

colony in doors. Experience has taught me that the less tiddling and fooling the bee-keeper has with his bees late in the fall and early in the spring the better it will be for both him and the bees. As soon as the first frost comes, remove the supers, and examine every colony. Give those that are short of stores plenty of good sealed honey in exchange for the empty combs. It is better for them to have more than sufficient to carry them through the winter and spring than not quite enough. If any are found that are not very strong, double them up; by so doing you may bring one colony through the winter, whilst if they are left separate you are liable to have only empty hives and comb in the spring. Those that are found to be queenless should be put with colonies that need to be doubled up, care being taken that the fertile queen be not destroyed. When you have advanced so far, instead of putting a half storey on, with chaff over the frames, put your propolis cloths on, and the thicker they are with propolis the better; now place your covers on over the cloths and on the single storey, and allow the bees to propolis them down so tight that no heat can escape, nor any cold enter. When packing is placed over the frames it absorbs dampness and very often becomes mouldy and causes the combs to mould. Is it reasonable to suppose that a human being, with nothing about him, could live in a house during the winter, with the heat all escaping through the second or third storey, and a heap of mouldy wet straw hanging over his head?

Boxes that are used for shipping teas are very good for packing bees in, and can generally be purchased quite cheaply. Place them where wanted, but raise them some four or five inches from the ground, and put some chaff in the bottoms. If you can get oat hulls they are better. Cover the top of the hives with chaff as well as the sides and bottom, putting some poisoned bread on them to kill the mice. Cover the case tight, and leave them alone until spring. If the case is large enough to contain two tiers of hives, all the better, for there will be so much more heat saved where it is needed. It matters not whether they face the north or the south; those facing the north may not fly so much, but they will winter quite as well if not better.

The first warm day that comes in spring carefully examine them in the heat of the day. Do not open the box or hive any quick jar to cause them to stir themselves, for they may not again have a fly for some time. A glance down into the combs is generally sufficient to tell whether or not they have plenty of stores; if lacking, gently remove a frame or two near the end of the hive, and replace with other frames filled with

honey which has been reserved from the previous year. Be satisfied they are all right for a month or so; then, if the spring is backward, go through the same process again. When the 10th of April comes, and they begin to bring in pollen, you may consider them as out of danger, provided you keep the hives closed until the honey flow comes.

Yours, etc.,

J. N. KITCHIN.

Weidmann, Ont. Sept. 1892.

Foundation and Foul Brood.



R. ALLEN PRINGLE, ex-President of the Ontario Bee-keepers' Association, writes us as follows:—

SIR,—In the B. B. J. of September 10th, 1891, a correspondent asks (766, p. 406): "Has this question been ever definitely answered: Does the melting temperature of wax, or what other temperature, with certainty destroy the microbes or bacilli of foul brood?"

In your issue of December 3rd, 1891, the Editor says, in a footnote to a letter from Mr. Corneil (863, p. 556): "We do not see that it would be impossible to test the matter" (that is as to whether foundation made from contaminated comb contains living spores of *Bacillus alvei*), "as a bacteriologist ought to be able to separate the spores from foundation; and if they are still alive, he should have no difficulty in cultivating them. . . . There are solvents of wax that have no effect on the vitality of spores. We hope that Mr. Corneil's surmise of sheets of foundation containing millions of live spores will not prove to be correct, and we hope that the matter will be tested."

This subject was discussed at the annual meeting of the Ontario Bee-keepers' Association, in January, 1891, and was deemed of sufficient importance to warrant action by the Society to have the above point determined and settled, if possible. The writer, as President of the Society, was accordingly instructed by the meeting to communicate with certain scientists in Canada occupying official positions, to induce them, if possible, to undertake the necessary experiments to determine whether the degree of heat required to melt wax was sufficient to destroy the vitality of the spores of *Bacillus alvei*, and, if not, what degree of heat is necessary to destroy them.

Professor Ramsey Wright, who occupies the Chair of Biology in the University of Toronto, has consented to make the experiments and settle this important question on behalf of the Ontario Bee-keepers' Association. Professor Wright commences the experiments this spring as soon as we are able to supply him with the necessary