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The Canadian Bee Journal

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The Canadian Bee Journal

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JAS. J. HURLEY, EDITOR, BRANTFORD, ONTARIO, CANADA
W. WHITE, ASSISTANT EDITOR.

Vol. 20, No. 6. JUNE, 1912 Whole No. 568

DEEP vs. SHALLOW COMBS

By J. E. Hand.

Ever since bee-keeping has become an occupation of any note, much time and talent have been devoted to the discussion of the proper shape and dimensions of hives and brood frames, some even claiming that in the selection of a hive and and frame of the right proportions will rest in a great measure our success or failure in our chosen avocation. A noticeable feature of the case is the wide diversity of opinion that exists among the rank and file of bee-keepers as to what constitutes a correctly proportioned hive and frame. Perhaps nearly all will agree that during the summer season the form of hive and frame should be adapted to the convenience of the bee-keeper in the performance of the necessary manipulations, but at the same time the idea largely prevails that there are certain natural laws that govern the successful wintering of bees, the violation of which will inevitably result in disaster and loss to the bee-keeper. This point is abundantly demonstrated in an article in the C. B. J. page 135 by Samuel Simmins, in which he declares that the Langstroth frame is entirely inadequate to the requirements of bees at any season, and especially during the winter.

A noticeable feature of the article mentioned is its seemingly contradictory statements. For instance, after declaring that the Langstroth frame is too small for the best results in any location, he makes the statement that the 10″x16″ frame (which is still smaller) would fulfill all the economic conditions required in a modern bee hive. Again after going to considerable length to show wherein a deeper comb than the Langstroth would give better results in wintering he (perhaps inadvertently) makes use of the strongest kind of argument in favor of very shallow combs for wintering. For instance, he says in part, "Let it be con-"sidered that during cold weather the "combs are really unnecessary except "as store cupboards. Under normal con-"ditions during late autumn, at the cen-"tral lower portions of the combs the "cells are all empty just as vacated by "the later hatches of brood. As the cold "weather comes on, the bees form upon "that portion of the combs, the nearest "possible approach to an unbroken clus-"ter, some of them occupy the empty "cells and rest head to head on opposite "sides of the centre walls of the combs, "while others crowd between. Thus they "make the best of the situation as they "find it; but careful experiments, con-"ducted over a series of years, have "always shown me that the bees prefer "to cluster in winter where there are no "combs at all to intersect them, and in "this situation they have less difficulty in "maintaining that animal heat so neces-"sary for the preservation of life."

I quote Mr. Simmins, verbatim, at considerable length because I regard this particular quotation as about the strongest argument in favor of very shallow frames for wintering that I have yet heard of. If I have a correct understanding of the English language, the above statement is equivalent to saying that combs of solid honey five inches

deep, with an empty space five inches deep below them, will be strictly in harmony with bee nature, and therefore will give better results in wintering than combs that are ten inches deep or deeper. While all my experience is in support of this theory, I have not as yet carried the experiment far enough to warrant me in making a public statement to that effect; it gives me great pleasure however, to note that so good an authority as Mr. Simmins, has antedated me with this theory by several years. It seems quite reasonable to suppose that ten combs of Langstroth length and five inches deep would contain sufficient stores for winter, and also that a ball of bees of goodly proportions hanging in a natural unbroken cluster from the lower edge of these well filled combs and extending downward into the open space below would enable them to withstand a low temperature, and maintain a normal temperature by bodily contact in full force and in harmony with the natural habits of bees.

In view of such broad and sweeping concessions as these we can well afford to forgive any previous reflections of a derogatory nature that Mr. Simmins has (perhaps inadvertently) cast upon the merits of the most popular frame in America, the Langstroth.

In conclusion, if there be any advantage in having combs that are deeper than the standard Langstroth, then the advantages are realized in the highest stage of perfection in the use of two or three horizontal divisions of a sectional hive, thus forming an ideal brood chamber which approaches more closely the cubical form—natures greatest winter protection—than any solid full depth comb of whatsoever proportions; simply because this system admits of free and full communication of bees and queen horizontally and vertically to all parts of the brood chamber through its centre, and enables a colony to change position in cold weather without breaking cluster or suffering any inconvenience whatever, a feat that would seal the fate of a colony on deep slabs of solid combs.

Furthermore this system admits of the economical method of manipulation by hives instead of by frames which should appeal to the judgment of the busy bee-keeper whose time is too fully occupied to admit of useless frame handling. However, since modern methods of handling bees automatically independent of hives and frames precludes to a great extent the handling of either frames or hives, it is doubtful whether there is a better all round general purpose hive in existence today than the justly celebrated American Langstroth hive.

Birmingham, Ohio.

WOMAN'S DEPARTMENT

CONDUCTED BY

Miss Ethel Robson, Ilderton, Ont.

Winter Loss

Did you notice that in last month's Journal I never mentioned winter losses? Well, that was because I was ashamed. Ten colonies perished from starvation. This is a humiliating confession, but, fortified with resolutions to do better next year, I am able to make it. Next fall, too, there will be a little more money in hand, which will make it easier to feed generously. But if I was caught, I was not the only one. A good many bees starved to death last winter.

A Recruit

This month sees an addition to the ranks of prospective women bee-keepers

in Ontario. Miss Newland, an English lady, has come over from the Old Land, and after one or two years' work with other bee-keepers, plans to start for herself. This is certainly enterprise. The Isle of Wight disease has been making such terrible inroads into the apiaries in England that she was afraid to start there.

A Start With Chickens

Since the combination of bees and chickens is receiving such attention these days, it may not be amiss to tell you of the beginning of our little experiment in chickens. When I say "our" I mean my sister and myself, she being the manager and I supplying the money to get it started. Now it might be more profitable for us to stick to the bees, but we like a little variety. This may be the proof of a certain instability in our make-up—a thing greatly to be deplored. Nevertheless, the unstable in the world have to be kept amused just as well as the stable. There were other reasons, too. You know this department stands for the belief that the girl who remains at home in the country ought to have the means of making a little income of her own. Bees and chickens are the two means nearest at hand for most girls, and knowing something about bees, we wanted to know something about chickens, too.

For years the hen has been a tolerated nuisance on most farms, being housed indifferently, without any definite account being kept of what she ate, and existing under the implication that she hardly paid her way. Still, eggs were needed for the house, and the chickens formed a very desirable adjunct to the meat supply in the fall, when the cured pork from the previous year was almost finished and the butcher had ceased to make his weekly round.

But a new era has dawned for the hen, and chicken is no longer the poor man's meat, but has become a delectable morsel for the rich man's table, whilst eggs continue to soar aloft and are reaching unheard-of prices. Such being the case, the hen is promoted to a place of dignity, and in consequence the yet antiquated methods are likely to improve rapidly.

Hens, according to old-fashioned ways, we had always had; a few chance eggs in the winter, but not enough to be profitable. The work of caring for them had been ours, but it was not such as to increase our self-respect. If we were going to have winter eggs, this meant early chickens. But the farm biddies refused to set in sufficiently large numbers, whilst besides they were unreliable, having a way of leaving the nest at unexpected times. So we determined to buy an incubator. Although not recommended by the O.A.C., we finally decided on one of the small round ones, partly because it was cheap, partly because it did not take up too much room, but mainly because we knew some people who had been very successful with them. We had already determined on the variety of our chickens—Barred Rocks—and were able to get the eggs from a reliable person near by.

Oh! the troubles and worries of those three weeks of incubation! The thermometer would persist in running up too high in the day-time and down too low at night. However, we had been assured by others that they had had the same trouble and yet had secured a good hatch, so we lived in hope. It was a great relief when on the morning of the twenty-first day the chicks were heard chipping in the shell, and two or three hatched during the day. The next morning the excitement was at fever heat when, lifting off the cover, the machine was apparently full of the fluffy, downy, struggling black-and-white balls. Altogether we had forty chicks out of fifty-two eggs. One of

these has since died, but all the others are doing well. Having been assured that the brooders were never as satisfactory as hens, we gave them, when a day or two old, to two hens. These, with five others, make a pretty big brood, but they seem to be able to care for them all right. We have the coop on plowed ground, where the chicks keep much cleaner and drier than on the grass. They have huge appetites and drink large quantities of milk.

There may or may not be money in chickens. I hope there is, for they are certainly wonderfully interesting. Some time I'll tell you whether they paid their way or not.

QUEEN-REARING IN OUTLINE

By F. W. L. Sladen, F. E. S.

It is a great advantage to the honey producer to rear his own queens. Not only does he save the cost of buying queens but he has them ready when he wants them and it is a fact that, without any special knowledge or expensive appliances, he can, by taking heed to a few simple principles, produce queens that are quite equal in constitution, if not in blood, to those sent out by the best breeders. Moreover one of the best tests for breeding stock is heavy supers, and if one has a good working strain in one's apiary, one is sure to find a number of queens that are good enough to breed from.

When only a few queens are wanted, the simplest way to get them is to save those that are reared naturally in the swarming season. About a week after the first swarm has gone off—earlier if its departure has been delayed by bad weather—the parent colony should be broken up into nuclei, each consisting of two combs covered with bees and containing both honey and brood, and one or two good queen cells. A ten-frame colony will thus make five nuclei, or if the bees are in the super, one may add combs from other hives and make two or three more. Under very favorable conditions of temperature and honey-flow one comb of bees with a comb of honey from another hive is sufficient; but it is better to err on the side of too many bees than too few, and allowance must be made for the old bees that will return to the parent hive. Miniature hives are not necessary. Each nucleus may be placed in a full-sized hive having its entrances closed with screening to confine the bees and yet provide ventilation On the evening following, the screening should be removed and a strip of wood fixed over the entrance, reducing its aperture about 1 inch x ⅜ inch as a protection from robbers. A much better plan is to divide an eight frame hive into three compartments with tight fitting division boards, so as to accommodate three nuclei, the outside compartments having their entrances at the sides near the back. The bees should be confined to the hive as before and wire cloth should be fixed over the bottom instead of the bottom board to prevent the bees getting stifled. The bottom board should be substituted when they are given their liberty. Hives containing confined bees should be shaded from sunshine or still better placed in the cellar. Under some conditions confinement may be unnecessary.

