens them during swarming, the loss of the queen after swarming, or a great diminution of population on account of meteoric causes, the invasion of mice, temptations to robbery, etc., etc. The apiarist intervenes and remedies the difficulties and they quickly retake themselves to the work of reparation. The apiarist will lose their product for the coming year or will certainly see it diminished, but invariably they will reimburse him during the following year. They are a superior race of beings; with instincts, habits, an intelligence perfectly adapted to their surroundings; they are the "Benjamins" of mother nature, destined by her to propagate and perfect their species. It is only necessary that the hand of man does not harm them by misunderstanding them.

On the other hand there is always in an apiary, even a well conducted one, a certain number of colonies which, everything considered, gather nothing, or scarcely anything, for the apiarist, and frequently do not gather sufficient for their own use during winter.

If all productive hives from the apiary have been as they ought to have been, carefully wintered, sheltered and well provisioned, in March they will present nothing particular to be observed; but in April we are able to observe that in many hives the inhabitants either remain stationary or increase very slowly, or positively decrease. We cannot give them more sections, but it is frequently necessary to decrease the number. These are the families which do not raise much brood comb, and we can by careful inspection divide them into two unequal categories. To the lesser number belong the colonies which show in a decided manner the cause of their weakness, lack of nourishment, impotent queen, loss of queen, abnormal mortality among the workers, etc. If these families have been productive in former preceding years the apiarist can remedy the defect and rely on a good result. They have not degenerated. They are only the victims of an unfortunate catastrophe, and if this is remedied the colony will recover its vigor sooner or later.

To the greater number belong unfortunately the families in which whatever has happened them, as far as I know we cannot discover the cause of their weakness. The population is less numerous, rather disunited, and the workers are sooner irritated. Honey abounds because it has not been consumed for the raising of brood; the queen, which is frequently a breeding queen, is beautiful; the eggs are well deposited; the brood cells are compact but naturally in proportion to the reduced population. A lack of activity is revealed.

TO BE CONTINUED.

A SPECIAL OFFER.

A special discount of 10 per cent. on first 50,000 order; also, on first 25,000 order for Sections, received before 1st December, for January delivery. C. A. OUELLETTE.

Colonies not Sufficiently Productive

In some rare cases we find a cause which is that the adult bees emigrate entirely or in part to a neighboring hive; but the latter becomes a very powerful colony, which attracts the workers from the others, leaving the stock guarded only by the young bees or those just born, frequently also by bees reduced in size as a consequence of the lack of heat. Still more exceptionally it is the wood of which the hive is made which does not permit an early raising of brood, and consequently retards a good spring development. But this cause is a very rare one, and the fact that another colony in the same hive has given good results is sufficient reason for its non-consideration.

As a matter of fact these colonies which in April show themselves to have deteriorated in a marked degree, generally presented more or less—I do not wish to say always—in the preceding year (very often for several preceding years) the same phenomena. They have received especial care as regards wintering, etc., but they have not repaid the apiarist or have given him only a small quantity of honey. Left to themselves a part will perish by becoming the prey of robbers; the others show some activity during the time of a good honey-flow, but soon perish little by little, seldom lasting till autumn.

These families had commenced late to raise brood, and had raised a little, but then only when in March the workers were still numerous. These are the colonies who do not know how or who cannot remedy the grave loss of the workers who die in March or April. There seems certainly to be shown here a defect in the instincts or natural habits either of the queen or the worker, but I am unable to say precisely in what this defect consists.

At all times the apiarist uses several efficacious means for to sensibly influence or change the character of a sick colony. Let us examine them summarily.

As all the workers of a colony are children of the queen, it would seem that in changing the latter the end would be attained, that is to say, the personnel of the colony

would be changed. In order not to be led into error on the value of the new mother, we can choose her from among the best of the apiary. At the end of two months all the workers will be children of the new mother, sisters *ovariques* of one of the best stocks in the apiary; the colony will be completely renewed. I have made this experiment so many times, and the result has been in general so unfortunate that I have about abandoned the idea of again recurring to it.

The experiment of directly changing all the workers of a suffering colony would be equivalent to suppressing it completely, since it would not be possible in an operation so radical to spare even a doubtful queen.

To be continued.

The Achievement of a Pioneer.

Toronto Globe, Sept. 30th, 1893.

A matter of very considerable interest in insurance affairs, and one which is attracting widespread attention at the present time amongst insurers generally, is the settlement by the North American Life of this city of its early investment policies.

The North American was the first Canadian life insurance company to adopt the Tontine investment policy, and consequently has the honor of being the first one to have the policies mature. Opposition to the plan was strong and persistent by most of the North American's competitors, but so acceptable was the policy to Canadian insurers that nearly all the companies adopted this plan of insurance a few years ago, and are doing more business on it than on almost any other form of insurance. But what lends additional interest just now to it is the satisfactory results which this pioneer company is paying to the holders of these investment policies. This in itself is one of the strongest possible evidences of the wisdom and good business judgment which prompted the North American in offering this plan of insurance.

