

skin. If examined when the disease is just developing, the affected larvae are usually found to have changed their position: They are no longer curled up, but lie extended in the cell, or move about unnaturally. The bees themselves may at this time or subsequently show symptoms of the disease by a kind of inertness or inactivity which seizes them. As the disease progresses, the young larvae lose their plump appearance, become flabby and die. Then a process of decomposition begins, which is shown by their yellowish appearance. This yellow color turns brown, and if touched with a pin or needle at this time or later, a portion of the putrid mass may be pulled out in a long, ropy, tenacious string, due "to the chitinous aerating sacs and tracheae which do not undergo decomposition at all; and these remaining cause the peculiarity referred to" (26). This ropy mass gradually dries down to the bottom of the cell, leaving nothing but a brown scale which adheres to the wax.

As a rule, the bees do not remove larvae dead from this disease. Instead they become quite inactive, lose their desire to fly, are often seen fanning at the entrance of the hive, which in many cases emits a bad smell. A phase of the disease, which some authors have described as being a different form, is that in which the larvae die after the cells have been capped over. These cappings become darker in colour than those of the healthy brood; then become indented or sunken, and lastly become perforated with irregular holes. By putting a needle into any of these cells the same ropy mass, before described, may be drawn out. If an examination is made from the juice of the larvae at different stages of the disease, the bacillus may be detected; but spores do not form till after death has occurred. The ropy mass contains large numbers of spores, as does also the dry scale.

According to Cheshire (26), the bees themselves become diseased. In a number of cases he obtained the bacillus from the blood of bees from infected hives. Hilbert's examination in 1875 led him to declare that the mature bees in infected hives were liable to be affected. Some writers contradict the statement that the bees themselves are affected by the disease; but they lose sight of the fact that the bees do not die in the hive, but leave it sometime before death occurs.

The queen may become infected. Cheshire (26) demonstrated the presence of bacilli in the ovary of a queen; but he did not make cultures therefrom. W. G. Smith (27) reported that a queen sent to Cheshire and examined by him contained *B. alvei* in both of her ovaries. McKenzie (28) examined five queens from infected hives and succeeded in obtaining bacilli from the ovaries of three. He thinks that their presence there is accidental, as in the case of a queen from a badly diseased hive he was unable to find the bacillus, whilst in a six weeks old queen from a hive in which there were only a few diseased cells, he succeeded in finding it. A queen sent by T. A. Govan (29) to Cowan, the editor of the British Bee Journal, was examined, and *B. alvei* was found in the ovaries. F. F. Ward (30) removed a queen from a diseased hive and placed her in a strong, healthy stock, "which speedily became a mass of corruption." This operation was subsequently repeated with a like result.

I have also myself examined seven queens from diseased hives, and in three cases have had no difficulty in finding the bacillus, and have obtained typical cultures therefrom. The method of examination employed has been the same as that used by McKenzie. The upper surface of the bee is sterilized and cut longitudinally, and all the internal organs except the ovaries are removed. The surface of the ovaries is then sterilized and a hot needle plunged into the centre and allowed to stay there until it is cold, when