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CANADIAN BEE JOURNAL

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WHOLE
No. 376

Shade has at various times been advocated for bee hives. The Review says.

Shade. "Sunflowers make a neat, effectual and desirable shade for hives. The seed must be planted early and the ground rich in order to have the plants large enough to furnish shade during the hot days of June and July. Plant five or six seeds in a row four feet long and a foot south of each hive. As the plants grow they can be thinned out if necessary. A sunflower apiary is decidedly picturesque."

I would just about as soon go about with a two lb. weight attached to each foot as to put an apiary in such shape. I like to have free vision through the apiary and be in a position to quickly detect any irregularity. To gain such shade hinders greatly the free circulation of air, an important factor. I do not think portable shade boards can be used, or placing the hives on the edges of apple trees with the limbs not too low.

* * *

In The Deutsche Illustrierte Bienenzeitung the editor says that Germany and Europe generally, has had a very good honey crop. He also takes the precaution to warn its readers especially beginners that the results of the past year cannot be obtained every year. On the American continent the opposite advice will be applicable. Do not get pessimistic and imagine that every year is as poor a honey year as the season of 1895.

* * *

Eberbach in Germany, there is a "Beekeepers School," last autumn there were 18 scholars, thirteen men and five women in attendance.

Down With Adulteration.

MR. EDITOR,—I have just read J. H. Martin's article entitled, "The Honey Competition Fallacy." It is right to the point. Are we not going to do something about it? If not, are the difficulties so great in the way of getting some effective laws, such as some States and Canada have? We want laws compelling all producers or manufacturers of articles of food to label truly the constituents of everything offered for sale, with heavy penalties for violations. Let our "big guns" boom the alarm, and do so in such a way as to wake everybody up to their senses.

You will remember I sent you a sample of honey for your opinion on it. A man calling himself J. C. Hogarth, of California, has been on the line of the Rock Island railroad selling so-called California honey in 50-pound cans, at whatever price he can get. An Ottawa firm, that had bought 100 pounds from him, found that their customers, who were used to my honey, would not buy it; they had to dispose of it the best way they could, and return to mine. It is some of the honey I sent you. Now, who is J. C. Hogarth? Can somebody vouch for him? Some of our leaders, or would be leaders, have advised us to keep still on the subject. I think it bad advice. We should never keep still until we have silenced the adulterators, or at least until we have obtained law compelling adulterators to call their stuff what it really is.

What is the use to work faithfully for years to create a home market for honest home product, and at last be undermined and undersold by a mixture of half glucose or more, sold for honey. to unsuspected purchasers?

I am not jealous of honest competitors, and honest, straight goods—if such can undersell me. Well, I say, good for the consumers, we all must live, and the buyers

are in the majority; but fraudulent competition is what riles me.

Let us awake and do something!

Utica, Ill.

A. MOTTAZ.

[Yes the sample of so called "honey" which Mr. Mottaz sent us was pretty vile stuff. We pronounced it glucosed, at once, what a pity that we have no good laws that would help put the villainous adulterators where they belong. With the best glucose at one cent a pound, what won't the criminally inclined do when they have a chance? Bee-keepers *must* arouse, united, and then push for anti-adulteration laws. Once having them (the laws), we'll soon start the adulterators on the run.—Ed.]

The above comes from the "American Bee Journal." In this matter our friends in the United States have our sincere sympathy. It is of the greatest importance that bee-keepers have laws to prohibit the adulteration of honey. True bee-keepers will incur the enmity of a few who are opposed to such laws, and a few more who value such men's friendship more than they do the bee-keeping interests, but the battle must be fought in a whole-hearted manner, and victory will be assured in the matter, We wish our U. S. friends every success.—Ed. C. B. J.

FOUL BROOD.

E. S. LOVESY,

I would have been much pleased to have met you at the convention of the North American next month, but circumstances will not permit at this time. Last year at the St. Joseph Convention the following question was asked: "What can we do to prevent and cure foul brood?" And I notice with regret that the only answer given was "we can do nothing." Really such an answer to so vital a question should never have emanated from the North American Bee-Keepers' Association, for it is a fact that much can be done, both to prevent and cure this, the most dreaded of all bee-diseases. For every case that we cure, we help to prevent it, even if we obliterate or destroy it, we prevent its increase, then why say that we can do nothing. While we may not be able to tell its source or to give the cause, we can and do do much to cure and prevent it. Who can give us the

original source or cause of diphtheria, scarlet fever, or any of those kindred contagious diseases, yet they mercilessly attack people without warning, still they are cured. We find as a rule that this dread disease diphtheria, attacks the young. So also is foul brood a disease of the young larva. It is a disease of the brood and not of the bees, for this reason we consider the practice of total destruction by fire a barbarous one. What would we think if a health officer went to a house effected by diphtheria and burned it down with everything and everybody living in it. This and other kindred diseases are fully as contagious and harder to cure than foul brood. We know when it is once started in a hive it spreads very rapidly through the brood, but it does not effect the live bees, young or old, and with all the popular prejudice in regard to foul brood, I am very much in doubt as to its effecting the honey, in fact I don't believe it does. The bees carry it from one colony to another by contact as a rule I believe they carry it on their legs from diseased hives, and thus communicate it to the young larva in their own hive. I have studied and investigated this subject for the past two years, and like many other diseases it often owes its origin to f. b. I know a number of cases where bees and brood have died, and being left to rot, foul brood has been the result. Two years ago I knew of two parties that were anxious to increase their bees. They each divided their bees before they were strong enough; they each put the new swarm on the old stand. Too many of the bees left the queen and went back to the old stand. They built queen cells and were getting along all right, but the old queens not having sufficient bees in the hive stopped laying, then to help matters as they thought, they each placed the old queen back on the old stand, then the new swarms were nearly deserted so that the young queens died in their cells and also some of the other brood. Later after all the brood had hatched out that was not dead, and finding them in a helpless condition one of them dumped the whole thing back into the old swarm. The other one finding considerable brood which was dead, accidentally divided it, putting the few live bees and brood into the other colonies. The result was that later I found three well developed cases of foul brood, caused evidently by this rotten brood. Another theory of what I believe to be a cause of foul brood; I have noted in summer or early fall when the bees are found in unclean pools or mud holes for water. It often happens that we hear of foul brood. The supposition is that they carry the f. b. to the hive on their bodies or legs.

I do not know that I could prove these theories as to the origin of foul brood, but I have seen a great many cases of foul brood under those and similar conditions. I find by microscopical observations that as soon as the disease gets well started many of the young larva are attacked as soon as they are hatched. These often die before being sealed up, while others are sealed up and die after. All the foul brood that I have ever seen are backward in the cells, that is with the head in the bottom of the cell. I have often been asked if foul brood caused wrong presentation, or if wrong presentation caused foul brood. It is plainly to be seen that the first is correct. When the disease attacks the larva, in its agony it turns itself with its head in the bottom of the cell and remains in that position. But many of them attain their full growth in the early part of the disease, before they die. If the combs are taken from the hive before the larva is sealed, they will often push themselves backward out of the cells, but they will not do so if left in the hive. I have examined a great many foul brood combs this season, and I have seen a many cases just after being sealed, which to look at, seemed to be healthy and perfect, but when the caps were cut off, apart and sometimes all would show the wrong or backward presentation, and if an attempt is made to drag them out of the cells, at any stage of the disease, they will break and run like so much matter, while all with the proper or head presentation can be drawn out whole. I have noticed that whenever there has been found a few cells in a hive with this wrong presentation it is only a matter of a few days before we have a full developed case of foul brood. Therefore, I never wait or procrastinate in the matter but attend to it at once. The great trouble with many bee-keepers is that they try to cut it out, but this is like trying to cut a cancer with a knife, the roots are left and the disease soon develops again.

My system of curing the disease is practically the McEvoy plan, while I do not strictly follow his rule it is similar. I feel greatly indebted to Mr McEvoy, and I believe the whole bee-keeping fraternity have been benefited by him to some extent. At least all those who have adopted his theory seem to believe that his system is the best.

