

process of making, is subjected to a temperature sufficiently high to kill any spores that may be present.

I may add that I found spores of *B. alvei* in two samples of wax sent me by R. F. Holtermann of the *Canadian Bee Journal*, but both samples were from hives which were very badly infected with the disease.

In 1897, about ten pounds of wax was infected with large numbers of spores grown upon agar. The wax was cut up into small pieces, and heated at a low temperature, only just sufficient to melt it; and as McKenzie (28) had shown that the spores settled to the bottom, the wax was vigorously stirred from the time the spores were added until it had set again. The wax, thus infected, was sent to Holtermann for foundation-making. He manufactured it by the usual process of melting and gave the foundation made from it to bees, and no foul brood developed in the colony supplied with it during the years 1897 and 1898. The probability is that the spores are fixed in the wax, and are thus unable to infect the bees.

Healthy bees may pick up spores of *B. alvei* from flowers previously visited by diseased bees; wasps, which are noted robbers, may also carry the disease, and thus infect a locality.

The very large traffic in bees and bee-keeping supplies where agriculture is carried on, probably favors the spread of the disease. In fact, many instances are cited in bee journals of infection carried from one locality to another by the importation of bees and bee supplies.

Persons manipulating diseased hives and then examining healthy ones may be the means of spreading the disease. The practice of using a knife for cutting out diseased comb and then using the same knife for work amongst healthy comb (which I have seen done) is by no means wise, as the spores may thus be transferred from diseased to healthy hives. Cowan (4) observes that beekeepers who have not succeeded with their bees in consequence of foul brood have been known to sell by auction hives in which the bees have died. In such cases the purchasers are usually beginners who have no idea of the danger they are incurring.

Conditions favoring the spread of the Disease. Besides the weak or badly nourished condition in which bees may be, and lack of other hygienic conditions which favour the spread of this disease, great humidity in winter is said to be favourable and probably great heat is also conducive. (45.)

Predisposition of Varieties. No definite statements can be made as to the predisposition of various races to this disease. Quinby (49) says that black bees are more subject to foul brood than Italians. Aspinall (51) also affirms that common bees are more liable to the disease than Italians, but de Layens (47) states that Italians are more easily infected than black bees. (See also page 17.)

REMEDIES.

Three remedies have been tried:

1. Stamping out.
2. Starvation.
3. Treatment by chemicals: (a) by feeding chemicals in food; (b) by putting certain chemical substances into the hive and allowing them to evaporate at the temperature of the hive. This latter method may be regarded as rather preventive than curative.

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