

air do not retain their vitality for a sufficient length of time to reinfect a colony treated by a method which delays brood-rearing more than four days after all infection has been effectually removed.

Thus it will be seen that though McEvoy's method of treatment, which at first was so unpopular, and seemed so far from being correct, has, much to my surprise (and, need I say, disappointment?) been shown to be the only rational method laid down among all the writers on this subject."

DO BEES MAKE A WINTER NEST? WHY WE SHOULD FEED EARLY.

In our issue for Oct. 1, page 588, we stated that the purpose of early feeding is to give the bees a chance to "invert" the syrup to some extent, and at the same time to make a "winter nest"; that if the bees are fed late, instead of having this nest surrounded by sealed stores, the cluster will be formed upon slabs of honey (probably unsealed) approximately an inch thick, which slabs would divide the cluster up into so many vertical separate and distinct clusters of bees—a condition that is not in accordance with nature.

In his comment on this, the editor of the Canadian Bee Journal considers this rather a new doctrine, differing much from the opinion he had hitherto held. Then he adds, "Does Mr. Root know that this is a matter of fact, or is it only theory?" For our brother editor's benefit we may state that our conclusion was arrived at through a series of observations covering some twenty-five years. We have repeatedly opened up the brood-nests of our outdoor wintered colonies during different months of the year, more especially during the last days of feeding, and at the approach of cold weather. We have observed time and again, when bees are fed *early enough*, say the last of September, they will form a winter nest of empty cells, said nest surrounded by sealed stores. If this nest be opened during mid-winter, individual bees will be found crowded down into the bottoms of the cells, the evident purpose of which is to make the cluster of bees one homogeneous mass, separated only by paper-like midribs of the combs and the cell walls. Place a thin division-board between two clusters of bees, and almost invariably you will find a hemisphere of

bees on each side, showing how the two lots of bees seek to get the advantage of mutual heat.

If, on the other hand, bees are fed late, the cluster will be formed, but it will be divided up by a series of vertical slabs of stores, approximately one inch thick. As the winter progresses, the stores will be eaten out and the winter nest will be formed.

No one would deny that bees can winter when placed upon combs filled with solid with honey or sugar syrup. We have wintered them that way hundreds of times; but that does not argue that such a condition is ideal. Experience in our case shows that such late-fed bees are handicapped during the fore part of the winter, or until they can form that nest. This consists of a circle of empty cells in each comb, generally toward the front in a Langstroth hive. As the stores are consumed, the cluster works upward, and then gradually backward, always keeping as close as possible to the stores. During the fore part of the winter we shall find this winter nest toward the front of the hive, directly over the entrance. Why this is so, we do not know. During the later part of the winter we find it towards the back.

Of course, there are many exceptions to all these cases. We are only stating what we have observed here at Medina and at other yards where we have had the privilege of making an examination during mid-winter.

We join with Editor Hurley in the statement that "a frank discussion of the matter can do no harm." And then he generously adds, "If Mr. Root is right we shall be glad to find that we are in error." In the same way, if discussion shows that we are wrong, we shall be equally frank to admit it to Mr. Hurley. The matter is of some importance; because if bees do not form this winter nest, or do not need it, rather, then we can feed as late as we like.

On the side of theory it would seem clear that a cluster that is practically a homogeneous mass will winter better than one that is divided up by vertical divisions an inch apart. Besides, honey is a conductor of heat and cold. If the division is made up of sealed honey or sealed syrup these divided clusters necessarily have to keep the honey practically at a temperature of their own bodies. This would necessarily mean a large consumption of stores in order to keep up body heat. Overfeeding in winter is apt to in-

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