My way of handling this disease is as follows: Just as soon as I discover foul brood or any of this wrong presentation, I take a clean hive, then I put in one frame fully or wholly filled with pure clean honey. I set this in the centre of the hive, and I fill the hive with frames of founda-

tion, after they have worked two days I take out the frame of honey and replace it with another frame of clean honey and the job is complete. I do not exchange the foundation frames at all. I expect that some of my brother bee keepers will take exception to this modus operandus for the cure of foul brood. But allow me to state that I have followed this plan for two years and I have never lost a colony of bees by this disease when those instructions were followed. For this reason and in the absence of something quicker or better I expect to stay with it. The only trouble that I have experienced has been carelessness by some bee-keepers in destroying the foul or rotten brood. I have heard of some who were anxious to save some of the nice clean brood. There would probably be one or more cells of this nice brood, with this wrong presentation, and the result would be foul brood again. This is what Ben Franklin called penny wise and pound foolish, they may save a few cents and lose many dollars.

I will relate one circumstance that tends to prove that foul brood is, as I have before stated a disease of the young brood and not of the living bees.

A bee-keeper on finding a colony with foul brood, examined his whole apiary, when he found five cases in all, also one with laying workers and two with no queen and no unsealed larva. He smoked the bees and transferred the three strongest as I have before stated, then put the other two foul brood colonies into the queenless colonies, also putting the one having the laying workers into the weakest one, and the bees were not troubled with the disease after. I decidedly would not recommend such a course, yet it indicates that although the disease is introduced by the bees by contact, it seems to need young larva to introduce it.

I do not introduce these ideas as a standard for anyone to be guided by, but in the hope that further knowledge may be gained on the subject.

Salt Lake City, Utah.

[We do not know that we would like to subscribe to the above views, but good may result from a discussion of the subject. Some of our readers will doubtless have something to say on it. Let us hear from them.—Ed.]

I think the CANADIAN BEE JOURNAL has very much improved, and I would not like to be without it. JOHN HANBRIDGE.

Everett, Ont., Feb'y. 14th, 1896.

Cleansing Polonized Brood Combs.

—F. A. GEMMELL.

As a rule nearly all apiarists sooner or later, find themselves supplied with a superabundance of brood combs, containing more or less pollen, the quality or quantity being such that it is not desirable to again return them to the bees.

To those who may desire such combs relieved of their contents, I may here state that I have succeeded to my heart's content, and herewith give the method so that others having the same facilities may follow that practiced by myself.

The generally adopted plan heretofore used was to first soak the combs in water for a few days and then throw out the water soaked pollen by means of the honey extractor. In order to force the air out of the cells so that the water would find its way to the bottom, the combs were held over some large vessel, (I used a large square tin uncapping can) while yet another vessel containing a quantity of water was close at hand. A small corn broom or whisk was dipped into the water and swished or thrown over the surface of the combs, they being held at an angle of about 45° during the operation. As soon as thoroughly filled they were set side by side in the uncapping can, when it was filled with water so as to completely cover the combs, the same being held in position by having a board and large stone placed thereon, and allowed to remain thus for 36 or 48 hours or more if desired.

The above method has been practiced by myself in the past, but a more expeditious and much more satisfactory plan has been used of late, and anyone having the advantage of a town or city water works system I would certainly recommend its utilization for such a purpose.

The mode of procedure in this case is the same as just outlined up to the time of the applying of the water to the surface of the combs, but instead of whisking it into them a nozzle is attached to the water works hose, capable of throwing a fine stream or spray, that will cover the surface of the comb, five or six inches in diameter, every cell inside of that compass being thoroughly drenched to the septum with such force as in some instances to throw out the dried pellets of pollen which are sometimes seen in such combs, almost instantaneously. The filling and washing out of a whole comb being accomplished in a very

few seconds. The same method in regard to the saturating of the solid pollen is carried out with all combs not thoroughly cleansed by the first spraying, and in 48 hours the stream or spray is again brought into requisition, this time however, before the combs have been revolved in the extractor, as the stream, when directed on to the water soaked combs, forces anything and everything contained in them to make a hasty retreat, leaving all as clean and sweet as if new. Nothing now remains but to give the cleansed combs a few turns in the extractor to get rid of the remaining water they may contain. A wire cloth screen such as is used when shipping or removing bees to "fields anew" is now laid on two pieces of 2x4 scantling, and the hives containing seven combs in each and perfectly spaced are tiered five or six stories high with another screen on top so that a current of air can pass through and thoroughly dry them.

The above plan was so satisfactory that I was almost sorry when it was finished, indeed my son who assisted me in the work (he being an awful lazy fellow like myself), remarked that he never saw me like to boss a job so well before. You know I could sit down to it while he had to stand up and run the extractor. "By the way," he continued, "I notice of late years you don't get up at 4 o'clock in the morning as you once did. Is it owing to a lack of interest in the pursuit, or are you becoming troubled with that 'tired feeling' which young people who grow too rapidly are subject to?" "Well son," said I, "it no doubt is a trifle of both, but as far as I am able to judge up to date, the 4 o'clock in the morning business don't seem to trouble you much, not near so much as the 4 o'clock in the afternoon business does." All the satisfaction that I received however, was to the effect that he used to hear his mother say that when I commenced my early morning perambulations, that I disturbed the whole household, and he did not want to do that. I guess I am not the only bee-keeper who does less of that sort of thing than they used to, and my son has yet time enough for it too, for if he goes to California as he intends doing, and runs 1000 colonies of bees so as to make his fortune in one good year (if it ever comes again) he will require to get up earlier than a few minutes before school time in the morning. But here I find myself away from my text. That's me all over. By the way, some one has said that when I did write an article I could not, or did not adhere strictly to my text, and if I did, and sent it to THE CANADIAN BEE JOURNAL that it would be filled.

with typographical errors or punctuated in such a manner as to puzzle even a bee-keeper to understand it, in fact that neither head nor tail could be made of it. Well brother editor, I'll be the head this time and you can be the tail, and if you see that this article is published correctly, we will then reverse the order of things next time, that is if I am to blame. I will now conclude by saying that the combs treated as stated were all wired brood combs four years old or there about, but I see no reason why, with care, unwired combs could not be treated in like manner. For cleansing combs containing small quantities of sour honey which sometimes accumulates if left too long unoccupied by the bees, as they were last season, (I not having swarms to have them on), the spray is a capital way of making them sweet and clean, and also for cleaning the basket of the extractor. Now do not say anything about poor bee-keeping, you know how it was yourself last season.

Stratford, May 19, 1896.

Fertilisation of Flowers.

FROM A LECTURE BY PROF. A. DENDY, D.
Sc., F. L. S., AT CANTERBURY, N. Z.

It would appear that there was a time when insects did not habitually visit flowers in search of honey, and when none of them even possessed the long proboscis which is so essential to that pursuit, their mouth parts being adapted simply for biting. At that time, also, such flowers as existed had probably no honey to offer them, and, being on the whole a truthful family, they did not advertise by means of bright colors and strong scents, the possession of an article which they had not got. Still less did they exhibit any of those marvellous contrivances whereby insects are now pressed into their service as pollen-carriers.

Cross fertilisation was doubtless at first effected accidentally by means of the wind, as is still the case in many flowers at the present day, and it is a very significant fact that such anemophilous flowers are always inconspicuous and devoid of scent, as, for example, in the grasses and cereals. In order to secure cross-fertilisation by the wind, however, an enormous quantity of pollen must be produced, to compensate for the immense amount which is lost in transit; so that wind-fertilisation is an extremely wasteful process.

Now suppose a certain species of insect took to regularly visiting a certain kind of flower, having found, perhaps that pollen is good to eat, that some part of the flower itself is good to eat, or even that the flower afforded a convenient shelter. Then, whether the flower was previously cross-fertilised by wind or not, it is certain that cross-fertilisation will be occasionally effected by pollen accidentally carried by the visiting insects. In virtue of this cross-fertilisation the flowers in question will produce as we know experimentally, more numerous and more vigorous offspring, and these offspring will inherit any peculiarities in the parents which make them attractive to insects, and will have some advantage in the struggle for existence over their weaker brethren. Of course, all living things vary to some extent, and no two flowers, even of the same species, are ever exactly alike. Therefore the insects have a certain amount of choice, and they will certainly visit and fertilise those individual flowers which happen to be most suited to their requirements in preference to any others. Thus, if one is more conspicuous than its fellows, it will be most frequently visited and most surely fertilised. It will produce more seed and hand down to its offspring by heredity its own particular advantages.

Thus the flowers are gradually rendered more and more attractive to the insects by the slow accumulation of slight favorable variations, simply because the lucky ones always produce the most offspring, which in turn inherit the favorable variations of their parents. At the same time, the unlucky ones produce fewer and weaker offspring and gradually get weeded out by natural selection. In this way, the secretion of honey, the production of bright colours and strong scents, and lastly, the wonderful mechanical contrivances for making the insects carry away the pollen, are all accounted for.

