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SHIPPING BEES.

HOW TO CARE FOR THEM AFTER YOU GET THEM.

AS a great many customers are asking how to manage their bees after receiving them, we think that a few words on that subject will not be amiss. Those who are up in the business will not require any hints in this direction, and they are not intended for such but for those who are just beginners. We are now shipping large numbers of colonies and may here explain how we prepare them for their journey and the necessary attention they should receive after they reach their destination. The ends of the frames are all nailed with slender wire nails to the sides of the hive; the ends of nails are allowed to project sufficiently so that they may be withdrawn with an ordinary claw hammer or pinchers. In order to remove the wire nails it is necessary to lay a stick across the frames about half inch from nail in end of frame, then taking the hammer in one hand, holding the stick down tightly with the other, with claws of the hammer each nail may be removed without lifting the frames; a smoker may be used to advantage while this operation is being carried on. After the nails are removed the frames should be placed close together only allowing sufficient space for a bee to pass over them; should there be more combs in the hive than bees require they may be placed back of the division board. The entrance blocks should be adjusted to suit size of colony, and weather; in warm weather they require a fairly wide opening, while in cool weather they should be closed up allowing space only for one bee to pass in and out at a time; and on cold nights it

should be closed up entirely, and not opened the following morning until the weather becomes favorable for the bees to fly. Combs may be added as fast as the increase of the colony requires. In handling bees in early spring and in cool weather when no honey is in the flowers it is necessary to exercise great care or they are liable to ball their queen. When necessary, feed in the hive, which may be done by pouring a little on the bottom board, when bottom of hive is water tight, or lift out an empty comb and pour the feed into it, then place it next the brood chamber. Do not pour the feed in at the entrance as it incites robbing. The reason the wire nails are placed through ends of frames when shipping bees by express or freight, especially when shipping long distances, and over several lines of railway, is that we find from experience that when the bottom of the frame is not fastened much less breakage occurs; in fact we have shipped bees to all parts of Canada and the U. S. packed in this way without loss.

FOR THE CANADIAN BEE JOURNAL.

ABOUT WINTERING.

WHAT, that means Mr. Axtell and I, like your plan of asking and answering questions very much, as often we wish to know what we cannot find out in any other way. We have met with a very great loss in our bees this last winter. We went into winter quarters with 244 colonies—125 on summer stands and 118 in cellar. Thirty-three colonies of the cellar-wintered bees are dead and 70 out of the 125 wintered out of doors, and I am sure many more would have died had we not put them down on from one to four combs. The most of the colonies were crowded down on to two and three combs, just as soon as we could work with them in the spring. The honey seemed very watery this spring, and some of the capped honey bulged ready to burst open; pollen very mouldy and green in some hives. Last fall bees were in a very weak condition and but few colonies were really strong, but as Mr. Axtell received a severe kick from a mule and was unable to see to them when fitted for wintering, and I

was not able to do so either, they were not wintered as we usually do the weak ones; but we picked out the weakest and tied a string on each hive and set them in the centre of the cellar and they have come out in just as good condition as the stronger ones. I remarked to my husband that I did not think our bees looked or acted well last fall. They gathered scarcely any honey since last June, so we allowed them to take down honey enough out of their surplus sections to winter on. We noticed this: that where the bees were crowded down into a few combs and all other combs taken away that they could not cover, they wintered better than those that were stronger and had more combs.

If we live to see another fall we think we shall crowd our bees down into a very few combs to the colony of early gathered honey and feed sugar syrup until those combs are full and cover all with clean cotton duck, and fill hive with dry chaff, both for cellar and out-door wintering; lean the hive forward so the dead bees will be carried out easily, and lean a board over the entrance and let the snow cover the hives without molestation, as we think cleaning it off the alighting board arouses the bees somewhat and causes dysentery. Never saw ours have it worse, both in cellar and out of doors. Our crop of honey last year gathered in June was about 7,000 pounds; in 1883, 14,000 pounds; in 1882, was 39,000 or about 216 lbs per hive, four or five barrels of which was extracted honey, the rest two pound sections. Please criticise the above mode of preparing for wintering if you think of any defects, as we certainly do not want to meet with such a loss again, neither do we want to nurse so many sick bees in the spring. Please answer the following questions: How do you make hives tight enough to prevent snow and rain driving in and around the lids and through the joints of the lids, even when made very light? How would it work to put a fresh coat of paint over the hive and then lay on a thick cloth of cotton duck and paint over that, as our hive covers are made like the roof of a house and have a joint in the centre. I think some of our straw packing being damp helped on the dysentery of those out of doors. How wide an entrance should a good colony have in winter, and if best to tip the hive forward? Is it best to send a hand (not a very careful one) around once in a while to clean out the entrance when we think they are being clogged up? (My husband being somewhat of an invalid and not always to be around.) I would like to ask also if, when wintering in the cellar, it is advisable to pack the hives with straw or not? We have always done so and generally had better success in cellar

wintering than in out-door wintering. The winter after our bees had gathered 216 pounds per hive, they were very strong there being almost double the bees in each hive as there was last fall. It was a very cold winter and we lost heavily that fall. We thought perhaps there might have been some "honey-dew" mixed in with their honey, but the honey was almost as light colored in the fall as that in the spring gathered from white clover. We think we have learned that it pays to put bees into winter quarters before the weather is too severe, as we had 118 colonies to put into one large cellar, we put in all but about thirty-five before the weather was severe, thinking we would leave the others out as long as we could, because so many in the cellar, and packed with straw, they seem to get too warm in moderate weather. There came on a very cold spell, and then it moderated a little when Mr. A. and a hand thought it safe to move them, so took them into the cellar. They were equally as good as the rest when put up last fall, but to-day there is scarcely a hive among the thirty-five that will much more than save their queen, three-fourths of the number are dead outright, and nearly one-half before taking out of cellar, or died in a few days, their bodies were terribly distended; a few of these were fed up later than any of the rest with section honey; the corner of the quilt was turned up a little and the help did not turn it down and take out sections. I think they all died. It grieves me so to see the poor little creatures suffer. We have had a cold backward spring with but one day that bees could gather pollen, except one other day when they gathered very little; but as our bees are crowded into such very close quarters, with combs of honey on outside of division board so bees can go over and get what they need, and the one day of pollen gathering two weeks ago, bees are doing very much better already. The better ones have their combs quite well-filled with brood, in a few days we will add another comb to such colonies as can take it. Excuse so long a letter from a stranger, and written in so hurried a manner, but I am one of the very busy ones though an invalid of thirty years, three-quarters of the time on my bed, except when caring for bees I get real well and strong. I have the oversight of our home apiary and care for it with the help of hired girls, and my husband takes care of the one away from home. The bees are Mr. Axtell's, not "Mrs. Axtell's Apiaries" as some have thought, because Mr. Axtell seldom writes for a Bee Journal. I write and say "we" and sign my name, and then editors call them "my bees."

