

contained diseased larvæ are quickly and thoroughly prepared for the incoming nectar.

The actual operation is to put the queen in a hive with full sheets of foundation, over this an excluder and the diseased combs over all.

The activity of the bees in cleaning out European foulbrood during a nectar flow from buckwheat has often been remarked. This has been accounted for by the supposed presence of a large amount of acid in buckwheat nectar. Acting on this theory some have fed a mild acid to diseased bees and reported good results.

Latham¹ in 1915 did much to bring this into prominence although Cushman² suggested it in 1890. Latham's plan is to give the infected colony a daily dose of lemonade. This is made of 10 ounces of sugar, the juice of one lemon and one-half pint of water.

Since it is an established fact that a honey flow (natural or artificial), often causes European foulbrood to disappear, the effectiveness of the lemon juice has been questioned and it has been suggested that a daily feed of syrup would be equally effective.

To avoid the trouble of making the lemonade one beekeeper has used an ounce of citric acid to a gallon of syrup and claims good results. Further testing is needed to prove the value of the acid treatment.

Exception has been taken to recommending the Alexander plan to all persons having bees, it being considered practical for advanced beekeepers only. There is some ground for this objection, but it is believed that anyone with sufficient skill and knowledge of beekeeping to successfully treat a colony with European foulbrood by the shaking plan, will be equally successful with the dequeening method. Further, since less work is involved it is often easier to get the beekeeper to do the work.

On the other hand, it must be admitted that a host of bee-owners will fail with either treatment and the only remedy which is effective in their hands is the destruction of the colony.

PROBLEMS OF BEE INSPECTION

By FRANK C. PELLETT, *Atlantic, Iowa*

I must confess that I have modified my views concerning bee inspection each year of the five that I have served as state inspector of apiaries of Iowa. New difficulties have presented themselves each season, while some of the former ones have become simplified. I have at last concluded that we have been working along wrong lines and

¹ Latham, Allen, 1915, *Gleanings in Bee Culture*.

² Cushman, Samuel, 1890, *Bulletin No. 9*, Rhode Island Experiment Station.

that the plan now in operation in most states is not calculated to bring the best results with the small appropriations available.

In the beginning the appearance of bee diseases known as foulbrood was a matter of grave concern to the beekeeper. Little was known about either form, and methods of control were not certainly understood. Practical men had found that by removing the bees to a new and clean hive and destroying the old combs, including brood and honey, the infection was frequently eradicated.

The beekeepers were poorly organized and were slow in bringing their needs to public attention. As a result, both European and American foulbrood had spread into most of the northern states, before a serious attempt at control was undertaken. All the laws for the control of bee diseases with which I am familiar are similar in their general provisions. The sole idea seems to be to give a state officer authority to examine all the colonies in localities where disease is known to be present, and, by the use of a rigid quarantine, insist on the treatment or destruction of the diseased colonies. Had prompt and decisive action been taken when the trouble first appeared, it might have been stamped out as foot and mouth disease seems to have been.

The first and greatest difficulty which an inspector is called upon to meet, is to cover thousands of square miles of territory in which are located thousands of colonies of bees, with an appropriation not sufficient to cover 20 per cent of the territory efficiently.

Next to the lack of funds with which to follow the directions laid down in the law, the great problem is to get men who are sufficiently familiar with bee diseases and who have had sufficient experience in dealing with the public to enable them to do efficient work. In most states the work is paid for on a per diem basis. There is a rush of work for a few weeks during the honey producer's harvest and nothing to do the rest of the year. Since a man who is competent to do the work of an inspector can make several times as much for the same time spent, in an apiary of his own, it is necessary to be constantly educating young men who are willing to spend their vacations in this work for the experience gained. One who has not been responsible for such work under such conditions can hardly realize the amount of irritation that is constantly arising because of mistakes of one kind or another. As soon as a man becomes trained to do the work in an efficient and satisfactory manner, he is sure to find a more attractive opening elsewhere.