At the same time many of the flower-visiting insects themselves have undergone slow modification in a similar manner.

Those with slightly longer mouth parts than their fellows obtained most honey, and, being better fed, produced most offspring. These inherited the longer proboscis and so on, until the proboscis was, by natural selection, developed to its present proportions.

It appears then that just as man has, through long ages of more or less conscious selection, produced an almost endless variety of domesticated plants and animals specially suited to his own requirements, æsthetic or otherwise, and differing very greatly from their original wild ancestors, so have insects acted in like manner to-

wards innumerable flowers in a state of nature, always selecting as the recipients of their visits those which were best adapted to their own needs.

Not only have they habitually selected those which have furnished them with most honey, but they have also selected those which have proved most attractive to them in form, color and odor. They have, as it were, impressed upon flowers the stamp of their own standard of taste in these matters. A curious confirmation of this statement is afforded by the fact that certain flowers which are fertilised by carrion-feeding flies have in consequence developed yellowish or brownish colors, and a foetid odor of decaying animal matter which to our senses is highly objectionable, though doubtless extremely attractive to the flies. The vast majority of insect-fertilised flowers have, however, odors and scents which to our senses are very pleasing, so that in these respects it appears that our own standards of taste agree with those of certain insects, and notably of the bees and butterflies.

Now we cannot doubt that flowers developed beautiful forms, bright colors and sweet scents for the purpose of attracting insects long before man put in appearance on the scene, and as man's ideas of the beautiful in form, scent and color are largely derived from the contemplation of flowers, while these in turn owe their characters to the selection of insects, it would appear that insects really set the fashion in these matters and that man owes his æsthetic ideals in great measure to some of the most despised of all his fellow creatures.—The Australian Agriculturist.

A Visit to Leamington, Kingsville and other parts of Essex County.

—S. T. PETTIT.

Possibly a few notes of a pleasure trip to the County of Essex may be interesting to the readers of *The Canadian Bee Journal*. For years I had contemplated a visit to Leamington and vicinity, and last month with a good deal of pleasure Mrs. Pettit and I realized the anticipated recreation.

A few hours run over the C. P. R. and Canada Southern Railways brought us to Comber, and another half hour by wagon brought us to "Pettit Ville," where one of my sons runs a cooperage supply, saw-mill

and mercantile business. The whir and whizz of saws, small and great, and the roar of the planers that convert about two million feet of logs into barrel heads annually; and the fierce fires and powerful engines, and the activity of the workmen with their cheerful, earnest look all go to make a moment in one's life not soon to be forgotten. But after all about the deepest impression made upon the bee-keepers mind is the thought of the great number of soft maple and linden, or basswood trees that come to grief in this and other mills in the country. But in most cases there is no help for it. The mill man must buy and the farmer in many cases, to his own hurt will sell and so the denudation goes right on. More attention must be given to the planting of trees or both the bee-keeper and the country will suffer. Our next destination was Leamington. I had often heard of Leamington and its grapes and peaches, and although two years ago I passed by the place, I had but a poor conception of its capabilities in the fruit producing line.

Leamington is situated about one and a half miles from the north shore of Lake Erie upon an uneven ridge of sandy loam soil; the composition of which and the climate conditions are admirably fitted for the production of the finest fruit, at least these were the impressions made upon my mind.

The population of Leamington is about 2000. It has a gas well—natural gas of its own. The warming and cooking are done with gas—gas in the kitchen stove and gas in the parlor stove, and may be some one will say; gas in this letter.

Around Leamington there are perhaps 250 to 300 acres in peaches bearing fruit and possibly 2000 acres set out to peaches. The largest orchard contains 115 acres, of which 75 are bearing. The average number of trees to the acre are about 200.

Most of the orchards are kept nice and clean. And their dark green foliage and bright clean branches bearing the most luscious peaches, of yellow, crimson and other lovely hues and tints formed a bewildering and inspiring reality not easily described. Small fruit and apples come to perfection here. But the peach industry promises to be of magnificent proportions soon.

While wife and I were driving along from Leamington to Kingsville enjoying the lake breeze and the scenery, with the lake dotted with steamers and other crafts and Pelee Island in full view, we decided to stop at a farm house for some peaches. When the owner was asked as to the number of peach trees he had, he answered: Oh about ten thousand. I tried to look composed but I

think he noticed my surprise, for indeed it was a surprise to me. Will not some live man give us some real peach blossom honey? But after all that can be said of Leamington, and indeed of all the very limited peach growing sections of Canada with the peach tree as it, is that luscious, health giving fruit must of necessity remain scarce and dear. We want a peach tree, the embryo blossoms of which will stand two or three more degrees of frost, then all the southern counties of Ontario can grow peaches. That such a tree can be bred I have no manner of doubt.

I had intended to refer to grape growing in Essex, but this is already too long.

Belmont, Ont., November, 1895

Remedies Against Mosquitoes and Flies.

DEAR SIR.—During six seasons of field-work on the Geological Survey of Canada, the writer has had a somewhat extensive experience with the mosquitoes, blackflies, sandflies, moose-flies, penflies, bull-dogs and other varieties of the Diptera, or two-winged insects, which are so numerous in some parts of our northern and north-western districts.

It may be interesting to your readers to know that there are some thirty known species of the Culicidae, or mosquitoes and gnats, in North America, that their larvae live in water, and that the adult females are very troublesome by their irritating bites.

However, by means of tents that were more or less mosquito-proof, and of one or two simple remedies, the present scribe and his companions in misery were enabled in a large measure to escape from the annoyance caused by the presence and persistent attentions of these small but powerful insects.

One of these remedies is Pyrethrum powder, which we have found an excellent thing to burn in the tent to stupefy and kill mosquitoes and black and sandflies. This powder is a vegetable product, and is known by all druggists as "Insect Powder," or as "Pyrethrum Powder," and sometimes as "Dalmatian" or "Persian Insect Powder." It may be bought by the ounce or pound, and has been extensively used for years in our towns and cities to scatter about for the benefit of house flies and other domestic insect pests.

However its value as a remedy against mosquitoes and other bush-flies is not so well known. and at this season of the year, when so many of our townspeople are preparing to quit the heated and dusty town for the cool and invigorating sea side or lake resort, or other sylvan retreat, the information may be more or less useful and acceptable. It has proved a perfect "God-send" to tired men in the field after a hard day's work, and the writer has seen it used in the houses and stores of the northern posts of the Hudson's Bay Company. When you retire to your tent, and burn about enough pyrethrum to cover a penny. Make the powder into a little pyramid or cone, on top of bark, stone, tin, or other article, and light the top with a match. It will smoulder away, and the fumes will quite stupify all the mosquitoes in the tent.

For sand flies this is the only effectual remedy known to the writer, who recalls the experience of one hot summer's night when he happened to be camped at a locality that was a favorite resort of these minute insect torments. The Indians call these flies "bite-em-no-see ems," which is a very appropriate designation, for they are so small that you are not generally aware of their presence until you feel the burning, fever-like heat caused by their sting. They will penetrate all kinds of clothing with the greatest of ease, and old voyagers say that nothing but wet blankets will exclude them. Be that as it may, on the night in question we tossed and turned, groaned and ejaculated, "blessed" (?) our little guests. But it was all of no avail, and as a last resort, I struck a light, produced the pyrethrum from my knapsack, ignited it, and awaited results. In a few minutes our tiny foes were vanquished, and with a sigh of relief we turned over and passed into the "Land of Nod."

The odor of the burning pyrethrum is not offensive, and when used in such small quantities it is harmless to the human occupants of tent or cottage. It is, of course, useless out in the open, but we have found "Hind's Black Fly Cream" (prepared by A. S. Hind, pharmacist, Portland, Maine) an excellent preparation for repelling flies, etc. It should be applied every few hours when the flies are bad, and washes off easily with cold water. Nets are sometimes useful, but we generally discarded them as uncomfortable and interfering with perfect vision.

The substance of this letter was contained in a contribution to "Insect Life," the official publication of the Division of Entomology of the U. S. Department of Agriculture, and is reproduced for the

Courier with the hope that the hints contained therein may be acted upon, and that they may ameliorate the sufferings of some of those who realize that these flies are the baneful feature of many of the otherwise delightful summer resorts of this fair Canada of ours. Yours faithfully,

A. M. CAMPBELL, Perth, Ont.

From the Perth Courier, 25th June, 1895.

Production of Comb Honey.

—GEO. McCULLOCH.