MRS. S. C. AXTELL.

Roseville, Ill., April 18.

Anyone who will try the wintering of

bees on a few combs and compare the results with those wintered on many, will soon be satisfied in the matter. We would have as few combs as possible, and those containing plenty of sealed stores well spread. When combs are placed close together the bees are more liable to start brooding than when they are farther apart. We will give full instructions for wintering another time and trust that you may be successful in future; there is no reason why you should meet with much loss. We make our hive covers out of extra dry lumber, either kiln-dried or lumber that we have had drying several years; the joints are then so perfect that we have no trouble with the wet coming through, even though they are not painted. Your plan of putting on canvas would prevent any difficulty in your case as long as they are kept well painted. Suitable paper could be used instead of canvas, which would be cheaper. We have our winter entrances about half an inch high, and eight inches long. It makes little difference whether the hive is tipped forward or not, if properly arranged otherwise. It is well not to allow the entrances to become clogged, they should be kept clean, which may be done by using a bent wire. It is not necessary when wintering in cellar to pack the hives, that is, providing your cellar is sufficiently warm.

harvest. Now I would wish to call your attention to the simple fact, 40,125 lbs of honey stored in sixty days by 113 colonies of bees in what you would call a weak condition, is evidence that there is plenty of honey here in the winter. But when we stopped extracting, the last of January, the bell flower was pretty much gone, but the honey flow was not ended, and as we wished to make 400 colonies, which as you know would require a large amount of bees and honey we concluded to take no more honey, but proceeded at once with our increase, which we did, but had it not been for the large increase we wished to make, and make it early, thus avoiding the great mistake we made last year, that of not increasing until the honey flow was gone, it is our opinion that as much more honey could have been taken as we did take in January and December, which would have run our average up to something unheard of in the annals of modern bee-keeping. While in this connection it will not be out of place to state that at the commencement of the harvest we had a few colonies (Jones' Holy Land Queens mated with native drones,) one of which stored 620 lbs., when they became queenless and no more honey was taken from them. Can any man tell *why* a hybrid colony will store more honey than *any* strain of *pure* bees that ever flew, (*i. e.*) the first cross. It has not been my experience that it is advisable to carry the crossing beyond the first, but for business and amount of stings they "take the cake." While it may seem idle to assert suppositions, yet, after the last six months experience, I feel that the record of B. F. Carrol, of Texas, (*i. e.*, 1000 pounds from a single colony,) would not be hard to duplicate here in Cuba, for the last honey taken from the colony that stored 620 pounds was February 27, while there was all of March and this month so far that the flow has been good. In my next article I will tell your readers of one kind of honey that surpasses anything for flavor the world can produce.

FOR THE CANADIAN BEE JOURNAL.

BEES IN CUBA.

FROM the 113 colonies--part of whose work was reported on page 9 of your JOURNAL--in just 60 days we took 40,125 lbs., making an average of 355 pounds to the colony, with 10 lbs. to spare. As I have said in several articles in U. S. Bee Journals, this yield is due to the great amount of honey secreted by the bell flower, and that we take but little credit to ourselves, for it was our first year in Cuba, and our first attempt at getting bees in condition for a winter honey flow, which I assure you, we found to our cost, needed different management from what we had ever practised for a summer

San Miguel, Cuba, W. I.

A. W. OSBURN.

Cuba must certainly be a wonderful place for the secretion of honey. If the average years are equal to the last, no doubt it will not be long before many will avail themselves of the opportunity of keeping bees there. If you had had strong colonies to commence with, your report would likely have been even more favorable, though it is the largest average yield we recollect hearing of, from that number of colonies. By all

means tell us more about bees and beekeeping in Cuba.

FOR THE CANADIAN BEE JOURNAL.

CELLAR WINTERING.

YOU invite correspondence, and if my experience can be of use to your readers, I am willing to take time enough to record the items, for I have no motive in life but to be useful to my fellowmen. Your JOURNAL, I suppose, circulates mostly where winters are severe, and as I have had much experience in cellar wintering I will make a few remarks upon that subject. I have been conducting a series of experiments on cellar wintering for more than fifteen years, and at the same time have made careful observations relative to the effects of the efforts of others, and I believe I have perfectly mastered the science of cellar wintering. This looks boastful I know, but I feel so sure of it that I would like to insure the safe wintering of all the bees in northern U. S. A. and Canada—for ten cents a colony if the owner will treat them according to directions, and it shall not be expensive either. I have not lost two per cent. in one winter for ten years, and I have wintered from one hundred to two hundred each winter. I remove no pollen and leave their natural stores. I put them in early before the ground freezes any, and take them out when there is plenty of natural stores and not before. My greatest trouble for many years has been that they would breed too much in the cellar before I took them out: last year my hives (18½ by 14½ by 9½ inches inside measure) were more than full of bees when I took them out. After smoking in all that could get in, some of them would have a peck of bees on the outside of hive. I tried keeping them cool with ice for many years. I have a sixteen foot box, a foot square, running sixteen feet into the cellar from a window through which I have admitted air. This I would fill with ice when ever the thermometer rose above 50°. And sometimes I have elevated other boxes of ice in the cellar, but never until this year have I succeeded in keeping them quiet and without premature brood. But my bees, 120, are as quiet now as they were in December. They have bred some since, but by watering I have kept them quiet, and I do not think there are any more bees in the cellar than we carried in last fall. That is what I have aimed at. I have accomplished this by keeping the temperature even, 48° all winter, 50° now, and keeping the air pure without much circulation. All the air admitted during cold weather came from my kitchen, a slight even ingress, but I have two four inch