The following letter, which was received just a day or two ago by the company, bears directly on the subject, and serves to illustrate the high appreciation in which this company's policies are held:

YARMOUTH, N. S., Sept. 18th, 1893.

To the North American Life Assurance Company, Toronto;

GENTLEMEN,—In October, 1883, I was induced to take a policy in your company by Mr. Geo. E. Lavers, your provincial manager. I decided on a ten payment life. My policy has now matured, and in all my options of settlement I find the figures are in excess of the estimates given me by Mr. Lavers at the time I insured. I find that the present cash value of my policy exceeds the total amount of premiums paid during the ten years, while my life has been insured in the meantime; thus my insurance has cost me nothing, so excellent has been the result of my policy. The paid-up policy offered me and the surplus are both also in excess of the estimates. I am very much satisfied with the results of this policy, and have other policies with your company from which I expect equally as good results. I have also to say that during my ten years' acquaintance with the North American Life and its representatives in Yarmouth I have always met with the most satisfactory treatment in every particular upon which I have made inquiry.

With best wishes for your continued prosperity and success,

I am, gentlemen, Yours, etc.,
C. C. RICHARDS.

A NEW METHOD OF ANALYSING HONEY

DR. OSCAR HAENLE.

Translated from the French.

For the last five years the chemistry of honey has been partly obscured by thick clouds. In books of instruction, in legal chemistry, it has been affirmed and established that all natural honey causes the plane of polarization of light to deviate to the left, and that all honey deviating to the right, is adulterated, and should be the object of condemnation.

But in my scientific experiments to discover the nature of the honey which causes the plane of polarization to deviate to the right, and after fortunate and unexpected observations I have ended by discovering the solution to the enigma. Many experiments and proofs have been made, and all chemists who have taken up the question have agreed with me that no honey could be condemned for the single reason of its deviation to the right. But the discovery of this deviation to the right according to the place in which the honey is produced, was coldly received. The result is that chemists examining natural honey can no longer pronounce immediately upon the nature of the honey submitted to them, because glucose, the customary ingredient in adulteration, always polarizes to the right.

As my readers are aware, I have divided honey into two classes honey, derived from flowers, and honey derived from coniferous or cone-bearing plants. The former always deviates to the left the latter to the right. Formerly it appeared easy to distinguish an artificial honey from that which had been adulterated, now the distinction is made more difficult by means of this double deviation. I have taken the trouble, after a long series of about 150 experiments, to establish figures showing these deviations to the right. I have even published a formula for the approximate determination of the quantity of glucose employed in the adulteration. But the experiments have everywhere a theoretic character, and all theory ought to be done away with if it has not a practical value sure and decisive.

Following these principles I have sought other methods, based upon new theories, and then I arrived at certain results by the aid of dialysis made before polarization.

The dialysis, that is the separation, the disunion of different matters, by *osmose*, that is to say the reciprocal changes of two susceptible liquids mixed together, but separated one from the other by a membrane of parchment. The *dialyseur* is the apparatus which contains this membrane, and in which

the operation of the diffusion of liquids is made.

Honey is composed of grape sugar (dextrose) and fruit sugar (levulose). The grape sugar is the part that crystallizes; the fruit sugar is the part that does not crystallize—consequently a fluid.

On account of its frequent use in the industry, the manufactured grape sugar is produced from the sediment by boiling it for a long time in a solution of sulphuric acid and water. The sulphuric acid is separated by means of chalk. The result is then filtered by means of animal charcoal and reduced to a thick syrup. This is the production which, under the name of "glucose," is used in the industry to give adulterated Swiss honey its remarkable color and beautiful appearance.

This manufactured grape sugar (dextrose) is not, however, precisely identical with natural grape sugar; it is not completely pure, as can be proven. The artificial product notably contains matters which do not exist in natural grape sugar. These matters are found in the syrup on account of the incomplete transformation of the sediment into sugar. The chemist ought consequently to carry his examination in this direction: Polarization, fermentation, the reaction of the dextrine, the use of all these means has not given results that were absolutely certain.

As a matter of fact after five long years of research, I have been successful, and I have arrived at a result which authorizes me to say to you with conviction and certainty, that it is possible to distinguish in good faith the natural honey from the products adulterated with glucose, by the dialysis before polarization. I will cite these experiments: they authorize me to make this declaration so important to apiculture, and important precisely on this account that the greatest practical success in apiculture can not by itself force out the artificial honey which floods the country as if it were natural honey.

EXPERIMENTS WITH THE HONEY OF FLOWERS.

1st. Pure Alsatian honey dissolved in the proportion of one part honey to two parts water; the polarization of this solution is 28° to the left or -28° ; after 16 hours of dialysis, the polarization of the extract taken from the dialyseur and re-dissolved is 0° .