Much tact is required to deal with men who know little about bees and care less. In the average locality where inspection is new, the inspector will find men who don't believe that bees are subject to any

such disease as foulbrood; men who defy his authority and dare him to come on the premises; men who regard the inspector as a grafter and believe that the office was created by the politicians for the purpose of providing him with a job, and last, and often rather infrequently, men who want to learn something about the bees and who welcome the inspector with open arms. If all were like the last named, inspection would be a real joy, but to convince the others that it is to their interest to take advantage of the services of the inspector and that they will not suffer because of his presence requires much diplomacy. A man must never be in a hurry, must never be arbitrary, yet must be firm. I have become fully convinced that the police powers for the purpose of enforcing the provisions of the law should be in the hands of some other officer. The mere fact that the inspector is given so much power adds greatly to his difficulties. Knowing that if disease is found the inspector is given authority to demand the destruction of the diseased colonies makes the uninformed dread his coming and place every possible obstacle in the way of having the bees examined.

I might very easily extend this paper to great length by outlining in detail specific instances of such problems as above enumerated, but the facts will be too apparent to require extended discussion. The real problem after all is to find a remedy that will meet the trying conditions. There seems to be little of permanent value in the work of the inspectors aside from the education that comes to the individual beekeepers as a result of the personal contact. Even though sufficient appropriations of funds and trained men could be secured to stamp out foulbrood from any single state, the chances are that it would not remain free from the contagion for a single year. The fact that it is present in all the northern states and most of the southern ones as well, makes it improbable that the diseases can ever be permanently eradicated. It very frequently happens that an inspector will be congratulating himself upon the fact that by thorough work in a given locality he has cleaned up the disease, when lo! it suddenly appears again with a shipment of honey or bees from some outside location.

Since all are agreed that the problem is now one of education, why not make it an educational problem instead of a quarantine regulation? When an inspector goes into a locality and is required to examine all the bees there, entirely too much time and money is required, considering the limited resources available for the purpose. Apiary demonstrations such as are now held in Ontario under direction of Prof. Morley Pettit would seem to be much more efficient. If the beekeepers of the surrounding country are invited to spend a day in an apiary where disease is present, much more can be accomplished looking toward the control of foulbrood. All who take sufficient interest

to attend the demonstration can be shown disease in its various stages and also be shown how to treat each colony as its condition demands. Thus in one day ten to fifty persons can be given actual instruction in recognizing and treating disease, instead of spending the same amount of time in examining the colonies in one large apiary. Under present conditions the inspector does not have sufficient time to give each man visited sufficient instruction to enable him to care for the diseased colonies properly, and it often happens that the inefficient owner will not understand directions correctly and will succeed in spreading the disease instead of checking it.

In my annual report which has recently been filed with the governor, I have recommended that the present office of state inspector of bees, be abolished altogether. In its place I have suggested that a man be employed on full time in the extension department of the college of agriculture for the purpose of holding apiary demonstrations as above mentioned, during the summer months, and lecturing on marketing, production and other subjects of vital interest during the remainder of the year. I would not repeal the laws requiring proper attention to diseased colonies, and our proposed bill provides that the state apiarist can be called on petition of the beekeepers in any locality to examine bees which are supposed to be diseased. If he finds disease to be present, he is required to give the owner written instructions for the proper treatment or destruction, which instructions the owner is required to comply with within the time specified. However, the enforcement of this law is left in the hands of others, and he is not handicapped by being required to see that his own instructions are followed.

According to this plan it is hoped that by paying a salary for full time, a competent man can be secured for the work. By making his work purely educational in character it is hoped that he will be able to reach many more people, and to avoid the prejudice which is apparent under the present law. I realize that this plan is not perfect and that valid objections may be raised, but in a state like Iowa where 50,000 square miles of territory must be covered, and where there are 30,000 beekeepers, big and little, I am convinced that far more can be accomplished with the small funds which can be secured for this work, than by the present plan. It is hardly within the province of the state to examine every individual colony of bees in localities where disease is present, any more than it is to examine every pig where there is an outbreak of cholera, or other animal disease. Quarantine methods are justified and necessary in dealing with some new malady which has not yet become generally spread, but it is a hopeless task to undertake to eradicate any widespread contagion by these methods. I am fully convinced that this plan will shortly be abandoned and educational methods substituted very generally.