pipes connecting a constantly heated chimney with the cellar. This has kept the air perfectly sweet, with no perceptible circulation, and the bees have remained hibernated much longer. Nearly all my hives are now, April 15, as clean as this paper. I expect they will not spot any thing very much when we take them out, if that time comes in any reasonable season. It looks dubious at this date. Snow fell one foot on the 14th and there has been "but one or two days" that bees could have flown with safety, and most beekeepers about here have set their bees out. Those who wintered out doors have lost nearly all, and many cellars are in bad condition. Yet all who have taken instructions and prepared cellars properly have their bees in fair condition.

H. V. TRAIN,

Maniston, Wis., April 15, 1885.

Many thanks for your interesting article. You are indeed doing good missionary work in your locality, and by giving us the facts through the columns of the JOURNAL you will assist all beekeepers. The degree of temperature you approve of agrees with our experience; we do not care to have our bees either colder or warmer than 45° until late in the season, and just before being set out, when we do not mind the temperature being a little higher. Ice or snow placed at the top of the room in bags or boxes is of much assistance in keeping a uniform temperature.

QUERIES AND REPLIES.

UNDER THIS HEAD will appear each week, Queries and Replies; the former may be propounded by any subscriber, and will be replied to by prominent bee-keepers, throughout Canada and the United States who can answer from experience, as well as by the Editor. This Department will be reserved for the more important questions, others will be answered in another place. We hope to make this one of the most interesting departments of the JOURNAL.

HEIGHT OF HIVES FROM GROUND.

QUERY, No. 11.—COLLINGWOOD, ONT.,—How high 'above the ground do you prefer to have your hives?

DR. C. C. MILLER, MARENGO, ILL.—From three to six inches.

M. EMIGH, HOLBROOK, ONT.—For high dry land four inches is high enough.

G. M. DOOLITTLE, BORODINO, N. Y.—From three to four inches.

R. MCKNIGHT, OWEN SOUND, ONT.—Four inches with the alighting board extending well down.

O. O. POPPLETON, WILLIAMSTOWN, IOWA.—I prefer bottom of hives to be from four to six inches above the ground.

S. CORNEIL, LINDSAY, ONT.—In summer four or five inches. In winter above the snowline because the ventilation is better.

H. D. CUTTING, CLINTON, MICH.—About six inches with sawdust all around. Bank the sawdust up in front until it comes almost to the top of bottom board.

DR. J. C. THOM, STREETSVILLE, ONT.—In practice four inches is the distance our hives are from the ground. If I had only a few hives I would have them one foot above ground with broad alighting board.

DR. A. B. MASON, WAGON WORKS, O.—I use Langstroth hives and have tried different ways of placing them, but like my present method the best, the front end of the hive placed on a piece two inches square resting on the ground and the back end on a piece four inches high, with enough sawdust in front of the hive to be nearly level with the alighting board.

H. COUSE, THE GRANGE, ONT.—I prefer a stand about three or four inches high, with an alighting board attached and sloping from the entrance of hive to the ground, thus allowing easy access to heavily laden bees or any others that may fall to the ground, and besides the hives are easily manipulated at this height. A bee-stand which Mr. Jones manufactures is the best I have seen.

ALLEN PRINGLE, SELBY, ONT.—I prefer to have my hives only high enough from the ground to allow a circulation of air under the bottom board to prevent dampness and preserve the hive from decay. (By the way the under side of every bottom board ought to be painted.) This altitude of hive will readily admit of an inclined passage way (a piece of board) leading up from the ground to the alighting board—an adjunct with which every hive in a well regulated apiary ought to be provided.

BY THE EDITOR.—Our bee-stands are four inches high with slanting boards to entrance, and an opening behind to permit free circulation of air under the hives.

THE CAUSE OF MORTALITY.

QUERY No. 12.—MONTREAL, QUE.—When bees are properly prepared for winter both in and out of doors, what is the chief cause of mortality?

C. C. MILLER, MARENGO, ILL.—I don't know.

H. D. CUTTING, CLINTON, MICH.—Diarrhœa and starvation.

MARTIN EMIGH, HOLBROOK, ONT.—Bad management.

H. COUSE, THE GRANGE, ONT.—With the above conditions there should be little or no mortality.

DR. J. C. THOM, STREETSVILLE, ONT.—First, improperly ripened honey; second, variations of temperature.

G. M. DOOLITTLE, BORODINO, N. Y.—Cold, for could bees fly every week or less bee diarrhœa would be unknown. Cold causes the confinement which brings all our wintering trouble.

DR. A. B. MASON, WAGON WORKS, OHIO.—Beekeepers are not agreed as to what constitutes "proper preparation" for winter, but when "properly prepared" I believe the chief cause of mortality is *too low temperature*.

O. O. POPPLETON, WILLIAMSTOWN, IOWA.—When we know how to properly prepare our bees for winter and do it, there will be no mortality as this question indicates. The causes of mortality among bees are not one but many; chief among them being extreme cold, long confinement, and poor quality of food. I do not think any one cause alone does material harm.

PROF. A. J. COOK, LANSING, MICH.—There are *two* chief causes in my opinion. Temperature is not as uniform as it should be and food is not good. I want equable temperature, 45 °; and good honey or syrup with little or no pollen. Mr. J. H. Robertson who has water flowing in the cellar all the time, has lost no bees this winter. Ours is the same. This water keeps the temperature just about 80 °. About Mr. Robertson's place, out of 373 colonies only 35 are alive. Hurrah for a good cellar! !