The comb honey producer must commence operations the previous fall, in order to get his bees in good shape for winter. Unless there is a good fall flow, in his locality the bees should be fed in September and October, so that the queen may be kept laying as long as possible in order to have plenty of good young bees to commence winter. If wintered on the summer stands, each colony should be left on till the last of May or 1st of June. My cases are only packed on three sides, so that the south side may be exposed to the sun rays during April and May. All colonies should be examined in early spring, to ascertain if they all contain good laying queens and plenty of stores, if such is the case they will not need much care for a week or two, but they should be examined again sometime before white clover begins to bloom. If only the middle frames contain brood, and the colony strong, those frames should be moved out, and the outside ones placed between. The object in view is to have the hive full of brood and bees with very little honey just at the commencement of the clover harvest. Supers may then be given them, containing full sheets of very light foundation in the sections. Work should progress rapidly in the sections till swarming commences. If bait sections of drawn comb are used, they will enter the supers more readily. When a swarm issues it may be hived on the old stand, and the parent colony moved to a new location, after removing the super or supers from it and placing them over a queen excluder on the new colony. The brood frames of this new colony should only contain starters, one inch wide so that comb building will progress slowly in the brood chambers, while most of the bees are at work in the super. The queen fills the comb with eggs below as fast as it is built, and in this way most of the clover honey is stored in the sections and that is where it is wanted. If supers having no bee space over the

sections are used, I would advise having one, by making a light frame of the same size as the super, and covered with heavy cotton or like material. This will give better filled sections, as the bees have a passage over the tops of the sections, and do not leave so many pop holes in the corners. Regarding the manipulation of supers I would say raise the first super when it is half filled and place an empty one under it, then another under that if necessary, by this time the top one may be removed by the use of a bee escape if all or most of the sections are capped. Sections should be removed from the hive as soon as finished as they become travel stained and therefore must be graded No 2. It is not advisable to crate honey as soon as taken from the hive, as the wax moths may damage it to a greater or less extent.

I would prefer piling it up in a warm room, were it may be fumigated every two or three weeks during warm weather. Then in the fall, clean every section thoroughly, and place in new crates. Comb honey should be graded. Keep all sections that are well filled, all sealed and perfectly clean separate. Of course these sections must contain nothing but pure clover, or linden honey—no spots of darker amber in them. Such honey should sell readily for a good price. The home market should be developed to the greatest extent, many people who like honey never seem to think of asking for it, unless they happen to see it shown in an attractive shape or are asked to buy it. Such people if looked after would not buy so much syrup, and canned fruit. Of course there are places where all the surplus cannot be disposed of at home. To those bee-keepers living in such places I would say—sell in the nearest market possible. There is a great risk to run in shipping comb honey long distances by rail, or sending it to unknown commission men in a distant city. If possible sell direct to some reliable grocer for cash. When shipping, make a large crate as light and strong as possible to hold fifteen or twenty small crates, a layer of straw in the bottom of each and a good handle on each end, so that they may be carried by two men will save it many a jar. The small crates should be placed with the glass side out, so that it may be seen what they contain. In placing it in the car, care should be taken to have the combs lengthwise or the same way as the rail. Honey shipped in this condition should reach its destination safely, and bring a price that will compensate the apairist for his trouble.

Harwood, Ont.

The Apiary.

WORK AT THE DOMINION EXPERIMENTAL FARM, OTTAWA.

Under the Supervision of James Fletcher, F. R. S. C., F. L. S.

The practical management of the apiary during the past season has been satisfactorily carried on under my supervision by Mr. John Fixter, the Farm foreman, an enthusiast in bee-keeping. Mr. Fixter has been of great service and has devoted much of his own time after hours to the careful work which is necessary to make the keeping of bees a success. He has also attended some meetings and explained the operations now in progress at the Experimental Farm. The interest in this subject has been shown by the large number of visitors at the Apiary. The 23 colonies of bees are in good condition and on November 20th were stored in the cellar prepared for them. A report by Mr. Fixter upon the working of the bees during the season is printed herewith and, I feel sure, will be of great interest to bee-keepers. The same experiments which were begun at the suggestion of Mr. R. F. Holtermann, of Brantford, Ont., and reported upon last season, and a valuable report upon them by my colleague, Mr. Frank T. Shutt, will be found appended to this report. This investigation is one of great value to bee-keepers, and I feel sure that Mr. Shutt's report will be found a valuable addition to the literature of bee-keeping.

REPORT OF MR. JOHN FIXTER.

EXPERIMENTS IN WINTERING (1894-95).

Twenty colonies of bees were put into the cellar November 9, 1894. The bee cellar is a chamber 10 feet by 12, boarded off from a large stone cellar; the floor is boarded and there are no shelves. In the autumn of 1894, the hives were packed as follows:—A row of empty hives was first arranged around the wall, and the hives containing bees were put on the top of these so that they might not be too close to the floor. To secure ventilation, a piece of wood 3 inches thick was placed on the top of the empty hives at the back beneath the full hives; the bottom boards of the latter were loosened and a 3/4 of an inch block was also inserted between the bottom board and the brood chamber; the front entrances being left wide open. Thus the upper or second tier of hives was 3 1/2 inches higher at the back than

in front. The wooden covers were removed from the hives and replaced by two common grain bags. This year cushions 4 inches thick and filled with chaff, have been used in place of these bags. Of the 20 colonies, 19 hives were arranged on the plan above described. All kept perfectly dry, but considerable humming was heard from the bees during the winter. One hive was put in the cellar with both wooden cover and propolis quilt on the top, and bottom board left tightly attached; in fact, the hive was taken in just as it was in the bee yard. This hive was quite damp during the winter and some mould was noticed on the comb. Although the bees in this case wintered safely, this plan of wintering is not recommended. The average weight of each colony and hive when put in the cellar on November 9th, 1894, was 48 1/2 pounds, and when taken out again on April 19, 1895, the average weight was 36 pounds and 3 ounces, each colony having only consumed an average of 12 pounds and 9 ounces of their stores against 20 pounds during the winter of 1893-94. This improvement was probably due to the higher average temperature maintained in the cellar during the winter and a better method of storing the hives.

The temperature of cellar expressed in degrees Fahrenheit was:—

November, 38° to 42°; December, 33 to 42°; January, 40° to 42°; February, 38 to 40°; March, 40° to 42°; April, 42° to 46°.

From 40° to 46° is claimed to be the proper average temperature throughout the winter in our cellar.

From an unknown cause, one colony died during the winter, although well supplied with sealed honey.

THE SEASON OF 1895.

April 18, 1895.—The weather being very fine, 6 hives were taken out of the cellar and placed on their summer stands in the bee yard. The remaining 13 hives were taken out the morning of the 19th. All the colonies appeared to be very unsettled, and in the evening of the 19th a considerable number of dead bees were noticed around the six hives put out first on the evening of the 18th.

April 20.—Very strong wind. All colonies still unsettled. Temperature, 60° to 70°, I noticed that three small colonies which had purposely been put into winter quarters, weak in numbers, to see if they could be carried through the winter, had gradually dwindled and the hives were forsaken.

