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FOUL BROOD

SUPPLEMENT TO SPECIAL BULLETIN 58

F. E. MILLEN

EAST LANSING, MICHIGAN
1914

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SUPPLEMENT TO SPECIAL NO. 58.

BY F. E. MILLEN, STATE INSPECTOR APIARIES.

INTRODUCTION.

Since Special Bulletin No. 58 was published, additional knowledge, concerning European foul-brood, has been gained. A third brood-disease, Sacbrood, has also been identified and is dealt with in the following pages. Also the new law dealing with Inspection of Apiaries, passed during the Legislative Assembly of 1913, is incorporated in this supplement.

SACBROOD.

Besides the two foul-brood diseases,—American foul-brood and European foul-brood, there is a third brood disease known as Sacbrood believed to be caused by a filterable virus.*

Older beekeepers will recognize this disease as pickled or sour-brood, since it now seems likely that most or all cases of pickle brood are really Sacbrood.

While this disease is infectious, usually it is not severe enough to require treatment in the general run of apiaries producing honey alone.

Any bee-keeper in Michigan who suspects the presence of foul-brood in his or in his neighbor's apiary should notify the State Inspector of Apiaries, Department of Entomology, Michigan Agricultural College, East Lansing, Mich.

LOSSES CAUSED BY BROOD DISEASES.

The name, "brood disease," at once conveys the information that it is the brood which suffers.

We know that the life of a worker honey-bee is short, and that during a heavy honey-flow the active part of its life is shortened to a few weeks, so that there must be a very heavy daily mortality through the summer season. The cleanly habits of the bees prevent the bee-keeper from noticing this loss, because the workers carry nearly all the dead bees away from the entrances, and then too, a very large number die in the field. In a normal, healthy colony with a vigorous queen this heavy loss passes unobserved, since the queen, capable of laying two-thousand or more eggs daily, easily keeps up the population of the hive. Directly foul-brood enters a colony the young larvae (worms) or (grubs) are attacked, and if the disease becomes serious, there may be as high as 90% of the larvae killed; thus in the place of the bees hatching daily by the thousand there may be only a few dozen. At

* Circular 169, Bureau of Ent., U. S. Dept. of Agr., Dr. G. F. White.

the same time, the adult bees are dying off naturally and in a few weeks we find a very poor colony where there was formerly a strong one.

The damage done by foul-brood then is serious because it means not only a loss of the honey crop together with the increase in colonies, but if neglected a total loss of the apiary.

TREATMENT FOR EUROPEAN FOUL-BROOD.

On page eight of Bulletin 58 is the heading "Treatment for both infectious diseases." This should be read "Treatment for American foul-brood." The treatment for European foul-brood is similar, but does not end with the shaking treatment alone. The following treatment is recommended for European foul-brood.

Owing to the comparatively recent advent of European foul-brood, as well as to its more scattered occurrence, our knowledge of its nature and treatment is less accurate and we have to do our work with less of confidence and certainty than in the case of the more familiar American foul-brood.

The most satisfactory results of all, in our experience, have resulted from following the plan, herein set down.

The first part of the treatment for this disease is the same as that outlined for American foul-brood, but it does not end there. To make the treatment effective, the shaking must be followed by requeening the entire apiary with pure queens of some race not black. The general experience of bee-keepers thus far has been more or less confined to the Italian race, and for this reason we recommend Italians, although other races may prove their value for this purpose on trial. Even when one has gone this far he is not safe from the ravages of European foul-brood, unless he is constantly requeening all colonies that show impurely mated queens or queens of poor constitution. The secret of successfully fighting this disease seems to be largely in the improvement of the virility of the bees, thus eliminating all but strong colonies. Feeding up heavily in the Fall with sugar syrup, and stimulating feeding in the Spring, between flows, also helps in keeping down the virulence of the disease.

SACBROOD.

This disease shows some symptoms that resemble both those of the American and of the European foul-brood,—the sunken, discolored and perforated cappings resemble those found in American foul-brood, while some larvae are extended and flattened like those dead from European foul-brood.

Sacbrood differs from American foul-brood in that ropiness and the gluey smell are lacking, and the dead larvae usually can be taken from the cells without breaking their skins. It differs from European foul-brood in the lack of odor, and it never has that greasy melted appearance so typical of certain stages in European foul-brood.

The symptoms vary in the same hive, some of the dead larvae are extended and flattened in the cell, with black spots on the head. These usually lose their segmented appearance to a large extent. Again other

larvae, while extended, have a more or less rounded shape, with the segmentation of the body well marked.

