

and everywhere where they can get nectar : and the red clover heads being smaller than usual and stunted their nectar is thus rendered accessible to the bees.

ALLEN PRINGLE.

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TREMBLING BEES--FOUL BROOD.

N. W. M'LAIN.

THE "QUAKING DISEASE."

WHEN bees are unable to obtain from ordinary sources a supply of saline alkaline aliment, indispensable to their health and vigor and to the normal performance of their functions, they seek a supply from any available source. At such times they throng upon the milk-weed and mullein which exude a salty sap. At such times large numbers of dead bees may be found at the foot of the mullein stalks, and thousands perish in the fields, and thousands more which reach their hives, being low in vitality, and unable to free themselves from the meshes of the silken fiber, in which legs and wings are bound, die in the hive or crawl forth to perish. The action of these starved and weakened bees when attempting to rise and fly or to rid themselves from the mesh of silky web, causes a peculiar nervous motion, and this is one manifestation of that which is called the "quaking disease," or the "nameless disease." If examined with a microscope, many are found entangled with the filaments from the plants, and their stomachs are entirely empty.

The honey from hives containing colonies so affected has a peculiar and very disagreeable taste and odor, somewhat like that of fermented honey indicating that some constituent essential in conserving it was lacking, and the cell-caps are dark, smooth and greasy in appearance, and an offensive odor is emitted from the hive. An analysis of honey taken from such colonies, made by the chemist of the Department, fails to reveal what element is lacking.

I have treated a number of apiaries so affected, using an application of strong brine, to which was added soda sufficient to make the alkaline taste faintly discernible. The hive should be opened, and each frame should be thoroughly dampened with spray from an atomizer, or the warm brine may be applied by using a sprinkler with very small holes in the rose, care being taken to use only enough to thoroughly dampen the bees and combs. The alighting-boards also should be thoroughly wet. The treatment should be applied morning and evening until the

disorder disappears, which is usually in three or four days ; a decided improvement being usually noticeable in twenty-four hours. The honey should be extracted and diluted by adding the brine, and, after being nearly heated to the boiling-point for ten minutes, may be safely fed to bees. The apiaries were last winter supplied with this food alone. Both wintered well. Vessels containing brine should always be kept in or near the apiary. Pieces of burnt bone or rotten wood should be kept in the vessels of brine, and these vessels should be protected from the rain.

Another form of the so-called "quaking disease" appears to result from hereditary causes; for, if the queen be removed from the colony in which the disorder prevails, and a young, vigorous queen be substituted, in due time the disorder disappears. In very rare instances bees also gather poisonous nectar from plants, such as fox-glove or digitalis, the eating of which, it is reported, results in paralysis, another manifestation of the so-called "nameless disease."

THE FOUL BROOD DISEASE.

One of the most malignant diseases incident to bees is called the "foul brood" disease. What pleuro-pneumonia and hog-cholera are to the dairyman and swine-breeder, foul brood is to the apiarist. This disease is so stealthy and so virulent and so widely distributed, no locality in the United States being assured of immunity, that much apprehension is felt, and some of the States have enacted laws having for their object its control and extirpation. In many States the ravages of this scourge have resulted in ruinous losses to bee-keepers, and many on this account have been deterred from engaging in this profitable branch of husbandry.

During the past year I have given much attention to the study of this disease and the experiments for its prevention and cure. In making my investigations and experiments concerning the origin and nature of this disease and the means of its prevention and cure, I have collected a great amount of information from my own experience and from the experience of many others. Concerning the origin of the disease and its means of communication, the evidence obtained is somewhat conflicting.

That the disease is actually contagious appears certain. That it is always communicated through the commonly accredited agencies is uncertain. That the disease is persistent and usually reproduces itself whenever the germs find the proper conditions for development is verified by experience. That the germs of this disease may be carried on the clothing of the apiarist and in and upon the bodies of the bees