The queens hatch in from three to four days and if the weather is favorable they get mated and commence laying a week or ten days latter

By this method, most of the little troubles of the amateur queen breeder are avoided or minimised— there is no "messing" with larvae or cups or handling cells, the bees are so attached to the cells containing their expected queens that fewer return to the parent hive than in nuclei formed in other ways, there is little or no young brood to get starved

and chilled through insufficient bees, while the young bees that hatch from the older brood are most useful should the mating of the queen be long delayed by unfavorable weather, to mention the commonest.

But often queens are wanted when no swarms are expected and then they must be reared artificially.

In my opinion the Doolittle method of starting the cells, namely, placing the young larvae in artificial cups is the best, the only material improvement that I employ—it is an important one—is to use turned wooden cups (made of willow or basswood) waxed inside by pouring beeswax into them, and immediately afterwards pouring it out.* The great advantage of the wooden cups is that they can be used over and over again.** I do not like Pratt's method of using flanged cups fitted into holes in the top bar of a frame, but prefer to fix the bases of the cups into fine nail points projecting from the bottom edge of a board ½ an inch thick, called a "carrier," which hangs in the hive and holds the cells about midway between the top and bottom of the combs where they are warmer and better cared for than at the top. The young larvae which should be about the size of mignonette seed are carefully lifted out of the cells with as much of the royal jelly on which they are floating as possible, and are deposited in the bottom of the cups by means of a sharpened tip of a quill which is slipped under them. To prevent the larvae getting chilled the work is carried on in a temperature of at least 65°, or if there is wind, in a temperature of 75° or higher, and the impregnated cups are given to the bees as soon as possible. Used cups are made ready for use again by picking out as much of the old jelly as possible and then smoothing them inside by twirling in them a wooden stick whittled to the correct size and moistened with water. The dried-up jelly is moistened and spread over the inside of the cup and dries again with a glaze and is much appreciated by the bees.

Beginners often experience a difficulty in getting the larvae accepted. One of the surest methods is to give them to the bees that have been shaken off the brood combs of a colony and have been confined in a box with comb containing honey and water for four hours. But a special, well-ventilated box is needed for this, and the cells have to be given to other bees to be finished, and an easier and better way for the honey producer—one that rarely fails to get a large proportion of larvae accepted—is to give the larvae to a prosperous colony covering a comb area equivalent to at least seven Langstroth frames of which at least five contain brood, this colony having had its queen and all the brood combs, except the two sealed brood and the smallest of unsealed, that contain the largest proportion of removed and replaced with combs of honey on the previous day. If the bees cover only seven combs they will rear about a dozen good queens, but if they cover ten or more they will rear two dozen. Each carrier should be made to take 14 or 15 cups.

One carrier is sufficient for the smaller colony and two carriers for the for the larger, the extra number of cups being allowed for a few that may fail. The larvae are placed next the brood, only one carrier being placed between two combs. The next day the cups are momentarily examined and those that are empty are removed. If less than half of them contain larvae, some fresh larvae are given in the empty ones. On the morning of the tenth day after the

*The outside diameter of these cups should be barely ½ inch; ¾ inch, as is often recommended, is unnecessarily thick.

**If wooden cups are unobtainable, the original all-wax cups may be made by rounding the tip of a wooden stick of barely ⅜ inch diameter, and, after moistening it with water, dipping it five or six times into melted beeswax to a depth of half an inch; these cups are fixed with melted beeswax to the under side of the carrier mentioned below.

larvae were given, the cells are ripe, i.e. the queens are due to hatch in a few hours, and they are either distributed to the nuclei in "West" cell protectors or they are placed in separate cages containing candy which are hung between the brood combs of a prosperous colony, the virgins being allowed to hatch in these cages before they are introduced to the nuclei. Introducing virgins to established nuclei, even when they are just hatched, which is the best time, sometimes results in their getting killed, the conditions that most court such disaster being insufficient honey-flow and unsealed brood and as the chief advantages of so doing—saving two or three days and selecting queens of good color and shape—are not so important to the private breeder as to the professional, I recommend the former to introduce ripe cells instead. But if nuclei have to be specially formed, the virgins may be allowed to hatch in their cages and when the virgin has been hatched about 48 hours the nucleus is formed by going to a strong colony at noon and after finding the queen, shaking the bees off two or three brood combs into a hive containing some combs of honey (no eggs or young larvae) and having its entrance stopped with grass. Care must be taken to prevent the confined bees getting overheated. The queen is run in about overheated. The queen is run in about 4.30 p.m. through a tube that has been placed in the entrance, or through a crevice made by pushing the cover to one side care being taken to let no bees escape. The bees will be so pleased with the queen after having been queenless and broodless for nearly five hours that they are sure to accept her and, what is more, comparatively few of them will want to return to the parent hive the next day. Of course the return of bees can be altogether avoided by getting them from an out-apiary and this is a great advantage.

To avoid sacrificing the colony in which the queens are reared one may return it its queen in a cage and when the cells are sealed, five days after they were started, she may be liberated and the cells placed in a cage hung between the brood combs of this or another hive.

When one wants to rear successive batches of queens the best plan is to employ a strong colony, and merely partition off with a sheet of queen-excluder a part of the brood nest, this part containing two frames of chiefly sealed and hatching brood with the cups hanging between them. Every ten days or so the the outer of these combs is moved into the place of the inner one, which is removed, and a fresh comb of brood in all stages from the queen's compartment, is put in the place of the outer comb. Thus the comb next the queen excluder always lacks eggs and young brood, and contains a diminishing quantity of older brood. This with the absence of the queen seems to give the bees the idea that the queen is failing for they readily rear queens on the carrier placed between the two combs though sometimes they are disinclined to accept the larvae there, and then it is necessary to get the latter started by the confining method. Thus one can rear a batch of about a dozen queens every five days in a hive without caging the queen or seriously interfering with the prosperity of the colony. This method is best carried out in a special brood chamber made to take 12 or 15 frames, but if the bees are very strong the queen-rearing compartment may be placed in the super.

It is impossible to mention many details in queen rearing in a single article, but these may be found well described in various booklets on the subject published within the last few years in America and Europe.

If there is not a good honey-flow, daily feeding both before and during queen-rearing is necessary for success and the temperature should be above

60°. A higher temperature is needed for mating. In my experience this has never taken place at a temperature below about 62° and then only when the weather is calm and continually sunny, drones abundant, and honey-flow or feeding proceeding. Under ordinary conditions a temperature of at least 70° is desirable.

Canada ought to be a first-class country for queen breeding. Plate No. 26A in the Atlas of Canada issued by the Department of the Interior in 1906 shows that Ottawa and Winnipeg have over 100 days in the year with a temperature above 70°. Saskatchewan has 75 days. Halifax has 72, and even Cape Gaspé, Vancouver, and a spot near Fort St. John on the Peace River have 50 days. My queen breeding work at Ripple on the coast of Kent, England, has been carried on with an average of only 31 days above 70° in the year as I see by consulting my weather notes for the five years, 1904 to 1908.

Ripple Court Apiary, Dover, England.

MAILING QUEENS IN BOXES CONTAINING COMB

By F. W. L. Sladen, F. E. S.

For mailing queens the candy or Benton mailing cage containing only 10 to 20 bees has, owing to its many merits, superceded the old mailing box containing 100 or 200 bees on a little piece of comb, and is perfectly satisfactory for the regular trade, but there are cases in which the old fashioned box containing a comb has the advantage. These are in mailing queens in the spring, either (1) when the travelling bees are liable to be exposed over night or longer to a temperature below about 53° degrees Fahr. or (2) when it is desired to dispatch queens reared the previous year while they are in full laying.

As an illustration of the first case it may be mentioned that I have for some years been importing queens from Italy into England almost every week in April and May, and I find that up to the middle of May those sent in candy cages very often arrive dead, while those sent in boxes of comb always arrive alive. Even in sending short distances in England, if the queens remain in the mails overnight, I have found it unsafe to send them in ordinary candy cages until June, in fact until one can depend on a temperature above 52° (in certain cases a much higher temperature, see below). Although the queen is most liable to suffer, the workers are also apt to die. In the autumn, however, when it is the bees' nature to commence hibernating they will remain alive and well for several days in small candy cages in a temperature of about 55°, while a drop to 47° or less at night is not likely to do them any harm.

As regards mailing queens reared the previous season, these, when they are laying freely are extremely susceptible to cold, and unless they have been caged for two or three days in the hive are not fit to travel, except with a sufficient escort of workers (200 is enough) to maintain a temperature approaching that of the brood nest, also it is an advantage for the queen to have some empty cells in which to lay eggs.

The sudden warming up in May in southern Ontario no doubt renders mailing boxes containing comb less necessary there than in England, but in the climate of Nova Scotia, British Columbia and the North-West they ought to prove useful, and by remembering the conditions that demand them one may save the loss of valuable queens. Here in England I make it a rule to dispatch all valuable queens reared the previous year in boxes containing combs and since doing this have had no losses reported. A few boxes can easily be made in the winter and kept in stock for emergencies.

My mailing boxes are made of basswood and are 4″ long, 2¾″ wide and 3″ high; the ends are ⅜″ thick; the sides, top

and bottom 3-16″ thick; the wood is smooth outside, rough inside: each side has a saw kerf for ventilation as shown The little frame, which is ⅞″ wide, takes a square of comb 1¾″x1½″, which is cut out of a tough old comb and tied in with waxed string. If nearly all of the cells contain sealed honey the comb provides enough food to last 200 bees two to four days. The honey is allowed to drain out of the cut cells before the comb is tied into the frame. Care is taken not to overstock the box—200 bees is plenty. They are taken from a cluster formed by separating, half-an-hour previously, two brood combs; thus they are mostly young bees. They are scraped into the box before the comb is placed in, and the queen, previously caged, is run in the last thing. The weight of the box with comb, honey and bees is about 6 ounces.