“ 21.—Very few bees carrying in pollen,

- " 22-25.—Weather very cool, The bees did not come out at all. On the 26th they began to fly, but none were noticed carrying pollen.
- " 27-29.—Very fine weather. Bees flying well and collecting pollen freely from soft maples. Very few willows in blossom yet.
- " 30.—Morning opened cold and dull; but the afternoon was bright and the bees worked well on elms and willows.
- May 1-4.—Bees flying well and gathering much pollen.
- " 5.—Fine warm day. Bees working well. Noticed the bees beginning to cluster in front of one hive.
- " 8.—Wet all day. no bees flying.
- " 10.—Fine day. All colonies appeared to be working well. All hives inspected. Found abundance of brood. Some young bees coming out. A good quantity of fresh honey gathered. Found a few grubs of the Bee-moth (*Galleria melionella*, L.) in one hive and at once destroyed them all.
- " 11.—Fine day. Bees working well, cool towards evening.
- " 12-13.—Very cold. Bees did not come out at all. It froze hard at night.
- " 14.—A good deal of dead brood was carried out in front of several hives. Bees noticed clustering around water tap.
- " 15-16.—Bright and sunny, but very cold wind; very little working. A considerable amount of dead brood and young bees in front of every hive.
- " 19-18.—Bright and sunny, but a cool wind; bees working fairly well.
- " 19-21.—Wet, cold, and dull; very little flying.
- " 22.—Cold, but beginning to get warmer.
- " 23-24.—Very fine; bees working well.
- " 24.—Inspected every hive; a considerable amount of new honey and brood, except in one colony which was very weak. Later, this colony was united with a new swarm from one of the other hives.
- " 25-29.—Very fine weather. Bees working well.
- " 29.—First swarm of the season.
- " 30.—Fine till evening, when heavy rain fell. Bees clustering around nearly every hive.
- " 31.—Very wet. Bees did fly until evening.
- June 1.—Very fine. Bees working well. Placed first set of supers on all the hives except the weak colony mentioned above.
- " 2.—Fine; bees working well, but still clustering.
- " 3-5.—Rather dull, but bees working well; all clustering ceased.
- " 6.—Rather dull; very little flying. White clover and Alsike coming into bloom.
- " 7-10.—Very fine; bees working well.
- " 11.—Mock Orange (*Philadelphus*) in full bloom and very attractive to bees.
- June 20.—A considerable amount of clover honey in the sections.
- " 21.—Wet all day; bees working fairly well.
- " 22-26.—Weather very fine; a large amount of clover honey gath. red.
- " 27-30.—Bees working well on clover blossoms which are now abundant.
- July 1.—Basswood flowers fairly well opened; bees working well. All hives examined. Several supers full of clover honey; combs well capped. Each of these was marked and an empty super inserted below it, so that the bees might go on working, and the full super being on the top, it would not get travel-stained by the bees passing over it, and the honey would ripen to a certain extent.
- " 2-15.—Bees working well on clover and basswood.
- " 15.—All supers full of honey removed.
- " 15-18.—Bees working well. Basswood just about finished.
- " 18.—Buckwheat, plot No. 1, in bloom; bees working well on it and clover, which is still in bloom.
- " 23.—Bees collecting much honey from English horse-beans.
- " 23-31.—Very fine weather for bees; working well on clover, buckwheat and horse-beans. Buckwheat plot No. 2, came into bloom.
- Aug. 1.—Much buckwheat honey in super
- " 1-15.—Bees working well on buckwheat plots 1, 2 and 3; and a good supply of buckwheat honey in supers.
- " 17.—Considerable clustering, owing to the excessive heat. Made space for ventilation, between super and brood chamber, just wide enough only to prevent bees getting through, and also put an extra wooden cover on the top of the hives for shade.
- " 18.—Buckwheat plot No 1 out of bloom; but bees are working well on plots 2 and 3 now well in blossom; plot 4 just coming into flower.
- " 19-25.—Bees working well on buckwheat.

- " 21.—Slight frost at night, not enough to injure buckwheat.
- " 25.—Bees first noticed killing drones. Some bees seen attempting to rob; as soon as this was observed, the entrances to the hives which were threatened, were closed up, so that only one bee could enter at a time.
- " 25-31.—Bees still working on buckwheat, also on *Hydrangea paniculata*.
- Sept. 1-11.—Bees working well on buckwheat plots 2, 3 and 4.
- " 11.—Plot 2 ploughed under as green manure.
- " 15.—Very hard frost; buckwheat all frozen.
- " 16.—Bees flying well. Removed all supers.
- " 17-30.—Very fine weather; bees flying well; did not notice them gathering honey.
- Oct. 1-3.—Very fine weather; bees working on alsike and crimson clover.
- " 7-18.—Weather cold and windy; bees active when the weather was not too cold.
- " 19-22.—Cold and dull; 3 coarse sacks placed on each hive.
- " 23-26.—Days bright; but little flying.
- " 27.—Very fine day; bees show a tendency to rob each other; so closed entrances.
- " 28-31.—Cold and windy; no flying.
- Nov. 1-14.—Cold; very little flying.
- " 15-18.—Very fine weather; considerable flying.
- " 19.—Dull and cold.
- " 20.—Very cold windy day, freezing hard. Bees were put into winter quarters at night.

BUCKWHEAT.

Four plots of buckwheat were sown on the Experimental Farm last season, primarily as pasture for the bees but also for the grain. The plots were sown on sandy loam where there had been a plantation of forest trees and shrubs for the 5 years previously. No manure of any sort was used.

Plot No. 1.—Sown June 16th; came up 3rd; came into bloom July 18th. The bees began to work on this plot as soon as the blossoms appeared, which was rather early, as the bees were gathering clover honey. If the buckwheat had been sown a week later, the bees, this year, would had more white honey. Seed ripe August 26th; yield 29 bushels 16 lbs. to the acre, notwithstanding that the blossoms were somewhat injured by the excessive heat about the middle of August and late in the season.

Plot No. 2.—Sown June 29th; came up July 31st, when the bees began at once to work on it. Ploughed under for green manure September 11th, when seeds were beginning to form.

Plot No. 3.—Sown July 6th; soil part sandy, part clay; that sown on the clay did not do well; the soil being too dry, the seed did not germinate readily. Came up on the sandy portion July 13th; in bloom August 12th. Bees began to work on it at once. Frozen down by the sharp frost of September 14, when the seeds were ripening nicely; yield, 21 bushels 37 lbs. to the acre.

Plot No. 4.—Sown July 16; came up July 21, in bloom August 20. Bees busy on the plot until frost of September 14. No ripe grain, so ploughed down for manure Sept. 15.

FIVE-BANDED ITALIAN QUEEN.

The five-banded queen, which was introduced Aug. 4, 1894, has given the best satisfaction. This beautiful queen bee was presented to the Apiary through Mr. R. F. Holtermann, Secretary of the Agricultural and Experimental Union of Ontario. The colony came out of winter quarters very strong in the spring of 1894. During the season of 1895 these bees made 78 sections of honey and swarmed twice. The colour of this race of bees is very beautiful. I should like to see many more colonies of them in the Apiary.

RETURNS.

The returns of the Central Experimental Farm Apiary for the season of 1895 shows an average of 51 sections of honey for each colony.

Swarming for the season on the whole has been satisfactory. As stated above the first swarm for the season was secured on May 29.

EXPERIMENTS IN WINTERING (1895-96).

No. 1.—Seventeen colonies put into winter quarters in the cellar. Empty hives were placed on the floor, with 3-inch blocks of wood on the top of them, and the hives piled up three tiers in height. In addition to the 3-inch blocks, by which the back was raised higher than the front so as to give free ventilation, each hive is raised from its own bottom board with small blocks 3 inch in height. All front entrances left wide open. The wooden covers of all these hives removed and replaced by chaff cushions, four inches thick. Above the cushions strips of wood were placed so as to prevent them touching the bottom of the hive immediately above them and also to allow air to circulate freely under each tier of hives.

This plan was recommended to us by Mr. Pettit of Belmont, Ont.

No. 2.—Two colonies were put into the cellar, with the tops and bottoms left on, just as they were brought in out of the bee yard. These are to be watched for dampness, to be weighed in spring, and notes are to be kept of their work during the following season.

No. 3.—One colony was placed in a packing case in the cellar and packed with four inches of dry sawdust all round the hive; brood chamber raised from bottom board by four small 1-inch blocks; wooden cover of hive replaced by a 4-inch chaff cushion, and the packing case filled up with four inches of dry sawdust, above the cushion. For ventilation a small shaft, of the same size as the opening to the Langstroth hive, leads from the hive to the outside of the packing case. Case placed on top of another case three feet high, in the stone cellar beneath dwelling house.

No. 4.—This experiment is very similar to the last, but no ventilation is provided. The bottom board of the hive was removed and hive was stood on four blocks $1\frac{1}{2}$ inches high, one under each corner, placed right on the bottom of the packing case, which was then filled in with dry sawdust, four inches all round and above, as in experiment 3, except that no shaft for ventilation was cut through to the outside of the packing case; but immediately beneath the hive there is a narrow crack between the boards of the packing case, not $\frac{1}{16}$ of an inch wide. The packing case itself is raised about an inch off the earthen floor in the stone cellar by means of small blocks.

No. 5.—One colony was placed in a packing case large enough to allow of 4 inches of cut straw and chaff being packed all round the hive, and the box was left out of doors in a sheltered place on the ground in the yard. Bottom board loosened and 1 inch blocks put at each corner between bottom board and brood chamber. Wooden cover also replaced by 4 inch chaff cushion, and box filled with 4 inches of chaff and cut straw. No ventilation.

No. 6.—One colony treated exactly above but with ventilating shaft from entrance to the outside of the case which is placed 3 feet from the ground on the top of an empty case.

JOHN FARRER.

REPORT UPON FURTHER EXPERIMENTS WITH CERTAIN BRANDS OF "FOUNDATION."

