

it is withdrawn and used to inoculate agar cultures. According to Cheshire (26) the bacilli are found in the eggs. In one examination he says he counted nine bacilli from a half-developed egg taken from the ovary of a queen. McKenzie (28) thinks that this statement requires confirmation, as he was not able to find any infected eggs.

I have myself examined a very large number of eggs at various times. In these examinations three different methods were employed: 1.—The eggs were taken from the cells in which they were laid with sterilized forceps and washed in corrosive sublimate, 1 : 500 crushed and placed on agar plates. In many cases typical growths of *B. alvei* developed from eggs thus treated; but as it might be maintained that the eggs were laid in cells previously infected with *B. alvei*, and that the momentary immersion in corrosive sublimate failed to kill all the spores that were upon the exterior, the next lot of eggs 2.—Were crushed between cover-glasses, a small portion transferred into agar, and the remainder on the cover-glass stained by Gram's method. In several instances the bacillus was found in the crushed egg, and in every case the cultural test confirmed the microscopical examination. Again, as this method also might be criticized for the reasons above stated—(3) eggs were imbedded in paraffin and serial sections made and stained by Gram's method. No cultural tests were made; but in a few eggs of several hundreds sectioned a bacillus corresponding in its morphological characteristics to *B. alvei* was found. All the eggs examined were taken from hives more or less affected with the disease.

In view of these facts, I am of the opinion that the eggs of bees from diseased hives may in some instances be infected.

CHILLED BROOD.

Chilled brood is sometimes mistaken for foul brood; but the appearance of the former is very different from that of the latter. In the case of chilled brood the larvae turn grey; afterwards the colour darkens, and in the final stages of decomposition it becomes black. No ropiness develops.

A number of writers in various bee periodicals have mistaken chilled brood for foul brood, or they have stated that chilled brood turns to foul brood; but Schirach, as long ago as 1769, clearly distinguished between the two, and McKenzie (28) also performed several experiments in refutation of the statement that if chilled brood is allowed to putrify foul brood may arise *de novo*. He endeavoured to isolate *B. alvei* from chilled brood, but without success. Again, he killed perfectly healthy brood by chilling, and infected some of the cells from a pure culture of *B. alvei*. The chilled brood were allowed to putrify in a moist chamber for several months and examined with the same results, viz: that in the cells in which *B. alvei* was placed it was to be found, but not in any others. I have also performed similar experiments and they fully confirm McKenzie's contention. So far *B. alvei* has not been isolated from chilled brood in any stage of decomposition. Canestrini (31) described a case which was in all probability chilled brood and not an infectious malady; but his inoculation experiments failed to establish the pathogenicity of the bacillus, which morphologically resembled *B. megatherium*.

GEOGRAPHICAL DISTRIBUTION.

It has been thought that the disease varies in different countries, that foul brood as it occurs in England is different from foul brood in America; but as no bacteriological evidence has been produced in support of the con-

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