After the journey the workers and box should be destroyed as a precaution against disease, and the queen should be introduced alone in a cage of wire-cloth pressed into the comb.

One of the secrets of success in mailing queens, especially long distances, is to use young workers; the best are those that are mature enough to be only just distinguishable from adults by their slightly paler appearance. Recently hatched workers are useless, unless accompanied by many older ones. Adult workers travel best after they have had a good flight.

Ripple Court Apiary, Dover, England.

IMPROVEMENT OF BEES

By Dr. C. C. Miller.

I do not think there was any time within the past 50 years when so much space was taken up in bee journals on the subject of improvement of bees as at the present time. The wide divergence of opinion is rather remarkable. On the one hand are those who believe that great things are possible in the way of improvement, and that it is time bee-keepers should wake up to the possibilities that are before them. On the other hand are those who believe that the bee is a finished product, and that no possible change in its character can take place. Some of the former are very emphatic in their utterances, but it seems just a bit strange that some of the latter are even more emphatic—even vehement.

One can easily understand why a man should become enthusiatic over something in which he thinks he can see the opportunity for great gain to himself and his fellows; but it is not easy to see how he should display equal enthusiasm—enthusiasm seems hardly the word; let us say energy—in opposing a thing simply because he thinks it will do no good. Let us suppose that Smith is entirely right in thinking that any effort on the part of Jones to improve bees will come to naught, why should Smith so violently oppose that effort? At the worst it is only a bit of harmless lunacy on the part of Jones. If he thinks he has found one colony in his apiary that is a little better in a certain particular than the others, why should Smith want him put in a strait-jacket because he decides to breed from the queen of that particular colony in the belief that in time he may have all his colonies equally good in that certain particular? Will anyone kindly tell me what harm Jones will do to himself or others by his attempt to breed in that way?

Generally the middle course is the safe one; and perhaps I ought to get halfway between those who believe a substantial improvement can be achieved within the limits of a man's lifetime and those who think a thousand years not long enough to accomplish anything. I must confess, however, that I am not so well balanced as that, but find myself swinging dangerously near the one extreme, and inclined to believe that a man might succeed in making a certain improvement in his

bees and then live long enough after to enjoy a substantial monetary reward for his efforts.

The Canadian Bee Journal seems to be fair in showing up both sides, albeit the March number occupies less than a column to encourage the would-be improver, and more than five times as much in telling him "Its no use." Like the boy in the dark whistling to keep up his courage, I want to take up some of the points in the "no use" argument to try to break their force, at least a little.

Mr. Hand starts out on page 81 by noting the diversity of opinion as to improving the bee, apparently landing on the hopeful side by saying that improvement "is by no means impossible so long as sports and mutations occur." That's encouraging, and the encouragement is increased when a little further along he says: "It is evident that there is yet much to be hoped for by way of mprovement in bees by selection and breeding." And then a fog seems to be thrown over the hopeful landscape, and it transpires that the "much" to be hoped for by way of improvement refers only to color. While color may be changed "their habits and instincts must ever remain unchanged," because bees are incapable of reasoning, and are governed by laws which 'are as immutable as the universe.

That seems to bring us dead up against a stone wall But for all that I do not like to give up the idea of trying to improve bees. I'd rather think that Mr. Hand might be mistaken. There is some glimmer of hope in the thought that other things have been improved. There's the matter of cattle. Strains have been produced that run to beef. Others that run to butter. No dispute about it. And it has been done by breeding. I don't believe cattle have reason any more than I believe bees have reason. And if bees are governed by laws, are not cattle also? But there are the changes in the cattle. Why not in the bees?

The last two pages of the article are taken up with swarmingg and things more or less connected with swarming, all intended to show that the swarming impulse can not eliminated. But, friend Hand, there are other things than swarming or non-swarming that those want to work for who believe in improvement, and I wish you had taken up one of them to illustrate and enforce your position, for swarming is a rather complicated affair, and it's a bit hard for me to follow all you say about it. Besides, since you have invented a way to prevent swarming without any change in the character of the bees, there is not quite the same need to breed non-swarmers. I wish you had taken storing. If I could get my bees to store twice as much it would be of more consequence than to breed out the swarming instinct. Swarming as you say, can be controlled, and that without any change in the bees, but we cannot in the same way control storing, and double storing demands a change in the bees themselves. If color is the only thing that can be changed by breeding, of course there is no use to try for anything else; still the scientific authorities to whom Dr. Bonney applied do not seem by any means to be hopeless of improvement even in the matter of swarming. And Dr. Bonney deserves credit for publishing their letters. Not everyone in his place would have done that.

Marengo, Ill.

SOME REFLECTIONS UPON MY WINTERING EXPERIENCES

By Jacob Haberer.

We wintered 50 full colonies and 10 nuclei in the cellar. Of these we lost two. They were set out on their summer stands on April 6th. The bees have been working well on willows during the past few days, so we have started "clipping" to-day (May 7). Everything has progressed nicely, and

we have not needed the veil all day. We find that the colonies have from four to six combs of brood, with a good number of hatching bees. In the case of a Jones hive, there were eight combs of brood, hatched drones, and eggs in cell cups.

The **outside wintered ones** look pretty poor. A month ago there were only a few dead, and they seemed mostly strong, but since then they have dwindled down terribly, and we removed about 50 out of 250. Although the balance contains some very good colonies, yet the majority are very weak. I am leaving some of them merely for the sake of the young queens they have.

Most of our bees have been wintered upon fall honey, and only those that were short were fed on sugar syrup in the fall. These are mostly fair. Those in the cellar had also fall honey, but did not consume half so much as those outside, and did not contract dysentery as did those wintered outdoors, nor was the granulation of the honey in the combs quite so bad.

We still possess a number of Jones hives, and although they usually winter well, this year they have proved the very worst. Some of them had the greater part of their honey stores granulated, and none contained any sugar syrup, as they had been heavy with fall honey.

Until this season I had always wintered one-half outside and the other half of the colonies indoors. Last year, however, I took a notion to winter more outdoors, mainly on account of the "spring protection" that was required to be given to those wintered in the cellar. This present season, since we set the cellar bees out, I have noticed very little dwindling amongst them, whereas the outside packed colonies have dwindled at a rate awful to contemplate! The lesson for me is this: the winters are not alike, nor will the results be alike, and it is impossible to say that outside wintering is better than inside wintering, or that the reverse is the case. Therefore I will go back to my old plan of wintering half indoors and the other half out. And if we get such severe winters again, goldenrod and wild aster honey will not do. Buckwheat is better, as it will not granulate much in the combs—at least with us.

But after all, we have no reason to worry about losing a few colonies. Gleanings tells us how Harry Fort of Greenwich, N.Y., made 30 strong colonies (?) out of one, in one season! Shall we try to do likewise, or get him to manufacture some for us? No, we will go a little more slowly.

Zurich, Ont.

COMB HONEY PRODUCTION vs. NON-PROTECTIVE HIVES

By Samuel Simmins.

"The commercial hives in this country are very simple and easy to manipulate, but I do not think they go far enough to make any records as to honey gathered. Of course, tons of honey are produced here, but we have to thank the immense richness of our country more than any intensive or exact manner of handling bees."—Letter from an American bee-keeper, Mich., U.S.A., June 9th, 1911.

Perhaps all Americans will not agree with the above; but it is possible, and I have always considered it to be the fact, that both American and Canadian hives and supers are too cheaply made, and non-protective for securing the highest results.‖

More expensive, better made, more protective hives and cases would pay the purchaser better than demanding cheap, makeshift hives. He would gain the additional cost in one season, and have 50 per cent. to the good each year after.

His stocks would build up more quickly and store more rapidly when the

‖Chaff hives are, of course, excepted; but bees often suffer in non-protected hives when set out of the celar.

season was well on. The workers would be protected from the heat of the day and the cool air of the night. We have plenty of flimsy hives in Great Britain, but they are genrally more protective than most American hives.

Area of Sections Too Extended.

In using the Langstroth frame there has been a tendency among owners to adopt a hive of four sections to cover the extent of the brood chamber thus formed. This has always appeared to me to be bad practice, because the outer ends of the side sections, more especially without protective cases, are sure to lag behind the inner work, just as whole end sections of a row will do.

I have, since the early 80's, provided against thin end of the row sections by allowing additional space at the outside walls parallel with the comb; and that is now done by the majority of bee-keepers. But the naturally slow work at the ends and sides I largely disposed of by building section cases double at the sides, with warm material packed between. I also restricted the line of sections to three in the frame instead of four.

I should like to be able to show how little economy there is in trying to work four sections in a line, more especially in non-protected cases. The work of comb-building and storing is very much slower, while at the last there are many more unfinished combs on hand.

The result is something like this: Two protected cases, with three sections in a line, seven in a row, forty-two in all, will be completed more quickly than one case, four in a line, eight in a row, thirty-two in all, in a non-protective case, while the forty-two will be more perfectly finished.

It is better to concentrate your force in a narrow space, if deeper, thus conserving the upward trend of the warm air from the stock; rather than to expand over a wide surface, leaving the outer sections beyond the rising warmth of the stock, and so exposed that the heat is slowly escaping.

Unless the supering area† is restricted, and the sections well protected, the bees will not work so well where exposed to excessive heat by day, and the chill air of the night.

If the honey spread all over the stock combs during the day, even placed on some of the younger larvæ or displacing it, cannot be stored above for the want of rapid comb-building, it is evident, the population of the hive is soon restricted, and the colony is not going to do anything like what was expected of it.