By FRANK T. SHUTT, M.A., F.I.C., F.C.S.

Last year a series of experiments was undertaken in order to ascertain the relative ease with which various brands of "founda-

tion" were drawn out and used by bees in building comb. The results of these experiments and deductions therefrom were published in the report for 1891 (pages 220 to 223.) During the past summer this investigation has been continued, and the results obtained are now presented. In addition to the "foundations" tested last year, several new brands were put under trial. The relative weights of wax deposited when the honey was gathered from clover and buckwheat respectively, were also determined. The series also is more complete, inner and outer sections in all cases being examined.

The plan of procedure was as follows:—The frames were filled with the various foundations under experiment and of which the exact weight of two inches square had been taken. At the close of season the cells were opened by the careful removal of the cap, and the honey extracted with the extractor. The last traces of honey were got rid of by successive exhaustions with cold water. After allowing the comb to be thoroughly dry by exposure to the air, an area of two inches square was cut from the centre of the section. This method is practically the same as that used last year, with the exception that the caps of the cells only were removed. In the season of 1891 the cells were opened by shaving off the surface of the comb, a plan that necessarily involved the loss of more or less of the cell wall.

(TO BE CONTINUED).

Mr. J. B. Hall, of Woodstock, Ont., is known as Canada's comb honey chief. In 1893 he exhibited 22,000 pounds of honey at the Toronto Fair, and 11,000 pounds of it was comb honey in sections. Mr. H. produced and sold in one year \$30,000 worth of honey. Out of his honey crops he built a large two-storey brick house, and banked money enough to carry him over all the poor honey seasons. Mr. Hall is very popular with all the bee-keepers, and being such a successful specialist in bee-keeping, his opinions are always valued highly in bee matters. After saying all this (which we learned through one of our good Canadian friends)—would you believe it?—this same J. B. Hall won't open his head except he's driven to it in a convention discussion! My, but he *can* talk! but on paper he's very mum (for a Canadian), that it seems strange. He's a good man though, and we liked him very much when we had the pleasure of meeting him at the Toronto convention last September.—American Bee Journal.

Double Colonied Hives.

—G. A. DEADMAN.

We read very little about double colonied hives, or the keeping of two colonies of bees in one hive. There are many advantages to be gained by so doing, and as I have had considerable experience with such I will endeavor to give as concisely and clearly as I can my convictions regarding them. I would say that I have had from 150 to 200 colonies, two in a hive, extending over a period of several years. The number is now reduced to 60, or to those wintered in their summer stands. The objection to them when wintered in the cellar was they were apt to be too warm, especially towards spring. So satisfied am I with them, when not wintered in the cellar, that I purpose continuing their adoption so long as I winter outside and live in a cold climate. I am not sure but that I would continue their use if in a warm one, especially if kept in a house apiary. The double colonied hive does away with the idea of a readily moveable hive, but there are many who have no use for a readily moveable hive, preferring one that will not likely be moved by the wind, and that does not require to be moved by muscle. Perhaps those who clip their queen's wings will say that they must have a hive easily handled in swarming time, but with a double hive as I have then there need be no trouble having swarms with clipped queens. I will in this paper mention briefly their advantages and leave to future issues a description of them and their manipulation. Next to preventing swarming is the prevention of increase, and it is just here a double colonied hive is away ahead of a single colony one. The advantages are:

1st They are superior for wintering as each help to keep the other warm. For this reason they are better in the spring. Many a weak colony would have died but for the warmth they received from a strong colony in the other end.

2nd. They are of advantage when it is desired in the spring to reduce the number of frames to each colony, as the bees will always be clustered next to the centre. By beginning at the end, if you find bees in the first combs you need have no fear regarding your colony. If no bees there you simply take away frames of comb until you find them. Put down a moveable division board and your colony will be warm and comfortable.

3rd. There is a decided gain when wishing to unite two colonies. The partition I make has a half inch hole which is on a level with the top of the frames. This is kept closed with a wad of cloth. When it is desired to unite the two colonies take away the inferior queen, open the hole referred to and all is lovely, excepting removing any queen cells, nine or ten days after from the colony from which the queen has been removed. For this reason it is easier to keep down increase when using a double colonied hive.

4th. They are better when the seasons are short and a large working force is required on short notice. All you need to do is to remove the queen, the frames of brood and, if desired, the adhering bees from one end, and all the working force go at once with the remaining colony and are crowded into the supers. It does more than this, you have a larger number of honey gatherers in proportion to each queen, therefore there is less brood reared in proportion to the number of honey gatherers, which is very essential when the honey flow is short and the eggs that are laid would develop bees too late to gather the spoil, too early to endure the winter. By this method you gain what you would by confining the queen to fewer frames, and more because the working force is larger, and if there is honey to be gathered they are ready and will store it wherever you want it.

5th. There is no lifting of hives, making less work in that way, and unless the wind blows a hurricane there need be no fear that they will turn over. I like them much better than a quadruple hive, as the entrance must of necessity be on the opposite side. With the double hive I have both entrances on the same side which I prefer to have facing the south east. I tried four colonies in one hive, but did not like them for this reason as well as others.

Brussels, Ont.

That Debate on the Hon. R. L. Taylor's Paper.

After Mr. Taylor's paper was read at the Ontario Bee-keepers' Convention, which was held in Brantford, in January last, I saw by the way things were drifting, that several bee keepers would come to the conclusion that it could not be made to pay to feed sugar syrup to bees, for the purpose of producing what some call sugar comb honey, and if any person saw fit to trade on the weight of our convention not disputing this point, what was going to be the fate of

our "Pure Honey Bill." This was the thought that flashed on my mind at that time, and it was in the interest of our "Pure Honey Bill" that I sprang to my feet when I did and said, "If the brood chambers were full of brood and you put on sections pretty well drawn out and placed a feeder on top of them filled with syrup at a time when bees would carry down 10 or 18 pounds in a night, that sugar could be made to go, and go to pay." As far as I know I believe that every person in the convention believed that I was right, and accepted my explanation as a perfectly correct one. Mr. Pringle replied to me and said, "I think it is inconsistent, not to say wrong, for any man in this Association who condemns the construction of sugar honey to instruct the people how to do it." I did not catch all the words that Mr. Pringle said then, but rather enjoyed it as a joke at the time. But since the Journal has come to hand I am astonished to see that Mr. Pringle was not joking. I will leave it to those that were at the convention, or the readers of the Journal if I acted in an inconsistent manner by the explanation I made, which was done in the sole interest of our "Pure Honey Bill." I also wish it to be plainly understood that I consider Mr. Taylor to be an honorable man and a careful worker, and that in my explanation on the feeding business I found no fault in any way with Mr. Taylor's paper.

W. M. McEvoy.

Woodburn, May 11th. 1866.

Some Don'ts for Bee-Keepers.

Don't go into bee-keeping without first finding out something about it.

Don't buy too many colonies to start with.

Don't think bees work for nothing and board themselves.

Don't think you will not need anything from the supply dealers.

Don't fail to subscribe for one or two good bee-journals.

Don't think a dollar or two invested in this way thrown away.

Don't begin inventing new hives and appliances.

Don't experiment too much, leave that for those who can afford it.

Don't overhaul the brood-chambers of your hives every day or two.

Don't be too saving in the case of foundation.

Don't tolerate more than one size of frame.

Don't let the bees have too much drone comb.

Don't extract honey before it is pretty well sealed.

Don't jar hives while manipulating them, nothing enrages the bees so.

Don't smoke bees too much, enough is as good as a feast.

Don't be above wearing a good bee veil.

Don't wear gloves unless your hands are very tender.

Don't leave comb honey on the hive too long after it is sealed.

Don't open hives much or expose combs when nectar is scarce.

Don't be too mean to feed your bees if they need it.

Don't let kingbirds or toads hang around your apiary.

Don't use second hand sections or crates.

Don't send honey to market in a dirty, sticky condition.

Don't ship honey to a commission merchant unless you know him to be thoroughly reliable.

Don't try to sell honey in July.

Don't neglect your bees in the fall, but get them in the best possible shape for winter.

Don't try to winter bees in a shed or cold room, they would be better unprotected in the summer stands.

Don't contract the entrance too much.

Don't allow the entrance to become clogged with ice or dead bees.

Don't protect the south side of hives, wintered on summer stands.

Don't fail to examine all colonies in early spring, be sure they have a laying queen and plenty of honey.

Don't bother much with weak colonies, try to make one good one from two or three or more of them.

