

the sunken cap. With a microscope magnifying 600 diameters, he found small dust like bodies with a diameter of $\frac{1}{100}$ m. m. belonging to the genus *Cryptococcus* (Kutzig) and called the specific form *alvearis*, likened it to the fermentation fungus (*Cryptococcus fermentum*) and thought that the last germ gained access to the young bee and changed to *Cryptococcus alvearis*. He notices that many experts lay the cause of the disease to fermenting food but the larvae are easily contaminated by the fermentation fungus which is always present in the air. He also mentions the enormous rapidity with which the fungus multiplies and gives an elaborate calculation of the number that might be found in a cell containing a deceased larva.

As might have been expected, Preuss's statement aroused considerable discussion at the meeting of German bee-keepers, a short while after the publication of his paper.

Vogel (17) expressed doubt as to whether *C. alvearis* was the real cause of foul brood or only a consequence of the disease, but on the whole agreed with Preuss.

Wiegand (17) agreed with Preuss's theory, and in giving his experience said that the disease was introduced into his apiary through honey brought from a distance.

Pollman (17) believed that the disease was introduced by feeding honey from Havanna, where, when extracting the honey, both brood and honeycomb were mashed up and the honey pressed out.

Dr. Lenckhart (17) agreed with those who thought the disease due to a fungus, but discredited the supposition that it was the same as the fermentation fungus mentioned by Preuss, and rather thought it was related to the silk worm fungus and that most of the brood diseases ending in death were called "foul brood" while they were really something else. He believed that the fungus was present in the eggs of the queen when laid.

Gellen (17) believed that the disease came from the putrefying remains of animal bodies, upon which the bees alighted.

Mühlfeld (18) again in 1869, presented his former views, and also those of Preuss's and gave directions for maintaining the health of bees. He recommended the boiling of the honey, and a use of carbolic acid in the strength of 1:100 or permanganate of potash 1:300 as disinfectants.

Lambrecht (19) thought that foul brood was caused by the fermentation of the bee bread.

Hallier (19) considered it no specific disease, but thought it was probably produced by different fungi.

Cornallia (20) proved contrary to the above and found a fungus, which he thought developed foul brood. He called it *Cryptococcus alvearis* and used carbolic acid, potassium permag, and lime water as disinfectants.

Fisher (21) advanced a new foul brood theory in 1871, which somewhat follows the view of Liebeg regarding the silk worm disease and plant diseases. According to this theory, the predisposing cause was insufficient nourishment, especially short stores for winter and spring. Shortage of pollen supply was the next cause. Fisher tried to prove his views by the practical experience of bee keepers and explained that the first result of repeated and continued feeding was an increase in the production of bees; and a consequent disproportion between brood and brood feeders arose, which should be looked upon as another cause of foul brood. The disease, he said, might be lessened or exterminated by applying means to reduce the production of brood, as the removing of the queen and the area which the brood occupied. Foul brood is probably the cause of a quantitative dearth of nourishment and a consequent degenera-