Keep Them at It.

Then we must keep them going, if we want the bees to give us hundreds of finished sections instead of fifties, or less. First we want protection, then every section should be ready with drawn foundation; and it is understood that there is a good queen, and a population ensured that will start with at least three supers of 21 sections each (having the drawn combs).

The first and second crates above the brood nest are usually finished and sealed very quickly, and it is a question of the moment whether others are added on top, or the lower crates removed and the fresh ones inserted in their places.

The first five sets, when drawn combs are supplied at the start, may be finished in a few days; but if sufficient progress is not being made, the stock combs are doubtless becoming crowded with stores.

Swarming to Ensure Brood Space

In the above case something must be done at once, and there is nothing better than making an artificial swarm with the old queen, with one brood

†Superficial; go as deep as may be needed.

comb, and half-inch starters in all the other stock frames.

The supers are then replaced on this swarm left on its own stand, while the original combs, in another hive, are turned to one side, so that the bulk of the adult workers join the swarm.

With a young queen added to the denuded hive, the lately corroded stock combs will soon be a solid mass of brood, and as this begins to hatch, this stock with the original combs is reunited by placing it over the swarm, after removing the old queen, when the supers are again set over the doubled hive. In a good locality this procedure will be responsible for 300 lbs. to 400 lbs. of comb honey.‡

Double and Single Separators—Inserting Foundation

Slatted separators have come to be regarded as somewhat fragile. They are pared down by the bees, while not infrequently the combs are attached to the slats, making them unsaleable.

However, it may be interesting to those who use 4¼"x4¼"x2" sections to know that for some years I have used in connection with these, **double slatted separators,** with ¼" cleats set in between, and no cleats on the outer surface. Otherwise I think slatted separators have not been adopted to any extent with 4¼" sections, except as I formerly used them for many years, ¼" thick, without cleats, but tacked at each end on the frame holders.

Why have a double set of slats to each separator? Can you not see that the double separator with a bee-space all up between allows twice as many bees to work up between the combs in a given time, while it permits direct and independent access to all upper tiers of sections, without the whole of the bees passing over the comb surfaces; while the space between each pair of sections is so much wider that there is less hindrance to the workers.

As a matter of fact, there is more encouragement for the bees to work up quickly in these wide spaces; and comb building is being rapidly carried on, while an adjoining hive with single separators has its spaces so cramped that the bees may have delayed working in their sections.

Single Separators

After all, a plain board, a full ⅛" thick, with ⅛" cleats on either side, is as good as a single slatted separator, and they last out many of the slatted kind, while giving equally good results as the single slatted where thin sections are used. My own preference is for 5"x4"x1½" sections, and these worked against ⅛" cleats give just 16 oz. in weight.

Three 5x4 sections are worked in each frame, and according to the plan I published some 20 years ago, the whole length sheet of foundation is placed across the several sections at a stroke.

It seems passing strange that the majority of comb honey producers still prefer to tinker with one section at a time, setting in the separate sheet of foundation by melted wax, or some laborious mechanical means, when by a simple twist of the wrist the whole line of sections may be furnished in less time than a single one can be set up, and, moreover, with no extraneous fixing.

The foundation is secured more firmly than by any other known method, while several sections are handled as one, with no danger of single sections slipping during manipulation, until finally they are separated by a thin knife or fine wire.

Inserting Full Length Foundation

The frame of several sections is placed over a block, which pushes the sections **nearly** half out of the frame.

‡This plan of control by swarming without increase was given by me in the early 80's, and will do equally well in the case of natural swarming.

The left hand then picks up the slit edges of the several sections, opening them like the leaves of a book, as all sections are slit on three sides. The foundation already in the right hand is immediately passed between the several halves. The frame is then turned over on to a flat surface, and all pressed back in place. The operation is carried out, after a little practice, much quicker than can be described.

The operations in order are as follows:

(1) Fill holders with 3-side slit sections.

(2) Cut the sheets of foundation 1-16" short of the total width of the several sections, and ¼" less in depth.

(3) Set frame of sections on the push block.

(4) Lift the several halves with left hand.

(5) Insert foundation with right hand.

(6) Turn over on flat surface and press back in place.

(7) Insert in crate as furnished.

(8) Use push block to help sections out of the frame when sealed.

Heathfield, Sussex, Dec. 4th, 1911.

CONDITION OF BEES IN ONTARIO

Honey Prospects for 1912

By Morley Pettit.

For the purpose of reporting on the condition of bees in Ontario and the honey crop prospects for 1912, blanks were sent to 6,800 bee-keepers by the Fruit Branch of the Department of Agriculture. Nearly one thousand sent replies, 125 of whom stated that they were out of business through winter loss and other causes. The total number of colonies reported by 844 bee-keepers for the fall of 1911 was 30,911. For May, 1912, it is 26,286. This represents a winter loss of fifteen per cent., which is one per cent. more than that reported a year ago. While it is a heavy winter loss, there is no doubt that the actual loss is much greater than that. One hundred and twenty-five bee-kepers have reported that they are out of business, without stating the cause. Several have written privately that they have lost all, or nearly all, their bees. The winter loss has also been heavy in many parts of the States. This has made the demand for bees very keen.

Bees are reported mostly in fair to good condition and crop prospects the same. Where prospects are reported poor it is due to alsike having been injured by the drouth of last summer. Clover has wintered almost uniformly well.

O.A.C., Guelph, May 23rd.

BEE-KEEPING BY TWENTIETH CENTURY METHODS

By J. E. Hand.

In these days of low prices and off years, it behooves us, as intelligent and progressive bee-kepers, to adopt methods that stand for economical management. Manipulation is but another name for labor, and, therefore, a system of management that simplifies manipulation, lessens labor and reduces the cost of honey production, merits the careful consideration of the up-to-date bee-keeper. The advantages derived from having colonies located in pairs close together has long been recognized by many of the leading honey producers of the country. Realizing the possibilities along the line of economical manipulation of bees independent of hives or combs, with hives located in pairs close together, the writer has developed a scheme by which the working force of two independent colonies may be combined in one set of supers, thus ensuring a strong force of workers right at the beginning of the early harvest

from clover, and incidentally controlling swarming with very little manipulation. The modus operandi is as follows: Two colonies are placed side by side, one inch apart, upon a specially-constructed hive-stand, the said hive-stand having an entrance on each side centrally located. Pivoted at their inner ends, and operating in said entrances, are two switch levers, the outer ends of which protrude from the entrances in such a way that when the outer end of the switch lever is moved to its limit of motion in one direction the entrance to the hive on that side is closed, and the entrance to the hive on the other side is opened, at one operation, without changing the appearance or position of said entrances, which are always wide open and always in the same position. When the hives are placed in position the entrance switches are turned so as to form an entrance for each colony on opposite sides of the bottom board and facing in opposite directions. In order to combine the working force of both colonies in one set of supers, thereby forcing them to enter the supers right at the beginning of harvest, we have only to cage the queen of hive No. 1 in a Miller cage, having the hole filled with queen candy, and push caged queen down between the combs of her hive, to be subsequently released by the bees; this is to prevent the possible loss of the queen by the influx of bees. Next move the switch lever to its limit in the opposite direction, thus closing the entrance to hive No. 2, and opening the same entrance into hive No. 1; thus all the bees that have ever flown from hive No. 2 will be deflected into hive No. 1 through their regular entrance without any excitement or disturbance. In 48 hours the queen will have been released and will proceed in the performance of her natural function. Colony No. 1 will now contain all the field bees of both hives and will be in condition to enter the supers at once, which means a full crop of surplus if the season is good. It will be noticed that this operation has closed the entrance to hive No. 2 and at the same time opened another entrance for hive No. 1, which will now have an entrance 12 inches wide at each end. In order to provide a new entrance and exit for the young bees in hive No. 2 there is an auxiliary entrance 6 inches wide at each end of said bottom board, to be opened and closed as occasion requires by a shutter; therefore the one on the side of hive No. 2 should now be opened. So much for getting the bees at work in the supers at the right time. The next thing to be considered is the swarming problem, for it is evident that a colony placed in such a condition of prosperity early in the season would develop the swarming mania in the midst of the harvest. Swarming at this stage would be a calamity that should be avoided, if possible. Therefore, upon the development of conditions that would foster the swarming impulse the operation is repeated and the field workers are shifted back into hive No. 2, in which the conditions that would favor swarming do not exist. This is done by reversing both switches and opening the side entrance to hive No. 1, first caging the queen. At this time, however, work in the supers will usually be under full headway and the super, bees and all, should be transferred over to hive No. 2. By shifting the bees every eight to ten days they are kept in condition for best results in honey production, with no desire to swarm. Thus by the application of correct principles in harmony with their habits with respect to the stationary entrances, bees may be handled automatically, independent of hives or combs, thus avoiding much disagreeable manipulation, including the lifting of heavy hives. I have outlined only one of the many methods by

which this system may be utilized to minimize labor in uniting and dividing colonies, transferring, forming increase, treating foul brood, etc. Like most good things, the invention is covered by letters patent of the United States, and it is hoped will prove of value to the bee-keeping fraternity.

Birmingham, Ohio.

BEE-KEEPING ON THE PRAIRIES

By G. G. Gunn

The question is often asked, by people who have moved into our prairie sections of Western Canada from the supposedly more favored regions of the East and South, where they have been used to the successful pursuit of this industry, "Can bee-keeping be successfully and profitably carried on on the prairies of Western Canada?" Having had over twenty-five years' experience with an apiary in the Province of Manitoba, the climatic and other conditions of which are substantially the same as in the two westward provinces of Saskatchewan and Alberta, it is my purpose, in the present brief article, to answer this question, so far as I am able. This I shall, naturally, endeavor to do out of my own experience; for, having travelled over a considerable portion of Saskatchewan, and having some knowledge of the general conditions that prevail in Alberta, I am of the opinion that my own experience could be duplicated in many districts of these Western provinces.