ALLEN PRINGLE, SELBY, ONT.—I feel like answering this question as the Yankee answered the question where he was born. He said, "At Barnstable Bay, Cape Cod and all along the shore." There is one thing about this matter, however, which is just as certain as it is consoling to the bee-keeper. It is this: If he puts his bees away for the winter "properly prepared both in and out of doors," and they go the way

of all flesh before spring, the "cause of mortality" cannot be laid at his door; and he can then rest easy in his conscience for the true philosopher always gracefully submits to the inevitable.

S. COUNTELL, LINDSAY, ONT.—The chief cause of bees dying in winter is their inability to evaporate the water from their bodies. This inability to evaporate may be caused by a lack of heat sufficient to render the air permeating the cluster dry enough to absorb their moisture, or by the extreme humidity of the air surrounding the cluster, or by both. The lowest temperature of the cluster which may be borne with safety is an important matter, but I am not aware that it has been accurately determined. If the moist air surrounding the cluster is not gradually carried off it has the effect of cooling the cluster because water is a better conductor of heat than air and the more water air contains the faster a warm body in contact with it will be cooled by conduction. It is safest to have good strong stocks in the fall covered with heavy quilts of wool to keep the bees cosy and comfortable. If they are wintered outside the bees should be packed in such a way that the packing will be found to be dust dry in early spring. A plentiful supply of food is of course assumed and for this purpose nothing is better than their natural stores, honey and pollen.

R. MCKNIGHT, OWEN SOUND.—When bees are properly prepared for winter and put away in a properly prepared indoor repository, the chief cause of mortality is old age, unless the pollen theory has more mortality in it than I believe it to have. When the above conditions are complied with there is no more risk of loss among bees in winter than there is among other stock put into winter quarters in good condition and kept in favorable circumstances. It is appointed unto all men and all sublunary creatures once to die—bees not excepted—the natural life of some species is longer than that of others. Bees are among the short lived of animated things and some of them will die during the winter, no matter what means are employed to prolong their lives, but if "properly prepared" and kept in properly arranged bee houses they will generally live out their allotted days—under such conditions there is little fear of mortality from causes other than that of old age. In outdoor wintering it may be difficult. The vicissitudes to be endured consequent upon climatic changes and other causes may induce epidemic diseases. Sudden extremes of temperature may induce dysentery, from which bees become debilitated and die. Those kept in single-walled hives, and wintered on their summer

stands suffer most from these extremes and are consequently more liable to disease and death. This trouble is combated to some extent by the use of chaff hives or some substitute, but all these are more or less expensive so that he who intends to make bee-keeping a business will find it cheapest in the end to use single walled hives and build a properly constructed bee-house.

BY THE EDITOR.—If the stores used are good and the colonies are placed in a damp repository, the stores will gradually become poor by the incorporation of moisture. If the bees cover all the combs and are able to keep up enough heat in the hive to prevent the condensation of moisture and pass it off, they can then get rid of the moisture in their bodies, but if they are not able to do so more or less trouble will follow. We consider cold and moisture two of the principal causes of winter losses. Moisture does not affect a colony injuriously if it is sufficiently strong to keep up the amount of heat necessary to evaporate all the excess of moisture from their bodies and from the combs.

SUNDRY SELECTIONS.

WINTER LOSSES IN HALDIMAND.

Canoga Advocate.—We are sorry to learn that the beekeepers of this and surrounding counties have met with heavy losses in wintering, some having lost every colony, others nearly all. A few however, we are pleased to learn, have been more fortunate, and have lost comparatively few. So far as we have been able to learn, the loss in this county will be from 50 to 75 per cent.

M. EMIGH, HOLBROOK.—Here is my report for the past winter. On November 11 I set 180 colonies in my bee cellar. Yesterday (April 21) I took them out and there were just two dead colonies in the lot. I tried several experiments in preparing for winter last fall, and if agreeable to you I will try to give a report to your readers during the coming season. In the fall of 1883 I put in 150 colonies and only lost one. In the fall of 1882 I set in 150 and took out 150 alive. I have about come to the conclusion that

there is not much risk to run in wintering bees.

By all means give us the results of your various experiments and all particulars connected with your wonderful success in wintering. We might here state that Friend Engh is just as successful in producing honey, especially comb-honey, as he is in wintering. He has exhibited some of the finest it has ever been our pleasure to see.

W. A. CHRYSLER, CHATHAM, ONT.—I am very much pleased with the JOURNAL and consider it deserves to be well patronised by every bee-keeper. My report for this season is anything but encouraging. I have lost thirteen out of seventeen colonies. Principal cause, dysentery. But I am not discouraged. Three-quarters of the bee-keepers in this section, if not more, have similar experiences. I am as yet a beginner and with more and better instructions on wintering from our more experienced apiarists (which we undoubtedly will receive through the JOURNAL) we may feel confident of success.

G. GUYER, PORT ELGIN, ONT.—I am very much pleased with the CANADIAN BEE JOURNAL, and am also pleased to hear the publishers say that they will "fix up" correspondence in right shape for the JOURNAL, as I do not feel qualified myself to do so. The JOURNAL will be a great help to Canadian bee-keepers. I was taking the *World* myself and spoke to several about subscribing for it and the reply was "I take an American newspaper and cannot take both." Now I think we have just what we need and good American writers to help it on. The great trouble here is for small bee-keepers to bring their bees through the long winter season. We are on the lake shore and the weather is very changeable. Heavy losses are reported. I have much reason to be thankful as I have never lost any since I commenced and this is my third winter. In the fall of 1882, I put in one hive, took out one; in the fall of 1883 I put in five, took out five; in fall of 1884 I put in nine hives and they are alright yet. Two colonies seem somewhat weak, but brood rearing has commenced. The other seven are in extra good condition. I have experimented considerably on hives during

my short experience and decidedly prefer double walled hives built of cedar and packed with dry cedar sawdust and that as dry as it can be.

QUESTIONS & ANSWERS.

FEEDING DARK HONEY.

P. T. MCCALLUM, STRANGE, ONT.—Do you buy dark honey for feeding bees? How much per pound is it worth? How much per pound do you pay for beeswax?

