

BEE DISEASES IN MASSACHUSETTS

(By Burton N. Gates,
Expert in Apiculture.)

The Two Known Bee Diseases

Two contagious diseases of bees are now known. These attack the developing brood and so reduce it that the colony soon dwindles from lack of young bees to replace the old. They are known, respectively, as American foul brood and European foul brood.

AMERICAN FOUL BROOD

The cause of this disease is definitely known to be an organism, *Bacillus larvæ* White. It is what has been heretofore frequently designated simply as "foul brood." The nature of the disease is described by Dr. E. F. Phillips, in charge of apicultural investigations in this Bureau, as follows:

When the larvæ are first affected they turn to a light chocolate color, and in the advanced stages of decay become darker resembling roasted coffee in color. Usually the larvæ are attacked at about the time of capping, and most of the cells containing infected larvæ are capped. As decay proceeds these cappings become sunken and perforated, and, as the healthy brood emerges, the comb shows the scattered cells containing larvæ which have died of disease, still capped. The most noticeable characteristic of this infection is the fact that when a small stick is inserted in a larva which has died of the disease, and slowly removed, the broken-down tissues adhere to it and will often stretch out for several inches before breaking. When the larva dries it forms a tightly adhering scale [of characteristic and diagnostic shape and] of very dark brown color, which can best be observed when the comb is held so that a bright light strikes the lower side wall of the cell]. Decaying larvæ which have died of this disease have a very characteristic odor, which resembles a poor quality of glue. This disease seldom attacks drone or queen larvæ.

EUROPEAN FOUL BROOD

This is the disease which appears to be most prevalent in Massachusetts, prob-

ably having swept in from New York State, where it was formerly known as "black brood." Its presence is less easily diagnosed by superficial examination than is American foul brood. It is described by Dr. Phillips as follows:

This disease attacks larvæ earlier than does American foul brood, and a comparatively small percentage of the diseased brood is ever capped. The diseased larvæ which are capped over have sunken and perforated cappings. The larvæ when first attacked show a small yellow spot on the body near the head and move uneasily in the cell. When death occurs they turn yellow, then brown, and finally almost black. Decaying larvæ which have died of this disease do not usually stretch out in a long thread when a small stick is inserted and slowly removed. Occasionally there is a very slight "ropiness," but this is never very marked. The thoroughly dried larvæ form irregular scales, which are not strongly adherent to the lower side wall of the cell. There is very little odor from decaying larvæ which have died from this disease, and when an odor is noticeable it is not the "glue-pot" odor of the American foul brood, but more nearly resembles that of soured dead brood. This disease attacks drone and queen larvæ very soon after the colony is infected. It is as a rule much more infectious than American foul brood and spreads more rapidly. On the other hand, it sometimes happens that the disease will disappear of its own accord, a thing which the author never knew to occur in a genuine case of American foul brood. European foul brood is most destructive during the spring and early summer, often almost disappearing in late summer and autumn.

Damage From Bee Diseases

The damage from an epidemic of bee disease is as difficult to estimate as is the damage from an epidemic of smallpox, of typhoid fever, or of malaria in a human community. The loss of colonies is but one small item; there is the resulting loss of crop, the resulting lack of increase in the number of colonies of bees, and that demoralizing effect on the industry which tends to cause bee-keepers to go out of business. Besides this there

Nfld.	Total
27	311,095
.....	18,761
.....	26,276
125	21,103
60	22,671
10	41,776
529	20,560
730	42,960
230	3,849
50	5,109
3	\$31,567
.....	1,109
.....	2,749
13	2,104
9	2,034
2	3,997
66	1,999
99	3,802
28	411
11	750

er lb, or about
kilogs, or about
er 100 kilogs, or