* "The brood dies after the time of capping. The dead larvae are therefore almost always found extended lengthwise in the cells and lying with the dorsal side against the lower wall. It is not unusual to find many larvae dead of this disease in uncapped cells."

"Such brood, however, had been uncapped by the bees after it died. In this disease the cappings are frequently punctured by the bees. Occasionally a capping has a hole through it, indicating that the capping itself had never been completed. A larva dead of this disease loses its normal color and assumes at first a slightly yellowish tint. "Brown" is the most characteristic appearance assumed by the larva during its decay."

TREATMENT.

It is not usually necessary to treat a colony for Sacbrood, if however the disease is serious enough to weaken the colony then it should be treated at once, using the same treatment as that used for American foul-brood.

Sacbrood seldom becomes epidemic but it will spread through the apiary if the bee-keeper should change frames of brood and honey from an infected colony to a healthy one. Bee-keepers should never interchange frames from one colony to another unless certain that no disease exists.

ADDENDA.

1. Weak colonies and failure to swarm during the swarming season, should be regarded with suspicion. Look for the cause.

2. The presence of wax-moth (millers) should always be looked upon with suspicion, they cannot cause disease, but if they are at all numerous there is something wrong that should be investigated.

3. Render the old combs from treated colonies at once, wax-moth will soon destroy them if not cared for. The average hive contains two pounds of wax.

4. Always examine the brood-chamber of every colony, thoroughly, at least twice a year. It will be a good investment.

5. If you have only one or two diseased colonies in a large apiary, it may pay you to destroy them entirely and save further loss.

6. Never feed honey back to bees unless certain that no disease exists in your apiary or near you.

7. Don't be afraid to make use of your Inspector of Apiaries, he is here to help you.

* Circular 169 U. S. Dept. of Agr. Bureau of Ent. by Dr. G. F. White.

LAW RELATIVE TO BEE INSPECTION.

House Enrolled Act No. 144.

An act for the suppression of contagious diseases among bees in the State of Michigan, by creating the office of inspector of apiaries, to define the duties thereof, and to appropriate money therefor, and to repeal act number sixty-six of the Public Acts of nineteen hundred one, and all other acts and parts of acts inconsistent herewith.

The People of the State of Michigan enact:

Section 1. The State board of agriculture is hereby authorized to establish apiary inspection, and to appoint a competent person as chief inspector, who shall under the direction of said board, have charge of the inspection of apiaries as hereinafter provided. Said inspector shall investigate or cause to be investigated outbreaks of bee diseases, and cause suitable measures to be taken for their eradication or control.

Section 2. The inspector shall, when notified in writing by the owner of an apiary, or by any three disinterested taxpayers, examine all reported apiaries and others in the same locality not reported, and ascertain whether or not the diseases known as American foul-brood or European foul-brood or any other disease which is infectious or contagious in its nature, and injurious to honey bees in their egg, larval, pupal or adult stages, exists in such apiaries, and if satisfied of the existence of any such disease, shall give to the owners or care takers of the diseased apiaries, full instruction as to how to treat such cases: Provided, That if the colonies in question seem to be in such bad condition that treatment is not likely to be successful, or if it seems to the inspector that the chances of obtaining a cure are remote, and of this the inspector shall be the sole judge, it shall be the duty of the inspector to destroy said colonies by fire or burying or by both, without recompense to the owner, lessee or care taker of said bees. He may also inspect apiaries in localities not reported, in endeavoring to locate new areas of infection.

Section 3. The inspector shall, if possible, visit all diseased apiaries a second time after ten days from the time of the first visit, unless he has reasonable assurance that his directions have been carried out, and if need be, without recompense to the owner, lessee, or agent thereof, he may destroy, in such manner as to avoid as far as possible, spreading the disease all colonies of bees that he may find still diseased, together with the hives and all honey and appliances which may spread disease: Provided, That when the finding of the disease occurs in its incipient stages very late in the season after the honey flow has ceased, and after it is too late to successfully treat and feed, the treatment may be deferred until the following spring, if such delay is necessary in the judgment of the inspector.

Section 4. If the owner, possessor, agent or lessee of an apiary, honey or appliances, wherein disease is known to the owner, possessor,

agent or lessee to exist, shall sell, barter or give away or remove from the premises, without the consent of the inspector, any bees from diseased colonies, be they queens, drones, or workers, honey or appliances, or expose other bees to the danger of such disease, said owner shall, on conviction thereof be punished by a fine of not less than ten dollars nor more than fifty dollars and costs of prosecution: Provided, That bees may be shipped without honey or feed containing honey, also provided that honey may be sold in tight containers for commercial purposes, other than with bees or as food for bees.