Wintering in the Cellar

Naturally, in considering a subject of this kind, one of the first thoughts that rush to the mind of the would-be bee-keeper is that of the winter. "What of the winter?" they say. "How could these Western winters, with their extreme length and severity of frost, affect one's chances of making a success of such an enterprise?" In some parts of the East and South, of course, a slight covering right on the summer stands, or a chaff hive, is all that is necessary for winter protection. Now, so far as Southern Alberta is concerned, I am not prepared to say but that, in certain sheltered locations, this method of wintering might prove quite successful. In the major portions of both Saskatchewan and Alberta, I have no hesitation in saying that it would not do at all. Here in Manitoba I have known of bees being successfully wintered in trenches dug in the garden, roofed over and covered with straw and earth; the general practice, however, is to winter in a cellar, and this method, while involving a certain amount of labor, in putting in and taking out the bees, is found to be most satisfactory. All the requirements for such a wintering quarter is that the cellar should be dry, dark, well ventilated and kept a few degrees above frost. I have always wintered mine in the basement of my house, and I think my experience in wintering has been quite as satisfactory as that of the average bee-keeper in Ontario or the States to the South. I am always careful to keep my cellar well ventilated, so as to be free from damp and mould. This ventilating is done by means of a small pipe leading up into the pipe of one of the heating stoves above. In this way, the draft through the pipe keeps up a constant circulation of air, and so draws all the foul air from the bees.

Need Plenty of Food

To winter them successfully, it is necessary to prepare the bees for winter during September while the days are warm, so that each hive is seen to have ample food for the long winter months, twenty to thirty pounds, according to the number of bees that are in it. When winter comes, say about the first of November, they should be put in their cellar, and, just as soon as all the snow is gone in the spring, and warm weather

is assured, they should be taken out and put on their old stands. On account of the long winter, it is well to get them out of winter quarters just as soon as it seems safe. See that they have some food, and clean away all the mould and dirt that may have gathered in the hive bottoms and on the combs during the winter. If possible, it is better still to transfer them into clean, dry hives. And last, but not least, see that each hive has a good queen, for on this depends all the success of the season.

For some time after the bees are taken out and placed on their summer stands, it will be necessary to look over them more or less frequently, and to build up any weak hives that may be among them. With us in Manitoba the swarming season commences about the first of June, any swarms coming in May being regarded as especially early. Swarms coming about this time will build up into strong colonies by midsummer, and will themselves swarm if allowed, and will often store as much surplus as the parent hive. My experience here with swarming has been that one or more swarms can be counted on for each colony during the season, and yet the honey production of the apiary be in no way interfered with. It will be found advantageous, however, to curtail swarming to a certain extent if honey production is the object in view. This can be done very easily by swarming artificially, and always keeping well ahead of the increase of the hive with empty frames and bodies. I frequently have my hives, the eight-frame Langstroth being used, built up six storeys high before the end of the season. My aim is always to keep so far ahead of the bees as to have "plenty of room at the top" for further expansion.

Face Morning Sun

The location of the apiary, here as elsewhere, is of no little importance. I have always had mine located in a spot well sheltered with trees, having an exposure to the south and east, with the doors of the hives facing the latter quarter. In this way they get the benefit of the early morning sun; and, in the cooler days of the autumn, the same advantage from the south; while, at all seasons, our chilling north winds are prevented from blowing upon them. If the plan of simply setting the hives on small blocks on the ground is followed, which is the one I have always followed myself, it will be necessary to keep all grass and weeds cut away from about them, which might hinder the bees from working, or tend to keep the hives damp during rainy weather.

Of equal importance with that of wintering, to the would-be bee-keeper of our Western prairie provinces, is the question of "pasture," or supply of honey-producing flowers in the summer. What about the pasturage? Are there sufficient wild flowers on our prairies to make it possible for bees to gather honey sufficient to make it worth while to bother with them? And I must say that this question is generally a discourager to the uninitiated. To the casual observer passing over our Western prairies, there does not appear to be a superabunance of flowers from which to produce honey. This, however, is very largely only in seeming. With the exception of the bare, bunch-grass prairies of certain parts of Manitoba, Alberta and Saskatchewan, where there is no timber or shelter for miles, and where bees could not very well be made a success in any case on account of the high winds that continually sweep over them, there is just as much natural pasture to be found in our Western provinces as in any part of the Dominion. Wild flowers are abundant all over the West, and many of the indigenous species are not to be despised as honey plants.

Moreover, where the natural wild flower is found to be scarce, it is a

very simple matter to introduce some of the famous honey plants of the East and South that will quickly grow wild and supply an abundance of pasture, if they are just given a chance. All that is necessary is to get a few pounds of seed of the common Sweet Clover (Mililotus Alba) and scatter them in any waste corner of the farm, along the roadside, or, especially, along the banks of any stream that may be in your neighborhood, and in a very short time there will be plenty of pasture for any number of bees. Another excellent honey plant that rapidly spreads itself, in a similar way, in waste places, is the common White Clover (Trifolium Repens), the seed of which may be got for a few cents from any seedsman. These plants, which produce the finest quality of honey, are perfectly hardy throughout the West; and, as I know from my own experience, will if scattered around a little, soon solve the pasture problem in any locality. Only a few years ago, in this district, i.e., the Red River north of Winnipeg, we were entirely dependent upon the wild plants and had none of these; now we have not only acres upon acres of the small white, but an abundance of the Sweet Clover also, growing from six to eight feet in height and producing a crop of the finest honey in the market. These plants, I may say, we were not even under the necessity of sowing; they came to us like any other wild weed; and now I would be quite justified in labelling my honey "Pure White Clover." What has taken place here, I am confident can be repeated in many other parts of the West.

Quality Excellent

I am often asked by people from the Eastern provinces as to the quality of the honey we produce in this Western country; and, in view of what I have just said, my answer can easily be guessed. In color the honey produced in my apiary can compare favorably with the best Eastern product; and in quality —well, of course, White Clover is White Clover all the world over. In all my twenty-five years as a bee-keeper I have not had ten customers who did not like my honey; and, on the other hand, I have some customers that I have supplied for over twenty years. To some who have moved to British Columbia I ship regularly each season. The bulk of my honey I dispose of to the leading grocer in Winnipeg; and, as a further commentary on quality, I may say that the only difficulty I have with him is that I cannot give him enough.

This brings us to the question of a market, which is really sufficiently answered in the last few remarks just made. In this Western country, where we have to import all these luxuries, there is no trouble to dispose of all the honey we can produce, and at a good price. And what is true of the Winnipeg district, I have no doubt, will be found true of the rest of Western Canada. The difficulty is not to dispose of the product, but to supply the demand.

Money in Bees

To a certain extent, the success of an enterprise is measured by the amount of money that can be made out of it; and, although some people go into bee-keeping simply for the novelty and pleasure, the majority of us go into it for the amount of hard cash we can make out of the business. Of course, we all, entirely irrespective of dividends, derive a certain amount of pleasure from studying the ways of this most wonderful insect; and, I may add, that it is only those who do who can hope in the end to make a success of it financially, either here in the West or anywhere else. But I would give it as my opinion that, judging from my own experience, there is no reason why any person living in any of our Western provinces, where it is sufficiently sheltered, should not be able to keep bees and make good money out of them.

With regard to this question of the profitableness or non-profitableness of bee-keeping in the West, I may, in closing, be pardoned in taking another leaf from the book of my experience. The question is often asked by would-be bee-keepers: "What yield should we get from each hive during the season?" —a rather hard question to answer in a general way, as it all depends on the season. Bee-keeping is just like any other agricultural calling that is dependent on the weather. Some years, when all the elements are favorable, the yield is good; others, when the weather is adverse, it shares the fate of other crops. What I count a fair average return from each hive (spring count), in my own apiary, is one swarm of new bees and one hundred pounds of extracted honey. If the spring is extra early, and bees rather than honey is the aim, one may get two swarms from each. Bees in this country are worth $10 a colony, and all my extracted honey I sell readily at fifteen cents a pound and upwards; so the intending bee-keeper can easily figure out, on this basis, the probable profits.

Seasons Affect Results

Now, while my experience has proven to me that there is good money to be made in bees, and a ready market for their produce, I do not wish any reader of this article to run away with the idea that it is all success and no failure; for while, in most years, they have, with me, proven a success, I have had other years in which they have proven just the reverse. These latter, however, I am glad to say, have been few in comparison. Bee-keeping is very much like farming; too dry a season is not good for them, neither is a too wet one. While keeping bees I also grow all kinds of grain, and my experience has been that the honey crop has proven more of a sure thing than did the grain crop; and, what is better still, the price has always been good; for no matter what the season is like, the honey crop, even though it may be a small one, is invariably excellent in quality, and, as a result, the price is always good, for, so far, we have no honey combines to keep the price down.

As a finishing word, I will just give the experience of two different years in my apiary. These, of course, are the two extremes. I have given the happy medium elsewhere. A few years ago the summer was very dry, and out of each hive (spring count) all that I got was one swarm and about twenty pounds of honey. However, that same season, the hay and grain crop, in our locality, was also a failure. Last season, my apiary (spring count) averaged one hundred and eighty pounds of choice honey to the hive, and considerably more than doubled itself in the number of colonies.—Grain Growers' Guide.

HOW SHOULD WE CLIP THE QUEEN'S WINGS?

The Belgian paper, "Progrés Apicole," says:

"It is known that the queen bee during egg-laying holds herself with the wings in equilibrium. That is, however, impossible if the wings are trimmed (cut) across. Consequently such a queen will be burdened in her regular activity, and therefore is not seldom removed by the workers. To prevent this catastrophe, which already has overtaken many colonies without the owner knowing the cause, the wings must not be cut across, but only long

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THE INFLUENCE OF WEATHER ON BEES

Mr. Herbert Mace, an English bee-keeper, commenced in 1911 to record daily observations of the weather and of the varying conditions in the hives of his apiary. He writes in "**Nature**," giving the results of his observations, which may be summarized as follows:

(1) Sunshine is of paramount importance.