2d. 30 grammes of pure Alsatian honey dissolved in 150 grammes of water decolorized and dialysed; after 16 hours, the deviation has disappeared; the polarization is 0° . The liquid taken on the dialyseur has evaporated to 30 grammes; this time again no deviation appears. Evaporated to dry and put for two hours under a sulphuric acid dessicator an extract of a weakly yel-

low color is found, which re-dissolved in water is without action to the naked sight.

3rd. 50 grammes of pure Alsatian honey dissolved in 150 grammes of water and decolorized. The polarization is 11° ; after 16 hours of dialysis, the solution deviates no longer after dialysis, the extract found on the dialyseur has evaporated, it is without result on polarized light.

4th. 50 grammes of Alsatian honey, of which the polarization (solution, one part of honey and two of water) is 26° , dissolved in 250 grammes of water, decolorized and dialyzed after $5\frac{1}{2}$ hours only of dialysis, the deviation is no longer found. One hour after the honey is withdrawn from the action of the dialysis, and then evaporated. The polarization is still 0° .

5th. 30 grammes of natural honey dissolved in 150 grammes of water decolorized and polarized. The polarization is 10° . It is then dialyzed.

2 hours after the polarization is	- 5°
3 " " " "	- 4°
4 " " " "	- 2°
5 " " " "	- 0°

For more certainty we again dialysed for three hours; the extract has evaporated to 20 cubic centimeters, the polarization is again 0° .

6th. 50 grammes of Alsatian honey - the production of the forest and meadow - dissolved in 250 grammes of water, decolorized by means of animal charcoal and polarized. The polarization is -5° . After 16 hours of dialysis the deviation is 0° . Evaporated to 20 cubic centimetres the solution remains without any rotary power. After fermentation with yeast the fermentation is again 0° .

EXPERIMENTS WITH GLUCOSE.

(Under the form of glucose syrup.)

7th. A solution of glucose 10% strong, which deviates 1.0° to the right, decolorized and submitted to the dialysis for 16 hours, deviates still $+5^{\circ}$. The dry extract of 10 grammes of syrup weighs still one gramme, 682 milligrammes.

8th. 40 grammes of pure honey (a solution of 1 part honey to 2 parts water, deviation to the left 35°) are mixed with 10 grammes of glucose. A solution of this preparation 10% strong, shows after dialysis a deviation to the right of 4° .

9th. 30 grammes of pure honey are carefully mixed with 20 grammes of glucose, dissolved in 250 grammes of water and decolorized by means of animal charcoal. The polarization ascends to $+65^{\circ}$. After 14 hours of dialysis the deviation is permanently fixed at 14° . After evaporation to 50 grammes of the extract taken in the dialyseur, the polarization ascends to $+60^{\circ}$. Evaporated to dry and dried by means of sulphuric acid desiccator an extract of a strong yellow color

remains which, dissolved in water and treated by means of a ferment, deviated still $+48^{\circ}$.

10th. 50 grammes of an adulterated honey dissolved in 250 grammes of water. The polarization is $+95^{\circ}$. In order to observe the decrease of the deviation, the liquid found on the dialyseur is at first examined every two hours, then every hour.

2 hours after, the polarization is	$+45^{\circ}$
4 " " " "	$+33^{\circ}$
6 " " " "	$+18^{\circ}$
8 " " " "	$+15^{\circ}$
9 " " " "	$+12^{\circ}$
10 " " " "	$+11^{\circ}$
11 " " " "	$+10^{\circ}$
12 " " " "	$+10^{\circ}$

The deviation remains steady after 11 hours.

11th. 50 grammes of an adulterated honey of 10 per cent. in strength dissolved in 250 cubic centimetres of water, decolorized and polarized. The polarization is $+12^{\circ}$; 12 hours later the deviation remains steady at $+6^{\circ}$.

12th. 50 grammes of an adulterated honey treated as aforesaid. The polarization ascends to $+75^{\circ}$, after 13 hours of dialysis the deviation remains $+8^{\circ}$.

13th. An adulterated honey has been treated in the same proportions as above, and it has given a fixed deviation of $+9^{\circ}$, after 12 hours of dialysis.

By the foregoing experiments it is indubitably established:

1st. That honey, which after dialysis, deviates the plane of polarization to the right is adulterated with glucose.

2nd. That honey which, after dialysis, does not deviate the plane of polarization to the right is not mixed with glucose.

After these results give me permission to express a wish that apiculture should be under the high and powerful protection of the government, and that the government should forbid the importation and sale of artificial or adulterated honey under the name honey, this word being applied only to the natural product.

In the same manner that the law distinguishes butter from oleomargarine it should distinguish between natural and artificial honey.

As I sat a-dreaming,
And thought the world a-seeming,
With nothing true
Or old or new.
A little bee flew nigh me,
"Up! up and do!
'Tis such as you
That makes the world a-seeming."

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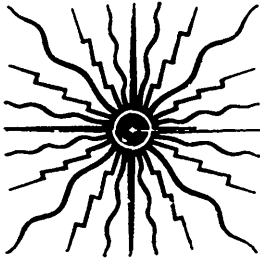
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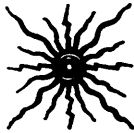
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