You will see price of wax quoted in former issue of the CANADIAN BEE JOURNAL. Dark honey for feeding bees would not be worth as much as sugar syrup, and there would be more danger of robbing during brood rearing as when fresh honey is being placed in the hives the bees get the scent of it from outside and it is apt to incite robbing which at this season is to be guarded against with great care.

WHY DID THE BEES DIE? TAN BARK FOR BEE YARD.

T. M. CRAIG, SHEFFORD MOUNTAIN, QUE.—Last November I put away seventy colonies in a small cellar under the kitchen, packing them in tiers two deep; temperature has ranged from 48° to about 30° in the coldest weather. They kept very quiet until about two weeks ago, when on going down to take a peep at them I found four stocks making considerable noise, and showing signs of dysentery as they were running about the outside and spotting their hives and quilts; did not trouble them at the time; looked to them a few days after and found they were dead. Examined two of them to-day, they seem to have been very strong in bees,—in fact it seems as though there were more than there was last fall.—found eggs and brood in all stages. The combs were dry but some of them a little mouldy. A good part of the bees had fallen to the bottom, some were clustered around the queen on the centre combs and a good many had gone into the cells head first and stayed there. They did not starve as there must have been ten pounds of honey in the outside combs though the centre ones were all cleaned out. Now, what caused their death? Could anything have been done for them when they were first noticed to be uneasy? How would from four to six inches of tan-bark with a slight dressing of sawdust on top, do for a bee-yard? Mine is in grass which I wish to keep down.

No doubt your bees died from dysen-

tery caused by the uneven temperature. If your cellar had been kept at a right degree of temperature in all probability no dysentery would have appeared. The sudden rise and fall of temperature caused the uneasiness among the bees and caused them to gorge themselves with honey; then when it became cooler in the hive the moisture would condense among the combs, thinning down the honey. The brooding perhaps had something to do with the trouble. If they had no pollen they could not have raised brood and in all probability would not have had the dysentery so badly. At the time you first examined them it is quite likely that the disease had gone *too far* to be remedied. We hope the remainder of your bees came out safely. We think tan-bark alone would be excellent. No grass could get through it.

APICULTURE.

BY ALLEN PRINGLE.

(CONTINUED FROM LAST WEEK.)

A properly constituted colony of bees consist of three different kinds, viz.:—an impregnated *queen* (the fully developed female); *drones* (the males); and *workers* (undeveloped females). The queen (absurdly called the "king-bee" from the time of Aristotle and even Virgil down to Huber) is the mother of the whole colony, and is capable of laying over three thousand eggs per day! During the height of the breeding season in the honey-flow, she frequently lays from two to three thousand eggs per day for many consecutive days together. She remains prolific for from two to four years, and in some instances queens have been known to remain prolific upward of five years. Before the queen-bee of a colony becomes quite barren, and while she is still laying, if not removed by the apiarist, the workers themselves supersede her, by killing her and rearing a young queen to take her place. Sometimes, however, the old, worn-out mother is permitted to remain in the hive while the young one is being reared, and ultimately dies of neglect and depression, or is assisted to "shuffle off" by her own unfilial progeny. The queen is reared from the same egg as the worker, but in a much larger cell, nearly perpendicular, and on

different food, called "royal jelly," which has the effect of fully developing the sexual apparatus. The time from the egg to the perfect queen emerged from the cell is about sixteen days. In a few days after hatching, the young queen leaves the hive for her "bridal flight," during which, and on the wing, she meets the male bee or drone in copulation and becomes impregnated, when she returns to the hive to remain there until she leads out the first swarm, which she does when she finds young queens being reared in the hive—one of them being designed to take her place. A *single* fertile queen in a colony is the normal condition of the household, and hence the old queen departs to make room for her successor. Second and third swarms are of course led out by the young queens. With the exception of sometimes attacking and destroying inchoate queens, the sole function of the queen is to deposit eggs and lead out the first swarm. After her impregnation she deposits both drone and worker eggs—either kind at pleasure. She is capable, however, as a virgin queen, of laying fertile drone, but not worker, eggs. This apparently anomalous fact (*parthenogenesis*) is now well established, but not only in the case of the virgin queen-bee, but in that of several other insects. Sometimes *worker*-bees in queenless colonies lay fertile drone-eggs; but the queen is the only fully developed female in the colony.

The worker-bees, though "the bone and sinew" of the hive, are not blessed with the queen's longevity. In active work, on the wing and the hive, during the honey season, they naturally live but a few weeks—from one to two months—while those hatched in the fall will live until spring, sometimes reaching the age of nine months and upward, which is the maximum longevity of the worker-bee. In passing from the egg to the perfect bee, the worker occupies twenty-one days. The young worker spends several days (from ten to fifteen) at home building comb, attending to the young brood, receiving and depositing the loads of the outside workers, and sundry other little duties, before it ventures to the fields to work. The duties of the older workers of the colony are to gather honey, pollen, and propolis, destroy and cast out the drones when necessary, and defend the colony from enemies without or within. They also, as already noticed, destroy old, unprolific queens and rear young ones to take their places, and sometimes lead out in swarming, as the queen does not always take the lead in swarming. And although very young bees are ordinarily very reluctant to leave the hive, I have seen such rush out under the swarming impulse so young that they could not fly more than a foot or two, if at all. They usually crawl back home again in apparent disgust with the outside world, and

doubtless with more wisdom and less conceit.

The third and last rightful denizen of a perfect colony of the bees is the unsophisticated, stingless, but much abused *drone*—the male bee. He is well named, however, being a very liberal feeder with excellent digestive organs for honey, and with no duties whatever within the hive further than the incidental one of contributing by the presence of his cumbersome corporation to the animal heat of the hive. As to his natural longevity, nobody from Virgil to Huber, Langstroth, Quinby, Newman, Cook, Jones, *et alii* seems to know much about it. The matter not being invested with any importance, no investigator seems to have bothered his head much with it. So far as I could ever see, the drone seems to live and thrive admirably until he is either killed off by the workers, starved to death, or gallantly yields up his life in performing his sole function, which he invariably does in the performance of this function in the act of copulation. The drone, as Dr. Dzierzon established, comes from an unimpregnated egg—the virgin queen, and sometimes even workers, being able to lay eggs which will produce drones. As a rule, drones are found in colonies whenever they are needed, or likely to be needed to impregnate the young queens, which is usually during the swarming season and honey harvest. Though they are promptly ejected from strong colonies when not needed, and the honey-flow fails, they are tolerated in queenless colonies, and are sometimes wintered over. The drone is much larger than the worker, and his cell very protuberant, and in it he spends twenty four days from the egg before he emerges.

