

hasten materially the destruction of the spores. I was able to demonstrate the presence of living spores in wax, containing one per cent. Beta Naphthol, and heated for two hours to 194° F.

From these facts, and taking into consideration also the physical fact of the settling of the bacilli to the bottom, I should think that, with reasonable care in the preparation of comb foundation, the dangers of infection from this source would be slight. But that the spores may germinate after being mixed with the wax, I think I have shown.

Why the spores of the bacillus alvei are killed so quickly in the melted wax, I am not able to explain; but it may be due to the fact that the wax itself, when heated to such a temperature, has antiseptic value. That the spores resist other antiseptics as strongly as do the spores of anthrax, I have proved by testing.

Cheshire and others recommend a solution of two per cent. carbolic acid for disinfecting the hive after removing infected comb, but on actual experiment with the infected silk threads, I found that two per cent. carbolic acid did not kill the spores in six days. These results are similar to those obtained by Koch for the spores of anthrax, and show that two per cent. carbolic acid cannot be relied on to destroy the spores. However, the question of the value of antiseptics I will take up more in detail later on in this paper.

I would like to say a word or two now on the methods of treating the disease. There are practically two methods; first, the starvation method, and second, the method by medicated syrup. Mr. McEvoy's method of treatment seems to me, practically a modification of the starvation method. The first method is widely used both here and in the United States, whilst in England and in Europe generally the second method is adhered to.

Considering the vitality of the spores of foul brood, it would seem at first sight useless to try any process which did not recognize as its foundation the destruction of the germ. I find, however, that many prominent beekeepers who have had

practical experience with the method of starvation, or Mr. McEvoy's method, accept it as successful. I have not had an opportunity to examine colonies which have been cured in this manner, and so cannot say that the bacilli have disappeared; I hope next summer to test this question more fully. We may, however, examine into the rationale of the method. In conversation with Mr. Corneil of Lindsay, he made a suggestion which may be quite familiar to you all, but which seems to me the only explanation. That suggestion was that either starvation or comb building carried the infected nurses past the period at which they act as nurses, and give them a chance to rid their intestines of the germ. If this is combined with a removal to absolutely clean hives with new foundation it may succeed; but I must say that absolute cleanliness in this respect must be insisted upon.

As I said above, I have not had an opportunity of investigating the results of these methods practically, and so cannot speak with certainty.

The fact of the presence of the bacilli in the workers and in the queen bears to a certain extent upon this question. Cheshire and others make the statement that the bacilli are found in the intestine of the workers and in the ovary of the queens. My own experience confirms this, I have found them repeatedly in the workers, and in five queens from infected hives I succeeded in obtaining the bacillus from the ovaries of three. That they are not always present in the ovaries of the queens from diseased colonies is certain; their presence there is apparently accidental. For instance: in the case of one of last year's queen; in a hive rather badly diseased, I was unable to find the bacillus, whilst in a six weeks queen from a hive in which there were only a few diseased cells I succeeded in finding it. Cheshire's statement that he found a bacillus in an egg of an infected queen seems to me to require confirmation. I have not been able to find the eggs infected myself, but it is a question which would require very long and careful investigation before