(2) High winds cause great loss of bees.

(3) Comparatively low temperatures cause extremely poor results. Classifying the maximum temperatures recorded into three groups—those below 65°, those above 66° and below 75°, and those above 75°—the average results for a strong hive under the three classes of temperature were gains of .108 lbs., .723 lbs. and 1,182 lbs. per day, respectively.

The influence of low temperature is felt in two ways—firstly, particularly in a weak colony, the bulk of the bees have to remain in the hive to keep up the temperature so as to avoid chilling the brood, and secondly, the flowers are affected, and the amount of nectar secreted is diminished.

No conclusive evidence was obtained in support of the theory that warm nights induce a flow of nectar, and the statement sometimes made by bee-keepers, that there is rarely a flow of honey during the prevalence of an east wind, was not supported by the recorded results.

ISLE OF WIGHT BEE DISEASE

We have received from the Board of Agriculture, London, a bulletin of some 140 pages, containing a very full report of investigations into the natural history and symptoms of the Isle of Wight Bee Disease, which have been carried out on behalf of the English Board of Agriculture by various scientists and practical bee-keepers.

In our April issue D. M. Macdonald wrote:

"We in this country are, unfortunately, at present suffering from a far more malignant and insidious disease,

compared with which either form of foul brood is a mere bagatelle. This Isle of Wight disease in all its stages is like the pestilence which walketh in darkness, as the evil has such a hold before its presence is fully recognized that trying to cure it is mere child's play.

The disease is causing much consternation amongst English bee-keepers, and in many districts, we are informed, the bees have been completely wiped out of existence. Its attacks are not confined to hive bees, for infection experiments have shown that other hymenoptera such as wild bees, wasps, etc., may transmit the disease and be infected with it.

The Journal of the Board of Agriculture briefly sums up the findings of the investigators as follows:

"It is shown that infection may be transmitted through the agency of infected foods or of living infected bees, among the former of which infected water and honey seem to be the most important. The introduction of the parasite into the hive is not necessarily followed by the appearance of the symptoms of the disease. It is probable that the stock sometimes remains healthy, and the infected bees are gradually eliminated; sometimes weeks or months elapse before the symptoms appear; occasionally the stock suffers severely for a time and then apparently recovers, though usually it succumbs in the end. Frequently the stock suffers from a mild form of the disease, but gradually becomes weaker and dies, and more rarely acute symptoms develop within a few days. The fact is emphasized that in the production of this disease, as in the production of most other diseases, various factors are concerned besides the mere introduction of the infecting agent. Unsuitable food, especially for wintering, lessens the natural resistance of the bee, and enables the parasite to develop more readily. Cold and damp weather and other unfavorable conditions act in the same way. On the other hand, suitable food and favorable climatic conditions increase the natural resistance of the bees, and, at least for a time, keep the disease in check.

In regard to preventive and remedial measures, drug treatment appears to have proved of little value, such treatment in the great majority of cases having produced no effect on the symptoms or rate of mortality. No undoubted example of a permanent cure appears to be recorded, and it is considered that in view of the nature of the causative agent it is exceedingly improbable that any of the usual drugs will be found to be of value. There is some evidence that the substitution of candy and syrup for natural stores for wintering is sometimes beneficial. The recommendations in relation to prevention of the disease include the provision of an easily accessible supply of fresh water, which should be changed daily; the collection and burning of bees dying with suspicious symptoms; digging and disinfection of the ground round the hives; disinfection of old hives; destruction of diseased stocks; removal of healthy hives to a fresh site if possible; restocking after an attack, when this is necessary, with bees from an infected area, since such bees, if they have survived an attack, may be to some extent immune, though some months should elapse between the death of the last stock and the importation of fresh bees; in non-infected districts driven bees or stocks should not be imported from infected areas; and the possible building up of apiaries from stocks which show well-marked resistance to the disease in infected apiaries or from stocks known to be partially immune."

THE VALUE OF IMMUNE STRAINS

We ask our readers to consider well the suggestions contained in the last twelve lines just quoted, as well as the following statement, which appears on page 127 of the Report:

"In many apiaries situated in infected areas it has been the practice to replace the stocks which have died by others. These stocks, in turn, become infected area, since, if they have sur- and thus the disease is kept alive. When the disease visits an apiary bees should not be imported into it, at any rate from a non-infected district, until the disease has run its course. If it is considered desirable to introduce fresh stocks, they should be obtained from an infected area, since, if they have survived an attack, they may be to some extent immune. Even partially immune

bees cannot be expected to survive if they receive large doses of infected material, though they may be able to resist small doses.''

We recommended in these pages some time ago a similar plan of attacking the foul brood disease question—Nature's own plan, and the most effective of all. When the subject of immunity is properly understood by bee-keepers, they will recognize in those colonies that have successfully passed through the ordeal of disease, strains of the greatest practical value. Let us Italianize, by all means, so that we may obtain an approximately pure race of bees, but at the same time let us breed only from the most immune strains that are found in the race.

A NATURAL ENEMY OF THE WAX MOTH

According to the ''Figaro,'' the wax moth has a dangerous enemy, a hymenopterous insect named **Apenteles laterali**s, which lives as a parasite on it. The female lays its eggs in the larvæ of the wax moth, upon which the young when hatched will feed. The parasite was observed last summer by Mons. Conté in the neighborhood of Lyon (France), where it spread very quickly. It is about 4 millimetres long, very lively and shy of light. The body is black and the wings are transparent and brown speckled. According to Conté, the bees took no notice of the insect, so that it easily entered the hive in search of its prey.

ARE THE BEES ATTRACTED THROUGH THE COLORS OF FLOWERS OR BY THE SCENT OF NECTAR?

Dr. von Buttel-Keepen discusses this question in ''l'Apiculture Nouvelle'' and says that Plateau resolutely defends the opinion that the bees are principally attracted by the nectar and not through the color, while Aug. Forel, after many years of experiments almost alone takes the opposite view. Some recent investigators have lately agreed with him, as they are in the position to prove his conclusions, that it is only the color which entices the bees. Supported by the investigations of Forel, Andreas, Giltay, Delto and Kienitz-Gerloff, it must appear as proved that the bees particularly are attracted by the colors of the flowers and not through the nectar. The color of flowers serves as a prominent sign which shows from a distance that here is nourishment prepared for the insect. The fact that the foraging bees, as a rule, never visit two kinds of flowers, but only one sort, shows sufficiently that they observe the flowers attentively. This is easily seen when one examines the pollen baskets of bees returning to their hives. One color of pollen will be found, and Dr. v. Buttel remarks that he only once has seen a mixture.

CANADIAN NATIONAL EXHIBITION

The prize list of the Canadian National Exhibition, Toronto, August 24th to September 9th, has been issued. It shows the usual liberal prizes in all departments of live stock, agriculture, apiculture and home work, amounting to a total of $55,000. It is also evident that the list has been carefully revised to have it in keeping with up-to-date conditions. Elsewhere in this issue will be found the prize list for honey, etc.

On the whole, the list shows a distinct advance on its predecessors, and, as the attractions will include a review of cadets from all the overseas dominions of the Empire, the Scots Guards Band and a brilliant historical spectacle, the Siege of Delhi, it is safe to predict another record year for the Canadian National.

SPRAYING DURING FRUIT BLOOM

Mr. Simon of Paris, Ont., writes us as follows:

Enclosed you will find a clipping taken from 'Farm and Dairy,' in which you will see the second spraying is recommended to be done just after the blossoms open. The posters sent out by the Ontario Bee-keepers' Association in regard to spraying state that the law expressly forbids spraying during fruit-bloom. An article of the kind inserted in a farming paper at a time when spraying and spraying mixtures are at their height will surely cause some trouble. While I have not had actual losses from such a cause, I have found dead larvæ in my hives, which caused me quite a little worry at first, but after having it two years, just in the spring, and after the inspector stating I had no foul brood, I began to look around, and found one of the neighbors made it a custom of spraying plum trees when they were in full bloom. Such articles ought to be corrected, I think, and I know no other way but to send them in when noticed to our bee journal.

The clipping which Mr. Simon has been so good as to submit to us concludes with the following paragraph:

"We spray three times. The first spraying is given when the wood is dormant, one part of concentrated spray solution to 10 or 11 parts of water. The second spraying, **just after the blossoms open,** is of a strength of one to 35. The other spraying of the same strength is applied just as the blossoms fall. **Arsenate of lead is added to control the codling moth.**"

Looking at it from the fruit-grower's point of view, it is difficult to understand how any practical man can be so foolish as to advise the use of a corrosive spray material upon the delicate sexual organs contained in the bloom of fruit trees at a time when they are least protected and most liable to injury from foreign substances. It is difficult to realize that a fruit-grower will consciously spread destruction amongst bees—his neighbor's property, most probably—upon whose agency the pollination of the fruit-bloom largely depends. Yet this is what the article in question advocates when it advises spraying during fruit-bloom.

Let us again urge upon all bee-keepers the great necessity of keeping a watchful eye upon all such harmful and illegal practices, and, if necessary, of taking effective steps to protect the interests of the bee-keeping profession. We shall be very glad to have this matter further ventilated in these columns, and also to hear of any instances in which the law has been transgressed.

FOR WASP AND BEE STINGS

Carbolic acid in crystals 1 dram, glycerine 4 drams; distilled water, 1 dram. Dissolve the acid by the aid of a little heat. Two or three drops of the preparation should be placed on a little cotton wool, which, if possible, should be tied over the wound, so keeping the air away. Care should always be taken to see that the sting is not left in the flesh.