As remarked at the outset, bee-culture made but little progress on scientific principles for thousands of years. It is only within the last half century or so that it has, under the magic talisman of science, fairly leaped forward like every other pursuit. The first great achievement was the application of the centrifugal force in the construction of the honey extractor, thus enabling us to get the honey in its purity out of the comb without injuring the latter, when it can be returned to the bees to be refilled. A German (Herr Von Aruschka) accomplished this, and thereby gave a great impetus to bee-culture. Indeed, the invention of the *movable frame* and the *honey-extractor* completely revolutionized the *modus operandi* of bee-keeping. As to who is really entitled to the credit of inventing the movable frame, there is some uncertainty and a conflict of claims. The truth seems to be that some three or four different persons are fairly entitled to credit—each, it would appear, having conceived and developed the idea, more or less independently of the others. Huber and Schmidt in Germany, Munn in England, M. de Beauvoys in France

and Langstroth, in the United States, are all fairly though not equally entitled to credit and each has placed progressive bee-culture under tribute. Mr. Langstroth, however, seems entitled to much more credit than any of the others, for his hive had more practical value than the whole of the others together. In carrying out the common principle, Langstroth was undoubtedly far ahead.

The next stride in advance was the invention of the manufacture of "comb-foundation," which was a great desideratum, as the honey season in the temperate zone is comparatively short, and a new colony of bees supplied with the "comb foundation" will do as much in two or three days as one alongside of it without the foundation will do in eight or ten days, as the writer has repeatedly proved. Foundation-comb is made by pressing sheets of pure bees-wax between metal rollers or plates so constructed as to give to the wax the exact impressions of the cells in the basal wall of the natural comb. This saves the worker bees just that much labor and time, and they proceed at once to rapidly draw out and develop the incipient cells. The merit of this invention is also somewhat in dispute. Upward of twenty years ago the late eminent apiarist, S. Wagner, patented comb-foundation in the United States; but it soon transpired that Herr Mehring, in Germany, had previously made foundation, and that the Germans had been using it for three or four years. As it is the accumulated wit and experience of the age, rather than the man, that produces the invention, it is quite likely that Mr. Wagner arrived at the idea without the aid of the other German (for Mr. Wagner was himself a German). Montaigne said he "had as clear a right to think Plato's thoughts as Plato himself had"; and the American German had not only as good a right as the home Teuton to think out this invention, but he was just as likely to do so, and more likely, for the inspiring and inventive Yankee atmosphere would quicken his blood and sharpen his wits.

Recent bee-culture has been also greatly promoted and extended by the specialty of queen-rearing, which has been brought to great perfection on scientific principles. D. A. Jones, in Canada, and Henry Alley, in the United States, have developed the department of apiculture to an extent leaving, one would think, little to be further achieved or desired. As, however, under the progressive laws of evolution, we have ceased to set bounds to improvement in any thing not fixed mathematically, we will not say that any department of practical apiculture is yet fully wrought out to perfection.

In order to secure absolute purity of fertilization in the different varieties and sub-varieties in crossing, D. A. Jones, of Beeton, Ontario, has established queen-nurseries on

different islands in Georgian Bay, so far from shore and from each other so as to secure entire purity of blood in copulation. Queens and drones bred and mated under such circumstances, from pure imported stock, can not be otherwise than pure.

Henry Alley also, of Wenham, Massachusetts, has, through a long series of experiments during many years, successfully applied science to the *modus operandi* of queen-rearing, and has recently given the world the fruits of his labors and researches in a work entitled "The Bee-Keeper's Handy-Book; or, Twenty-two Years' Experience in Queen-Rearing."

Another feature of present bee-culture, which is at once both largely the cause of its present advanced condition in this country and the best proof of its wide extension, is its periodical literature. Devoted wholly or partially to apiculture, we now have no less than three or four papers in Canada, and nearly a dozen in the United States. Among the latter is one *weekly* devoted *exclusively* to bee-culture. This is the "American Bee Journal," published in Chicago by Thomas G. Newman. Among the former is the CANADIAN BEE JOURNAL, a weekly, just commenced under the most favorable and promising auspices. It is edited and published by D. A. Jones, of Beeton, Ontario.

Since the hitherto great difficulty of successfully wintering bees in these climates has been nearly overcome by the application of science, bee-culture must, in the near future, become a great and profitable national industry in Canada and the United States.

D. A. JONES.

F. H. MACPHERSON

D. A. JONES & CO.,

EDITORS AND PUBLISHERS,

BEETON, ONTARIO.

WEEKLY, \$1.00 per Year, Postpaid.

BEETON, ONTARIO, MAY 13TH 1885.

CONVENTION REPORTS.

We have the report of the Middlesex Bee-Keeper's Convention on our desk, and hope to find room for it in our next issue.

FORCE PUMPS.

We have received a sample force pump from the manufacturer which seems to be a pretty good thing. We have written for a cut of it, and next week or the week following we will be able to illustrate it, and give more particulars.

HOW TO DEVELOP A HOME MARKET.

Every little while the request comes in to us to be sure and get up that pamphlet on the above subject, which Friend Pringle wrote of in

No. 1 of the BEE JOURNAL, page 9. We are now going to work at it and in a short time we hope to have it out. We don't know just what shape it will be got up in yet, but we intend to get it up so that it can be sold very reasonably to our customers for free distribution amongst their neighbors.

THE CANADIAN FLORIST

Is a neat little quarterly, published by F. Mason, Peterborough, Ont., and is devoted to the cultivation of flowers, fruits and vegetables. The price is only 25c. per annum, and we should think from the number before us that if all are up to this one, every lover of flowers and fruits could get the worth of the whole subscription out of each number.