Don't keep your ideas and experiences to yourself, let us have some of them through THE CANADIAN BEE-JOURNAL.

Harwood, Ont. GEO. McCULLOCH.

Harwood, Feb'y. 16th. 1865.

Editor C. B. J.,

Dear Sir—Please answer the following questions in C. B. J. and oblige:

Having as many colonies as I wish to keep at present, what would you think of (1) letting each colony swarm? (2) Having on starters and placing beside the old colony? (3) Taking unfinished supers from old and placing on new, and working the whole Apiary for comb honey till the white flow ceased. Then uniting them again for fall flow by placing one hive on top of the other, with a queen excluder between, queen in the upper story having been removed, then extracting the fall flow and preparing for winter. GEO. McCULLOCH.

A Protest.

I must protest against the manner in which my paper, which you requested and which I sent, "Some Mistakes of Bee-Keepers and Bee-Journals," read at the North American Convention, is printed in your last issue, the December number. The bad spelling, bad grammar, new words inserted, and manuscript words left out, which abound in print, are not to be found in my manuscript. In one place as many as fourteen consecutive words are left out altogether, making utter nonsense of the sentence.

Be kind enough to give this insertion.

ALLEN PRINGLE.

[We printed Mr. Pringle's article from the official report of the North American Bee Keepers' Association, published in the American Bee-Journal, in preference to his written copy, thinking the printer would be less likely to make mistakes, but it seems that we failed in our object. While such errors are annoying, we rather think Mr. Pringle finds a little satisfaction in having a chance to find fault, for there is very little the C B J can do to his satisfaction since we refused to publish an article of his, on a debatable subject entirely foreign to bee-keeping.—Ed.]

World's Fair Medals.

Sir.—We sent some white clover honey to the World's Fair in Chicago, and it took the only prize given for that kind of honey for Ontario, we have been waiting patiently for a medal or diploma, and were promised that by the Commissioners at Washington who wrote us about it. As you are our Secretary I thought to take this liberty of writing to you. We thought that we could expect something good from a nation that can afford to spread its mighty wings over North and South America. Please give us some information.

GEO. HARRIS & SON,

Dungannon, Ont.

It would certainly appear that there is more "red tape" required to run a Republic than a Dominion, or even than a Monarchy. We are assured that the Department of Agriculture at Washington is slowly but surely, signing the diplomas which are sometime to be distributed, along with the medals.

[The above from the April number of the

Canadian Horticulturist will be a surprise to some of our bee-keeping friends. There is then some hope of getting these medals and diplomas. We do not know how many of those winning diplomas have died of old age, but there must be a considerable number. The latest report is that the diplomas will be distributed very soon.—Ed.]

No Farmer.

Lewis Gaylord Clark, for nearly thirty years the editor of the once well-known and popular Knickerbocker Magazine, and the intimate friend of Washington Irving, told many amusing little stories in the "gossip" which he printed from time to time.

One evening he took his customary walk between Dobb's Ferry and "Sunnyside Cottage," and wrote that on the occasion he revived many pleasant memories, noticing among other things that where he and Washington Irving had so often sauntered there had lately sprung up two or three small villages.

He found the farmers mowing the sides of the aqueduct in several places where it ran through the meadows, clipping its steep sides to the very top. The balmy air and the new mown hay evidently roused a spirit of rural ambition in him, and he begged one of the farmers to allow him the privilege of wielding the scythe.

After a few vigorous cuts, Mr. Clark was seized with a conviction that the "nobleman of nature" was viewing his proceedings with undisguised scorn. He was confirmed in this opinion a moment or two when the farmer expressed his sentiments.

"You don't know nothin' about mowin' in our style," he remarked, contemptuously. "In these parts we don't generally care to slice the stones like a cucumber. You can't mow."

Meekly the editor surrendered the borrowed scythe and left the rows of sweet-scented hay-cocks, to pursue his walk in a humbled frame of mind.

We have an excellent article on "The Production of Comb Honey," and several convention reports held over until next month.

Work at the Ontario Agricultural College Apiary.

WINTERING PROBLEM.

Any light that can be thrown upon the wintering problem will be very acceptable to bee-keepers generally. To define my position clearly, I may say that for the last six years I have wintered my bees, from sixty-two to ninety-three colonies, with an average loss of between three and four per cent. Cellar wintering has been the system adopted. During the fall of 1894 my opinion was asked concerning a book, "The Wintering Problem in Bee-keeping," professing to be an exposition of the conditions essential to success in the winter and spring management of the apiary; and I may here refer very briefly to the contents of that work. The theory submitted was in brief as follows: That bees that wintered in trees and in gums, wintered better than they generally do in the movable frame hives; that bees situated in trees and log gums sometimes perished from excessive swarming, by being short of stores, or by loss of their queen; that bees so domiciled in gums were sometimes afflicted with what is now called bee-diarrhoea, but that this did not often happen, as the condition, which bring it about were not so liable to occur.

The aim of winter protection for bees should be:

(1) To reduce the heat conduction of the hive to the lowest possible point.

(2) To conserve the heat given off by the bees, so that it will remain in the hive until gradually lost by diffusion with the cool air in the lower part.

When absorbent material, such as forest leaves, chaff or planer shavings, is used above the cluster, it is generally saturated and thus changed into a rapid heat conductor, thus defeating the first object aimed at. The second object is also defeated, because more or less warm air escapes at the top, and all the heat contained in the absorbed moisture is carried outside of the hive chamber. When a tight cover is used, very little warm air escapes at the top; and the moisture, when deposited on the side walls, gives up its heat gradually, until it reaches the bottom board. This released heat again returns to the upper regions of the chamber and thus assists in keeping the atmosphere within the hive at the proper temperature, the water meanwhile escaping at the entrance. These are the conditions that are

found in the gum or hollow tree, which from natural formation, has abundant warmth at the top and is rendered impervious to moisture by the sealing of the bees. Further, in a tree, the lower portion of the compartment is comparatively cool; and if any moisture is condensed, it is in the lower part of the hive. As hives are generally prepared now, with little or no packing above, the under side of the quilt is cooler than the atmosphere, when it rises more or less saturated. The same is the case when absorbents are used and become conductors, cooling the quilt above. When this condition obtains the warm atmosphere, as it rises saturated with moisture from the cluster of bees beneath, strikes the cool surface above, is chilled, and deposits its moisture, as we see it in every-day life on the cool window pane. This moisture, when it collects in sufficient quantities, drops and falls on the cluster, to the great injury of the health of the bees, causing disease and bee-diarrhoea. By packing them in the way about to be described, the condition found in the log or hollow tree is secured. Such was the reasoning of Mr. Pierce. The entire theory is exceedingly plausible; and I know from correspondence, that it has had its followers.

In my experiment, ten colonies in eight-frame, single-walled, "Langstroth" hives, were prepared, weighing, without lid, but including bottom board, body of hive, frames, bees, quilt, and stores, as follows, Oct. 29th, 1894:

Clamp 1. No. 1, 58 lbs.; No. 2, 57; No. 3, 59; No. 4, 56; No. 5, 58; No. 6, 58; No. 7, 55; No. 8, 54; No. 9, 57; No. 10, 61.

The bees were placed in what bee-keepers generally call a clamp, specially constructed for the purpose. It was of pine, and, for convenience, had the bottom in one piece, the sides and ends each of one piece, and the cover in two pieces, all hooked together so as to be removed piece by piece, when desired. The roof has one-third pitch, sloping to the back, to prevent the fall of rain, etc., at the entrance. The hives rest on 2nd inch scantling, turned on the narrow side, thus making the packing space four inches, and one-fourth inch added in back when the bottom boards of the hives rest on the four inch scantling, making the back a little higher than the front, to prevent moisture from running in at the entrance.

There was a little over three inches of space for packing between the hives six inches back and front of the hives, at eight inches on the sides, with room for two inches of packing above. The space in the bottom of the clamp was filled with planer shavings. The wooden covers were removed

ed from the hives and the sealed quilts were left on. Purposely, the quilts had not been removed since the bees sealed them; and said quilts rested flat on the top bars, having no passage from comb to comb over the frames. Manilla tissue paper was now taken, of a sufficient size to cover the top of the hive, and put on to the depth of one inch, making 672 thicknesses of this paper. Ten thicknesses of newspaper were then put over this, all large enough to allow the edge to extend over the sides and ends to within an inch of the bottom board. The flaps or the corners were folded and all held tight to the sides of the hive by a cord. A bridge made of wood, the length and width of the alighting board, and one half inch strips were placed at the entrance, to give the bees free passage out and in, after the packing was placed about the hive. The hives were now thoroughly packed at the sides and ends, and finally on the top, to a depth of eight inches, as nearly as such packing could be measured. It will be seen that in this arrangement the bees were thoroughly protected by packing, with the exception of the entrance, the width of which was controlled by entrance blocks. It will also be noticed that the bees were packed, to avoid the condensation of moisture in the upper part of the hive, and to prevent the absorption of moisture above, with the object of securing its condensation in the lower part of the hive or as it leaves the entrance.

