

from one apiary to another, and that they be borne by the wind from one hive to another in the same apiary, and that the disease-germs may be liberated from the decomposing bodies of other insects and scattered over other objects with which the bees come in contact, seem probable.

That the disease is destructive to bees as well as brood; that live pollen is the medium through which the contagion is most commonly and most rapidly spread; and that the disease yields readily to treatment which is simple, cheap, and easily applied, appear to be true, in support of which I submit the following detailed account of my experiments and observations:

On June 1, an apiarist having over 200 colonies in his apiary reported to me that he had discovered two cases of malignant foul-brood, and that unmistakable evidences of its presence were apparent in 25 other colonies. As I knew this man was without experience with this disease, I could not hope that he was mistaken. I knew that he had had unenviable opportunities, having been a bee-keeper for many years where this disease had been prevalent, and two years ago he himself had consigned 148 colonies to the flames as incurable. I at once gave him the following formula for a remedy:

To 3 pints of soft water add 1 pint of dairy salt. Use an earthen vessel. Raise the temperature to 90° F. Stir till the salt is thoroughly dissolved. Add 1 pint of soft water boiling hot, in which has been dissolved 4 table-spoonfuls of bicarbonate of soda. Stir thoroughly while adding to the mixture sufficient honey or syrup to make it quite sweet, but not enough to perceptibly thicken. To $\frac{1}{4}$ of an ounce of pure salicylic acid (the crystal) add alcohol sufficient to thoroughly cut it (about 1 ounce), and add this to the mixture while still warm, and when thoroughly stirred leave standing for two or three hours, when it becomes settled and clear.

Treatment.—Shake the bees from the combs and extract the honey as clearly as possible. Then thoroughly atomize the combs, blowing a spray of the mixture over and into the cells, using a large atomizer throwing a copious spray; then return the combs to the bees. Combs having considerable quantities of pollen should be melted into wax and the refuse burned. If there is no honey to be obtained in the fields, feed syrup or the honey which has just been extracted. If syrup is used, add 1 ounce of the remedy to each quart of the syrup fed. If the honey is used, add 2½ ounces of the remedy to each quart of honey fed. The honey and syrup should be fed warm and the remedy thoroughly

stirred in, and no more should be furnished than is consumed.

Give all the colonies in the apiary one copious application of the remedy, simply setting the frames apart so that they may be freely exposed to the spray. This treatment frequently reveals the presence of disease where it was not before possible to detect it. The quantity prescribed, applied by means of a large atomizer, is sufficient to treat 150 colonies. Continue the treatment by thoroughly and copiously spraying the diseased colonies at intervals of three days, simply setting the frames apart so as to direct the spray entirely over the combs and bees. In order to keep the bees from bringing in fresh pollen, burn old dry bones to an ash and pulverize in a mortar and sift through a fine wire-cloth sieve, and make a mixture of rye-flour and bone-flour, using three parts of rye-flour and one of bone-flour, adding enough of the syrup or medicated honey to make a thick paste. Spread this paste over part of one side of a disinfected comb, pressing it into the cells with a stiff brush or a thin honey-knife, and hang this in the hive next to the brood. Continue this treatment until a cure is effected. Keep sweetened brine at all times accessible to the bees, and continue the use of the rye and bone flour paste while the colonies are recuperating.

As a preventive apply the remedy in the form of a spray over the tops of the frames once every week until the disease has disappeared from the apiary.

On June 20, the apiarist above referred to, reported as follows:

"Number of colonies in the apiary on June 1, 210. Number of colonies apparently diseased, 25. Treatment applied as directed to the whole apiary. Number of colonies actually diseased, 64. The disease present in all stages of progress; in some cases just appearing, in some well developed; in others the contents of the hives were a black mass, the brood-combs nearly rotten, not an egg to be seen, and every cell of brood dead, and the stench from the hives nauseating. Have given the diseased colonies three applications, the first time extracting the honey. Effect of treatment instantaneous even upon apparently hopeless cases. Every colony save five is entirely free from any trace of disease, and these five are responding to treatment rapidly. I examined a colony to-day which two weeks ago had combs of brood almost rotten. No trace of the disease remains. I had 4,000 frames of extra comb. After hiving a few swarms, on some of them I found the disease present in every case. I then melted everyone of these extra combs into wax, cleared and scalded and disinfected every