Other remedies are a solution of ammonia and bicarbonate of soda made into a paste with water and vinegar.

LOSS DUE TO POOR STORES

I have lost about 50 colonies out of 212, and what are left are not in very good condition. The loss, I think, was due mostly to poor winter stores. Buckwheat didn't yield any honey in my locality last season, but the bees filled the brood nests and gave a small surplus very late in the fall—mostly I think from asters. 30 of the weakest colonies I had wintered on sugar syrup, and all are living and in the best condition now.

LEWIS MINOR

Southville, May 2, 1912.

LOSSES IN NEW BRUNSWICK 75%

Mr. R. L. Todd of Milltown, N. B. writes us saying that the bee-keepers of Charlotte and Washington Counties have sustained big losses through wintering, amounting in cases to 75%. These heavy losses he attributes to faulty methods of wintering.

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REPORTS AND EXPERIENCES

GLENGARRY (ONT.) BEE-KEEPERS' ASSOCIATION

Spring Meeting

On the afternoon of May 7th a goodly number of the members of the Glengarry Bee-keepers' Association met in the apiary of Alex. Dickson, Lancaster, for their annual spring meeting, Mr. Esdon presiding.

Following the president's opening address and the transaction of business matters, Mr. A. Dickson gave a demonstration of "How to Manage Your Bees," comprising a complete survey of the year's work of the bee-keeper from early spring until the fall, when they are put into shelter for winter. Special stress was laid on such important subjects as how to cut down swarming to a minimum, the different methods of queen-raising, and how queens are introduced. Much interesting discussion followed these various points as they were dealt with by the speaker.

A second demonstration on "Foul Brood" was given by the foul-brood inspector, who carefully described the nature of the two varieties of the disease—the American and the European.

It was pointed out that as yet the only remedy for European Foul Brood was to Italianize, the Italian bee being partially immune to the disease.

At the completion of the lecture a vote of thanks was tendered by the members to the speaker, after which the meeting adjourned.

SPRING MEETING OF THE MIDDLESEX B.K.A.

The bee-keepers of Middlesex held their spring meeting in London on Saturday May 4th. The attendance was much better than at the last few meetings due partly to the fact that printed postcards stating the business to be transacted, were sent out to a great number of the bee-keepers in the county. The morning session was entirely taken up with wintering reports. The losses were unusually heavy, running all the way from 5% to the total loss of apiaries. Mr. Jacob Haberer of Zurich reported a loss of 33⅓%. His bees had gathered large quantities of fall stores, and owing to pressure of work only these colonies were fed which were light and the result was a great deal of dysentery especially among those wintered out of doors. Those wintered in the cellar did not consume so heavily and consequently were less affected. Mr. Jacob McEwen, Ailsa Craig, lost twenty colonies, due largely to failing queens. A large part of these were queens which he had bought, and his experience has proved that queens which have come through the mails will not wear as long as queens reared in his own yard. Others present corroborated this though none could give the reason. Rev. John Moore, of Springbank, winters his bees in the cellar, removes them early, and gives protection. Out of 97 colonies he had no losses; Angus Galbraith winters in the cellar, and his losses were light; David Anguish, Lambeth, winters four in a case on half depth frames, loss 5%. E. T. Bainard, Lambeth, fed a cheap grade of sugar containing some yellow sugar to 18 of his stocks and these were almost a total loss from dysentery; feeding much more heavily than usual last fall, owing to the large amount of stores consumed, lost his usual 10% from starvation, but he determined not to repeat this. Miss Thirlwall of Duncrief, lost one colony from starvation. She keeps from 10 to 14 colonies and in ten years has only lost 4, (can anyone beat this record?). The secretary, in a very chastened spirit, had to confess that she had lost about a dozen from starvation. Reports from the south western part of the county, where the winters are usually quite mild give the loss at 75%.

The first business of the afternoon session was with regard to the association fee. This has been 75 cents, for the local with a bee journal for premium, and 50c extra for the Ontario Association with the C. B. J. as a premium. The grant from the O. B. K. A. has enabled the local association to do this, but the decrease in the grant, owing to the increase in the county association, made it neces-

sary to get in more money from the fees. The general feeling among the members was as the membership of the provincial association was largely kept up by the local societies the grants to these ought to be increased, and also that the low fee which a good grant enables the the society to give, greatly increases the circulation of the bee journals thus doing good educational work. A resolution was passed asking the Ontario Association for an increased grant and in the meantime the fees were raised for the present year to $1.50.

The old question of inspectors was brought up. The old inspectors are feeling that the remuneration is not sufficient to warrant them leaving their apiaries when the work had to be done. This results in the work passing largely into the hands of students of the O. A. C., and the old bee-keepers thought it ought to be done by experienced men, or at any rate, that experienced men ought to be available, even if the beekeeper desiring inspection had to pay for the services himself. No action was taken with regard to the demonstration work to be done by the government, so leaving the department free to make such arrangements as they think best for the county.

ETHEL ROBSON, Secy.

Ilderton, Ont.

PREFERS THE SMALL HIVE

Our bees came through the winter in pretty good shape with a loss of about 4% I have sold some this spring and am now down to 63 colonies. They are building up fast, and as soon as the weather gets a little warmer I shall put in supers.The weather has been rather wet and cold since the 12th of May. I winter out-doors in Chaff hives. The hives that get buried in snow drifts consume the least stores and always winter well. The large hives that we hear so much about—they may be all right. I have never tried the 12-frame hive, but have used some nine-frame hives, though I can't say that I found them any better than the eight frame hive. I also have ten frame hives. I use them for brood-nests only. However it was an eight frame Langstroth that carried off the prize in the production of extracted honey at Poplar last year.

WM. ROBINSON.

Poplar, Ont., May 22.

TORONTO BEE-KEEPERS' ASSOCIATION

Hold Their First Apiary Demonstration

The first Apiary Demonstration of the recently formed Toronto B. K. A. was held on Thursday May 23rd, in the beautiful grounds of Mrs. C. Johnstone, on the Humber Bay, a short distance from the city. The occasion was favored by bee-weather and the colonies exhibited their best party behavior. In spite of the fact that there were a number of counter attraction in the city and neighborhood on the day of the demonstration, some forty bee-keepers attended, and were charmingly and hospitably received by their hostess. The location of the apiary is ideal, being situated in a little ravine not far from the house. The position is thus sheltered from the winds that blow from over the water.

The demonstration was in the hands of Mr. Jarvis of the O. A. C. who confined his remarks principally to describing the internal arrangements of the hive. A large number of those attending were apparently novices, and consequently Mr. Jarvis' remarks proved very instructive and highly profitable to his audience, as did also his explanation of the Sibbald Wax Press and practical demonstration of its use.

After the demonstration was concluded, all repaired to the house and partook of a most enjoyable luncheon. The inner man satisfied, all repaired again to the lawn, where Mr. Temple photographed the assembly. The President then gathered his flock around him and in a few well-chosen words, welcomed members friends and guests alike, and called upon Mr. Roach, a bee-keeper of near 50 years to address them. This patriarch of beedom was listened to with marked attention. Mr. Jarvis related some experiences that proved how close a student he is of bee culture.

The Secretary moved, on behalf of the Association, a vote of thanks to Mrs. Johnstone for the use of her apiary, and her hospitality generally. This was seconded by Mr. Smith, and characteristically replied to by Mrs. Johnstone.

Taking all in all, the executive feel that the day was a great success and feel much much encouraged thereat.

C. E. HOPPER, Secy.
90 Galley Ave.

Toronto.

THE CAUSE OF BEES DYING IN THE SPRING

I have been watching bees and studying "beeology" for many years, and have harvested and sold close on to fifty tons of honey. But I feel that I am knocked out this spring with more defeat than I ever met before. The whole force except a few hives have dwindled 30 and 40 per cent. And out of 90 good heavy colonies 12 came out of the cellar dead, whilst nearly as many more have dwindled since that date, April 22nd.

There are more yet to die. I will ask this question, and stagger at answering it myself, according to the knowledge I have obtained by my experience. Question: What is the Cause of our Bees dying oft in the Spring? My answer is this, we fail to supply our hives with young field workers after we get in our honey harvest. Last fall was very dry, and there was no fall flow, consequently there was no brood and no young bees, (I predicted what would happen this spring, and it has come to pass in our yard). I think it one of the greatest mistakes to let colonies go into winter quarters with merely the old stock of field workers, and no young bees. I shall be glad if others who have had experience in regard to fall feeding, will give their opinion in this matter.

opinion in this matter.

A. R. McRAE.

Bear Brook, Ont.

Took bees out April 15th. Came out in fairly good condition. Lost a few, suffering from shortness of stores and spring dwindling. The prospects are very bright for the coming season for Perth County.

F. S.

Dublin, Ontario.

Bees wintered unusually well in root cellar as usual. One lost out of 49. Others good. Set out April 15th. Clover prospect good.

H. McC.

North Bruce, April 29th, 1912.

REPORTS INVITED

We are always glad to hear from our readers. Drop us a postal card giving us a concise account of your experiences.

BEWARE OF FOUL BROOD

Brief Instructions for Treatment.

In a honey flow, in the evening, remove the colony from its stand and set in its place a clean disinfected hive containing clean frames with foundation starters. If the weather is very warm, place an empty hive under the one containing the starters for a few days, to give a good clustering place for the swarm. Cover the entrance with queen-excluding metal. Now shake the bees from the combs of the old hive into the new; but if any fresh nectar flies out in shaking it will be necessary to brush the bees. Get these combs immediately under cover, and clean up very carefully any honey that may be around, so robbers from healthy colonies cannot carry home disease.

When the diseased colonies are weak in bees, two or three should be put together into one clean hive so as to get a good-sized colony. In doing this diseased colonies must be united with their next-door neighbor and not carried to another part of the apiary.