Section 5. For the enforcement of the provisions of this act, the State inspector of apiaries shall have access, ingress and egress to and from all apiaries or places where bees, combs, or apiary appliances are kept; and any person or persons who shall resist, impede or hinder in any way, the inspector of apiaries in the discharge of his duties under the provisions of this act, shall on conviction thereof be punished by a fine not less than ten dollars nor more than fifty dollars and costs of prosecution, or be imprisoned in the county jail not less than ten days nor more than thirty days, or both at the discretion of the judge.

Section 6. After inspecting infected bees or fixtures, or handling diseased bees, the inspector shall, before leaving the premises, or proceeding to any other apiary, take such measures as shall prevent the spread of the disease by infected material adhering to his person or clothing or to any tools or appliances used by him, which have come in contact with infected materials.

Section 7. It shall be the duty of any person in the State of Michigan, engaged in the rearing of queen bees for sale, to use honey in the making of candy for use in mailing-cages, which has been boiled for at least thirty minutes, unless candy which contains no honey at all is used. Any such person engaged in the rearing of queen bees shall have his or her queen rearing and queen mating apiary or apiaries inspected at least twice during each summer season by the inspector of apiaries, and on the discovery of the existence of any disease which is infectious or contagious in its nature and injurious to bees in their egg, larval, pupal, or adult stages, said person shall at once cease to ship queen bees from such diseased apiary until the inspector of apiaries shall declare the said apiary free from disease. On complaint of the inspector of apiaries or of any five bee-keepers in the State, that said bee-keeper, engaged in the rearing of queens, is violating the provisions of this section, he shall upon conviction, be punished by a fine of not less than twenty dollars nor more than fifty dollars.

Section 8. It shall be the duty of any person in the State of Michigan engaged in bee-keeping to securely and tightly close the entrance of any hive or hives in apiaries not free from disease in which the bees shall have died either during the winter or at any other time, and to make the hive or hives tight in such manner that robber bees shall not find it possible to gain ingress or egress to and from such hives or to obtain honey from such hives. The sealing of the hives must be maintained so long as the hives remain in the yard or in any place where honey bees can gain access to them, and failure to comply with this provision shall constitute a misdemeanor, and on conviction thereof, he or she shall be punished by a fine of not less than five dollars nor more than twenty-five dollars for each offense.

Section 9. It shall be the duty of any one keeping bees in the State of Michigan, to deeply bury combs and frames taken from diseased colonies, in places where they shall remain undisturbed, unless they be placed in tight receptacles so constructed that it shall be impossible for bees to gain access to combs, or for honey or any other liquid to leak out where bees can gain access to it. Anyone knowingly exposing comb, honey, frames, quilts, empty hives, covers or bottom-boards or tools or other appliances contaminated by infected material from the same, from diseased colonies, shall on conviction thereof, be punished by a fine of not less than twenty-five dollars nor more than fifty dollars: Provided, That the wax may be rendered in such place or at such time that no bees will be able to gain access to the comb before it is thoroughly heated, or at any time to the liquids expressed in the process of rendering.

Section 10. All colonies of bees and all nuclei which is brought into the State of Michigan from other states or from other countries, not accompanied by a certificate of health from the official inspector of the place from whence they came, shall be reported immediately to the State inspector of apiaries, and such colonies or nuclei shall be inspected by him at such time as is expedient. Failure to report such importation of bees shall, on conviction thereof, be punishable by a fine of not less than one dollar for each colony or nucleus.

Section 11. The State inspector of apiaries shall receive such compensation as the State board of agriculture shall determine, and said inspector shall render annual reports to the State board of agriculture giving the number of apiaries visited, the number of diseased apiaries found, the number of colonies treated, also the number of colonies destroyed, and the expense incurred in the performance of his duty. He shall also keep a careful record of the localities where the disease exists, but this record shall not be public, but may be consulted with the consent of the inspector of apiaries.

Section 12. For the purpose of carrying out the provisions of this act, there is hereby appropriated out of the moneys in the State treasury not otherwise appropriated, the sum of fifteen hundred dollars per annum, or so much thereof as may be necessary, and all moneys appropriated under this act, or so much thereof as may be necessary to carry out its provisions, shall be expended by the inspector of apiaries under the direction of the State board of agriculture, and the same shall be drawn from the treasury upon presentation of proper certificates of said board to the auditor general, and his warrant to the State treasurer.

Section 13. Act number sixty-six of the Public Acts of nineteen hundred one and all acts and parts of acts inconsistent herewith are hereby repealed.

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