BEES NOW OUT.

Friend Corneil, Lindsay, sends us the following, with the request that it be appended to his article, "Keep Your Packing Dry," which, however was in print when the latter reached us. In reading it, refer to his article on page 86, of the JOURNAL for May 6th:

"Since the above was written we have set out the bees in our home cellar, containing 77 stocks. We found two starved, the only cases of starvation I had this year. These make a total loss of ten out of 154, one-half wintered on their summer stands, and the other half in the cellar."

HALDIMAND BEE-KEEPERS' ASSOCIATION.

The next meeting of the Haldimand Bee-Keepers' Association will be held at Nettles' Corners, on Friday, the 29th May, 1885, at eleven o'clock a. m., when the following subjects will be discussed: 1. Winter losses, and the cause of loss. 2. Which is the most profitable, comb or extracted honey. 3. Which is the best place to secure comb honey—in the brood chamber or over it? 4. How to sell our honey to the best advantage. 5. Question Drawer. Now, what every member should do is to go prepared to argue the subjects which are down for discussion. Jot down any little points you may have noticed in connection with your wintering which you think have tended to bring your bees through successfully or otherwise, so that your brother bee-keepers may learn and profit thereby.

OUR MAILER.

We have been so very busy that as yet we have not got our mailing machine to work, and we have had to write the addresses on all our JOURNALS. Next week we hope to have all the list printed, and the names will then be so plain that there will be little danger of the JOURNAL's going astray. Some of our subscribers have written us that some numbers have failed to

reach them, and we have in all instances sent duplicates, which we hope *have* reached them safely. When we get our addresses all printed we will print on the label, after each name the number of the JOURNAL at which subscription will expire, and when we do this and the number corresponds with the date to which your subscriptions runs, you may accept this as a receipt. Should you observe any mistake in the number please advise us and we will make it all right.

ABOUT SIZES OF GOODS.

A large amount of unnecessary trouble is often caused by orders not being sufficiently explicit. Since we began making up odd-sized goods we have often found it so, and we suppose other supply-dealers have found just the same difficulty. For instance in ordering sections the width is very often forgotten, in ordering section frames the same difficulty arises, extractor baskets come in for the same trouble, as well as lots of other things, chief among which is foundation. Lots of customers say when you write to them about it, "Well, I got some last year, and I supposed you had the size already on your books." Yes, but then how do we know but that you may have changed the style of hive, or something of the kind. If we were to make up the goods, whatever they might be, without first writing and asking about them, and *then* when they reached you, were wrong, who would be at fault? Ten chances to one you would say, "Why didn't you write to me first before making them?" Perhaps we would both be a little to blame, but that wouldn't help the matter much, because there would be the spoiled goods for somebody to lose on. When we make mistakes ourselves we do not mind and are willing to correct them, no matter what the cost, but we like to know that we are *wrong*, first. Now the best way to do is to send the exact measurements of anything you may want, be it sections, foundations, frames, or whatever else. Don't leave anything for us to do any *guessing* over, and then there'll be very few mistakes.

BEE LORE.

OCCURRENCES WORTHY OF NOTE IN THE BEEKEEPING WORLD.

The *Kansas Beekeeper* talks about adding four more pages to its present size. FRIEND J. E. POND, jr., of Foxboro, Mass., has been confined to his bed for some time with rheumatism. May he speedily recover.

THE *British Bee Journal* in its issue

of April 15th asks for the opinions of its readers as to whether it should issue as a weekly or not. We say do so by all means.

A BEE-FRIEND at Campden, Ont., Mr. Honsburger by name, fell from a building about three weeks ago and fractured both his legs. We are glad to know that he is doing well.

Western Farmer, Madison, Wis.—We omitted last week to mention that we had received a copy of the CANADIAN BEE JOURNAL. It is a very interesting periodical, and as the system which is found most successful in that country ought to succeed in our own country, it will be particularly interesting and profitable to our Wisconsin beekeepers.

SPEAKING of the great mortality among bees throughout the country the Napanee *Beaver* says:—It is gratifying to note that Mr. Allen Pringle's theories in regard to the preservation of bees, seem to be successful in practice. Out of thirty colonies wintered outside, only three or four perished; while out of sixty placed under cover, all were alive when taken out. A good record.

Gleanings says of "stingless bees:—"The newspapers get hold of these about once in so often, for a sensation, and the item goes the rounds. These bees do not amount to anything. They have been carefully tested; and although it is true that they do not sting, it is also true that they do not gather any honey of any account. There is no rose without its thorn.

COMPLIMENTARY.

ROBERT KNETCHEL, WALTON, ONT.—Take the CANADIAN BEE JOURNAL—decidedly, I like its ring, there is not much drone about it.

WM. MUTH, RASSMUSSEN, INDEPENDENCE, CALIFORNIA:—I have just received the second number of the CANADIAN BEE JOURNAL. I like the paper very much. I wish you abundant success in your new enterprise.

DR. J. C. THOM, STREETSVILLE, ONT.—Don't send any purchasers to me, I am flooded with enquiries.

The Dr. advertised in the first numbers of the CANADIAN BEE JOURNAL, and the above is the result.

DR. P. E. BROWN, ST. ANNE DE BELLEVUE, QUE.—Enclosed please find subscription for CANADIAN BEE JOURNAL for one year, of which I feel proud, as I considered the bee interests in Canada would scarcely authorize you going to such expense. It is really as great a credit to you as it is the to country.

J. P. CHRISTIAN, NEW ORLEANS, FLA.:—I am astonished at the amazing cheapness of the subscription. The JOURNAL is a creditable production. I ran a job-office for many years, and appreciate its several excellencies: good paper, ink, elegant type, and skillful composition. I wish you success.

A. W. OSBURN, SAN MIGUEL DE JARUCO, CUBA, W. I.—This morning's mail, (April 17th), brought me the first number of the CANADIAN BEE JOURNAL, I welcome it with a hearty good will and extend to it a prominent place upon my table among its sister Journals. It certainly does credit to its founders, and if its future numbers be as bright and intelligent as this first, success is assured to the C.B.J.