Clamp 2. A similar clamp with ten colonies was also packed, weights as follows:

No. 11, 62 lbs.; No. 12, 57; No. 13, 59; No. 14, 56; No. 15, 58; No. 16, 58; No. 17, 55; No. 18, 54; No. 19, 57; No. 20, 61.

The bees were prepared in every respect the same as before; but the manilla tissue paper was omitted, and according to my usual custom four thicknesses of newspaper were laid on in its place on top of the quilt. The quilt, before packing, was broken loose by raising, thus preventing any slight sealing. Eight inches of planer shavings were then added, this, with the quilt, making the top packing.

In both experiments, the entrance by which the bees went into winter quarters was five inches wide. The only precaution observed during the winter, was to see that the entrance and passage to the entrance, was kept clear of dead bees and snow. When necessary, dead bees were carefully and noiselessly removed by means of a beat wire.

Observations.—Many times, during November and December, it was markedly noticeable that the bees in No. 1 clamp were

flying, when those in No. 2 were perfectly quiet, and that their flight indicated a restless condition. There was, however, no outward signs of disease during these months. Towards spring, the bees in No. 1 clamp showed decided signs of bee-diarrhoea. When they flew, there was spotting. Some of the entrances showed signs of spotting; hives 2, 3, and 10, markedly so. The bees in No. 2 clamp did not show signs of bee-diarrhoea to anything like the same extent. In fact, there was a marked contrast between the two clamps. It will be remembered that a portion of the winter unusually severe, the temperature dropping at Brantford to 22° below zero. An examination was made on April 18th; and, as might have been expected from external appearances, with the exception of No. 1, every hive in clamp 1, showed more or less signs of dysentery. Nos. 2 and 3 perished, leaving their combs badly daubed and also leaving small patches of brood in the combs, an indication of exhausted vitality among the bees and an effort to recuperate by breeding young bees. No. 9 in the same clamp, was weak and queenless; but, as a note went to show that this colony had been queenless in the fall and that a queen had been introduced before going into winter quarters she might have been temporarily accepted and then destroyed. No. 9, should, therefore, be left out of consideration. In the following list of hives in Clamp 1, XXXX denotes a choice colony, covering, fairly well from seven to eight frames, XXX covering five to six, XX covering three to four, X covering one to two:

No. 1. XXXX; No. 2. Dead; No. 3. Dead; No. 4. XXX; No. 5. XXX; No. 6. XX; No. 7. XX; No. 8. XXX; No. 9. Queenless; No. 10. X.

The next examination was made April 26th. At this time there was no marked difference in most of the hive, except that No. 7 and No. 10 had perished, having been robbed either just before or after their death. Another examination was made June 1st.

Number of hive.	Nur.ber of cor with aes.	Amount of brood. Langstroth frames.
No. 1.....	8	7
No. 4.....	6	5
No. 5.....	3	2½
No. 6.....	4	3
No. 8.....	4	2½

It was not the intention to carry this experiment to test of the amount of honey

gathered, as other conditions would influence the result; but it may be of interest to know that the honey season was exceedingly poor, and on July 23rd No. 1 had gathered (allowing 25 pounds per hive for comb and bees,) 33 pounds of honey, stored in the body of the hive, and 17½ pounds stored in the sections. No. 4 had stored 14 pounds in the body of the hive but had no surplus; in fact, on none of the others were surplus receptacles put, as only strong colonies gathered any surplus in the apiary.

The second clamp wintered much better, but did not reach anything like a desirable standard for wintering. On April 18th the facts were as follows:

No. 11, XXXX; No. 12, XXX; No. 13, XX; No. 14, XXX; No. 15, Dead; No. 16, XXX; No. 17, XXXX; No. 18, XX; No. 19, XX; No. 20, XXX.

On April 26th No. 20 was dead, making two dead in the clamp. Another examination was made June 1st, with the following results:

No. 11, XXX; No. 12, XXXX; No. 13, XX; No. 14, XXX; No. 16, XXX; No. 17, XXX; No. 18, XXX; No. 20, XXX.

Number of hive.	Number of combs with bees.	Amount of brood Langstroth frames.
No. 11	6	5
No. 12	8	7½
No. 13	3	7½
No. 14	6	5
No. 16	5	3½
No. 18	8	7
No. 20	6	5

The remainder of the apiary (73 colonies), with the exception of one colony, was wintered in the cellar, and owing to the severity of the winter, it was a difficult matter to keep the atmosphere pure and the temperature high enough, hence the loss was a little higher than usual. Only three, however, died, which is much more satisfactory showing than in either of the clamps wintered outside. Regarding the latter, I may say that I am inclined to the belief that the bees packed with the paper had not sufficient ventilation at the entrance, and the paper packing prevented upward ventilation. In the second clamp some upward ventilation was possible. I do not know of any other way of accounting for the results.

During the winter of 1895 and '96, the experiment will be repeated, with this important difference, that passages will be allowed through the combs, to enable the bees to contract and expand the cluster, according to temperature, yet without having

to break the cluster, which is a very important advantage.

FEEDING OF BEES.

In an experiment in feeding bees sugar syrup for winter stores, the "Boardman" Entrance Feeder was used. It is an air feeder in which the bees have ready and continuous access to the syrup and at the same time find it impossible to daub themselves with the liquid. By this arrangement some waste is avoided. In our experiment, the bees had a continuous supply of syrup; and, so far as we are aware, the conditions under which the syrup was stored, were the best. The stores supplied were made of two parts best granulated sugar to one part (by measure) of water. The water was first brought to a boil; then the sugar was poured in and the mixture stirred until the sugar had dissolved and mixture had come to a boil. It was supplied to the bees a little above blood heat. In looking at the table, we notice that there is a considerable difference between the first weight of the hive, plus the syrup, and the actual weight six days after the last syrup was stored. The difference in weights may be attributed to evaporation, the consumption of stores which goes on all the time under natural conditions, and the increased consumption likely to go on whenever the bees are under the excitement or stimulus of storing and for some time thereafter. The colony weighing 33 pounds was not strong enough, and it will be noticed that in this case there was the greatest waste.

Number of Colonies.	Weight in pounds.	Pounds of syrup supplied	Weight six days after last syrup was fed.	No. of pounds gained by said feeding	Difference between first weight, plus syrup supplied and the actual gain in pounds	Percentage of loss
1...	36	27	51½	15½	11½	.63
1...	37	10	41½	4½	5½	.52
1...	35½	18½	47	11½	7	.52
1...	33	14	37	4	10	.71

The above experiment indicates:

- (1) That there is a greater difference between the weight of stores supplied to the bees in the feeders, and the increase in weight of the hive. There is a loss which cannot be explained in any satisfactory way.
- (2) That it will not pay to extract the honey with a view to making a profit, or supply the bees with sugar syrup for winter stores.
- (3) That when feeding has to be resorted to...

to, the strong colonies should be given sufficient comb and stores to cover their own wants and, in addition, supply the weaker colonies with combs of sealed stores.

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R. F. HOLTERMANN, - - EDITOR.

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[Will our Manitoba and British Columbia friends please answer about keeping bees in northern climates.—Ed.]

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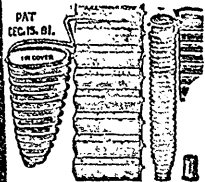
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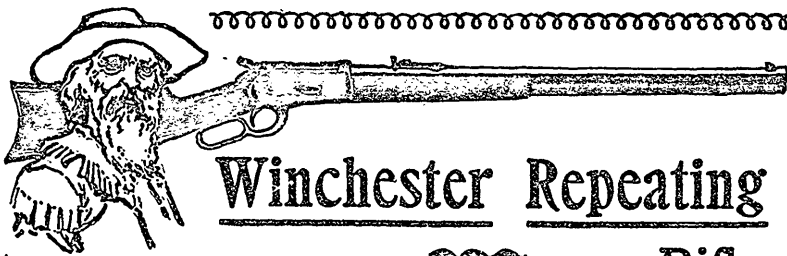
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