All combs from the supers as well as from the brood-chambers of the diseased colonies must be either burned or melted and boiled thoroughly before the wax is fit to use again. The honey that is removed is entirely unfit for bee feed and should be buried deep enough to be out of the reach of any bees.

For fuller particulars in reference to Foul Brood see Bulletin No. 197, issued by the Ontario Dept. of Agriculture, which will be sent you on application to the Director, Fruit Branch, Parliament Buildings, Toronto.

When writing to advertisers, please mention the Canadian Bee Journal.

CANADIAN NATIONAL EXHIBITION, TORONTO, AUG. 24 TO SEPT. 9, 1912

HONEY AND APIARIAN PRODUCTS

Prize List

Entry Fee: 50 cents each entry

All exhibits in this department to be in place and arranged by Monday noon, August 26th.

All Exhibitors must be bonâ fide bee-keepers.

The prizes are awarded only for the quantity of honey specified in the various sections, and no two members of the same family will be awarded prizes in the same section.

Exhibitors must not change their exhibits after the judges have given their awards.

Exhibitors selling honey during the Exhibition will not be allowed to make any removal from their regular exhibit, but may have a special supply at hand from which the honey sold may be taken.

In the solicitation of customers no unseemly noise will be permitted.

Comb Honey must be exhibited in natural form, paper or any other trimming not allowed.

Exhibits in this department will be judged by points.

For lists and entry blanks write J. O. Orr, Manager, City Hall, Toronto.

CLASS 272

Sec.		1st	2nd	3rd	4th
1.	Best and most attractive display of 50 lbs. of extracted granulated Clover Honey, in glass, 50 points for quality, 50 points for display	$5	$4	$2	$1
2.	Best and most attractive display of 50 lbs. of extracted granulated Linden Honey, in glass, 50 points for quality, 50 points for display	5	4	2	1
3.	Best display of Clover, Linden, Buckwheat or Thistle, of 300 lbs. of liquid extracted Honey, not less than 150 lbs. must be in glass, quality to count 50 points, display 50 points	18	12	8	5
4.	Best 300 lbs. Clover, Linden, Buckwheat of Comb Honey, in sections, quality to count 50 points, display 50 points	20	15	10	6
5.	Best 24 sections of Comb Honey, any variety, quality to be considered, clean sections and best filled	6	4	3	2
6.	Best 100 lbs. of extracted liquid Linden Honey, in glass. Display to count	7	5	3	2
7.	Best 100 lbs. of extracted liquid Clover Honey, in glass. Display to count	7	5	3	2
8.	Best 100 lbs. of extracted liquid, A.O.V., in glass. Display to count	7	5	3	2
9.	Best display of 100 lbs. of extracted liquid Honey, any kind, display to count 80 points	7	5	3	..
10.	Best 20 lbs. of extracted liquid Clover Honey, in glass	4	3	2	1
11.	Best 20 lbs. of extracted liquid Linden Honey, in glass	4	3	2	1
12.	Best 20 lbs. of extracted liquid Buckwheat Honey, in glass	4	3	2	1
13.	Best display of 200 lbs. Comb and extract Honey suitable for a grocer's window or counter, space to be occupied not to exceed 6 feet square by 4 feet high	10	7	4	2
14.	Best and most attractive display of Beeswax, not less than 10 lbs.	4	3	2	1
15.	Best 10 lbs. Beeswax, soft, bright yellow wax to be given the preference	4	3	2	1
16.	Best exhibit of Italian Bees, with queen, in single comb observatory hive	7	5	3	..
17.	Best exhibit of any other variety, with queen, in single comb observatory hive	7	5	3	..
18.	To the Exhibitor making the best and most attractive display	15	10	5	..

The prize in Section 18 is given by the **Ontario Bee-keepers' Association.**

Entries close August 15th

Want and Exchange Column

Advertisements for this column will be received at the rate of 50 cents for 25 words, each additional word one cent. Payments strictly in advance, as the amounts are too small to permit of book-keeping. Write copy of ad. on a separate sheet from any other matter, and on one side of the paper only. Say plainly how many times ad is to be inserted. Matter must reach us not later than the 23rd of each month.

WANTED

WANTED TO BUY—Wax and Honey in any quantity. Bee-keepers' supplies for sale. Root's goods a specialty. F. W. Bell, 4 Cherrier St., Montreal.

WANTED—I would like to contract now for your this season's light honey, either comb or extracted. I can supply tins. Write me. G. A. Deadman, Brussels, Ont.

WANTED—Your order for untested, leather-colored Italian Queens. One 75c; 10 for $7. Select virgins, 10 for $4.50. N. E. France & Son, Platteville, Wis., U.S.A.

WANTED—To buy, Bees, Honey and Wax. Bee-keepers' supplies for sale, especially the A. I. Root Co.'s line of goods. Address F. W. Bell, 4 Cherrier St., Montreal, Que. tf

WANTED—Representative wanted in each locality to mail circulars for Cut-Rate Grocery Mail Order House. Few hours' spare time will easily earn $20 weekly. Any one can do the work. Outfit furnished free. Dominion Grocery Co., Windsor, Ont. tf

HONEY WANTED—We save you risk and expense of purchasing cans, freight and uncertainty of market for comb and extracted honey. Write us if you are likely to have a honey crop. Reference, any bank. Foster & Holtermann, Limited, Brantford, Ont. tf

FOR SALE

FOR SALE—25 colonies of bees and outfit. A good locality here for keeping bees. George Ott, Arkona, Ont.

FOR SALE—Queens and half-pound packages. A good strain of 3-banded Italians for honey, now ready. Satisfaction guaranteed. W. D. Achord, Fitzpatrick, Ala., U.S.A.

BEES FOR SALE—Forty-five colonies Italians or their crosses, in 8-frame Langstroth hives. Good colonies and free from disease. Apply to Stephen McNeill, Conn P.O., Ont.

GOLDEN QUEEN BEES, ready to mail, at $1.00 each; six for $5.00. This stock has been favorably reported upon in black brood localities; also for foul brood. J. B. Case, Port Orange, Fla., U.S.A.

BEES FOR SALE—Am expecting to bring from the South a carload of bees, strong colonies in good order. Probably one hundred as yet unsold. Address Foster & Holtermann, Limited, Brantford, Ont.

FOR SALE—Golden Italian Queens; tested $1.00, select tested $1.25, untested 70c each, dozen $8.00. After July 1st: Untested 60c each, dozen $7.00. Send for price list. D. T. Gaster, Rt. 2, Randleman, N.C., U.S.A.

FOR SALE—10,000 lbs fancy honey, light and dark amber, barrels and 60-lb cans, same as we use for bottle trade; dark amber, 10c. Exhibition White Wyandottes, $1.00 per set; baby chicks, 15 to 20c. Queens, $1.00. Todd Bros., Milltown, N.B.

ITALIAN QUEENS after May 1st. Robey, Alexander or Case strains. Untested, 75c; tested, $1.25 breeders, $3.00; Carniolan, Cyprian, Caucasian and Banats, untested, $1.00; tested, $1.50. Honey packages and supplies. W. C. Morris, Nepperhan Heights, Yonkers, N.Y., U.S.A.

ITALIAN QUEENS—3-banded, finest quality; raised in latitude 59°. Tested: June, $3.00; July, $2.50; August, $2.00. Breeders: June, $6.00; July, $5.00; August, $4.00. Rebate of 25 per cent. when purchased by the dozen. Alexander Lundgren, 12 Tomtebogatan, Stockholm, Sweden, Europe.

FOR SALE—Eighteen colonies Italian bees in 8 and 10-frame Langstroth hives, painted white, fitted with reversible floors, Ideal galvanized covers, division boards, queen-excluders, hive stands and wintering cases; few empty hives; quantity bee-keepers' supplies. Apply to Wilfred Kitchen, Villa Nova, Ont. 5

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N QUEENS
Bred Strain

CANADA, MEXICO,
BA

Intested
September, $1 each.
dozen.
Tested
September, $1.50 each.
dozen.
Lots of 50 or More
"Superiority of the
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G. HANN
ieen Breeder
WN, N.J.

THE SECRET OF

SUCCESS IN BEE KEEPING

IS TO KEEP YOUR COLONY STRONG,

TO DO THIS YOU MUST HAVE

Good Laying Queens

Which we Guarantee at the following Prices:

	GOLDEN	3 BAND ITALIAN		CARNIOLAN
Untested	1 for $1.00.	6 for $5.40.	12 for $9.60.	25 for $17.50.
Tested	1 for $1.50.	6 for $8.40.	12 for $15.60.	25 for $30.00.
Nuclei with Untested Queen		1 Frame $2.50.	Six 1 Frame	$15.00.
" " " "		2 Frame $3.50.	Six 2 Frame	$20.40.
" " Tested "		1 Frame $3.00.	Six 1 Frame	$17.40.
" " " "		2 Frame $4.00.	Six 2 Frame	$23.40.

The drones used in our Apiary for Mating purpose are reared from the very best selected Queens which is as necessary as the selecting of a good Queen for Queen rearing.

For good Queens and quick service you can not do better than place your order with us. We guarantee safe arrival and satisfaction. Directions for building up weak Colonies will be mailed to you for 10 cents.

The above Queens are all reared in separate yards.

W. J. LITTLEFIELD

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FINE ITALIAN QUEEN BEES

All authorities agree that the Italians are best to withstand diseases. Get our strain of Italians, which are hardy, strong and vigorous.

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These are large, prolific young queens, whose bees are gentle and sure to please.

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MOTT'S Strain of **ITALIAN BEES**
also Carniolans

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Bees by pound and half pound nuclei.

Plans "How to Introduce Queens," 15 cts. "How to Increase," 15 cts, or both 25 cts.

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Golden and Leather Colored Italians

We are receiving orders now for early delivery. Early cash order discounts. Safe delivery at your Post Office guaranteed.

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Doolittle & Clark

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