CONVENTION NOTICES.

IN THIS DIRECTORY we will keep continually standing the names, dates, and places of meetings and conventions throughout the year, together with the name of the Secretary of each Association. Secretaries will please keep us posted as to the dates set for their Conventions, that this directory may always be kept complete.

ONTARIO BEE-KEEPERS' ASSOCIATION, at Toronto, during the Industrial Exhibition, between September 10 and 20, 1885. Exact dates will be given hereafter. Jacob Spence, Sec., Toronto, Ont.

HALDIMAND BEE-KEEPERS' ASSOCIATION will meet at Nelles' Corner, May 29th 1885. E. C. Campbell, Secy., Cayuga.

MICHIGAN STATE CONVENTION, at Detroit, Mich., on December 8th, 9th, and 10th, 1885. H. D. Cutting, Sec., Clinton, Mich.

LISTOWEL BEE KEEPER'S ASSOCIATION, at Queen's Hotel, Listowel, Ont., May 29th, 1885. Geo. Brown, Sec.-Treas., Molesworth, Ont.

EAST ELGIN BEE-KEEPER'S ASSOCIATION, at St. Thomas, at the Hutchison House, on the first Saturday in June—6th—at one o'clock. John Yoder, Sec., Springfield P. O.

NORTHERN MICH BEE-KEEPERS SOCIETY will hold its 2nd Annual Pic-Nic at the apiary of F. A. Palmer, 1 mile west of McBride, on May 28th. Teams will be in waiting at the depot in the morning to convey passengers to the grounds and will also return them in time for the trains homeward.

NORTH AMERICAN BEE-KEEPERS' SOCIETY, at Detroit, Mich., on December 8th, 9th, and 10th, 1885. W. Z. Hutchinson, Sec., Rogersville, Genesee C., Mich.

ADVERTISEMENTS.

A CARD.

Dr. Thom begs to announce as always in correspondence in regard to bees, that he has now none to dispose of. Streetsville, Ont.

BEES FOR SALE. I will sell strong stocks of Italian Bees, transferred to any hive to suit purchasers, at \$10 each. Those who purchase will have no reason to complain. Bees wax worked into Foundation on the Given Machine, 7-9c. S. CORNEIL, Lindsay, Ont.

BEES FOR SALE. Mrs. Rosie McKechnie, of Angus, Ont., will sell ninety to 100 colonies of nice Italian Bees, at reasonable rates. They came out in good condition, and are in good shape now. Prices of colonies on application. 15 pd.

1,500 Valuable Presents Given Away.

We are thoroughly convinced that the welfare of apiculture demands that the

AMERICAN APICULTURIST,

be placed in the hands of every bee-keeper in America and we propose to increase our subscription list to 5000 during the coming season.

In order to do this we shall give away to new subscribers 1500 presents as follows:

The first 500 who send us \$1.75 cash will receive Vols. I and II, for 1883 and 1884, bound in one volume, in cloth, together with the journal for the remainder of the year (1885) from June (7 mos.) and also as a present, a choice warranted queen worth \$1.50, bred by Alley's method, either Italian Syrian, Carniolan, Albino or Cyprian.

The second 500 will receive one of Alley's Drone Traps and the third 500 one of Locke's Bee Feeders.

All who are entitled to a present will be notified and new subscribers who do not receive a present can secure one of these queens by sending us \$1.00 extra mentioning this offer. These are the best offers ever made to new subscribers by any bee journal. If you wish to secure one of these presents you must reply at once as the call will be a large one.

A New Enterprise—The Apiculturist Experimental Bee Farm.—We have purchased from Mr. Henry Alley, of Venham, Mass. the old Bay State Apiary, established by him twenty seven years ago; together with his entire queen and bee business, including his choice and valuable collection of breeding queens the work of twenty three years of careful selection and breeding.

We have Italian breeding queens for which we would refuse \$100 each, and these are those from which the rich golden yellow queens that we are giving away as presents, will be reared.

Our queen rearing department is under the personal supervision of Mr. Henry Alley whose services we have secured at a large salary. We shall deal in

Queens and Bees Full Colonies, Nuclei, etc.

Our little Bee-keepers' Companion, a pamphlet filled with valuable information to the beginner in bee-keeping—contains a likeness of Mr. Alley, the veteran queen-breeder, who has reared and sold more queens than any other apiarist in America and has given to apiculture the only scientific and systematic method of rearing queens extant. It also contains our circular and price list.

Send your address at once and get one of the "companions;" they are sent free. If you wish to secure choice queens that will produce first-class bees for honey gathering purposes give us a trial. We guarantee entire satisfaction in every respect. Address

SILAS M. LOCKE & CO.,
Wenham, Mass.

W. E. CLARK, SUCCESSOR TO L. C. ROOT.

Dealer in all kinds of **Apiarian Supplies**, the Quinby **Smoker**—the best made—a specialty. The Quinby Hives made and sold finished and in the flat. Also all other kinds of hives. The Vandervort Foundation kept in stock, both wired and light. Send for illustrated price list, free.

2-3m.

Garwood's Reversible Frame Device

Will fit any frame, is simple and cheap; any one can make it. No nails or screws required to fasten it to the frame. Send ten cents for photograph with instructions, or 25 cents for a model. Friend Root turned this down as "too much machinery; but quite ingenious." You will smile.

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High side-walls, 4 to 14 square feet to the pound. Wholesale and retail. Circular and samples free.

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- CHAS. HERTEL, Jr., Freeburg, Ill.,
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- E. KRETCHMER, Coburg, Iowa,
- E. F. SMITH, Smyrna, N. Y.,
- C. F. DALE, Mortonsville, Ky.,
- EZRA BAER, Dixon, Lee Co., Ill.,
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and numbers of other dealers. Write for SAMPLES FREE and Price List of Supplies, accompanied with

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Eggs for Hatching. — White Leghorn, one dollar for thirteen.
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