2026 Stahlman Bee Notes

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American foulbrood and the honeybee society as seen by Bernard Mandeville

June is always an important honey month or at least has been over the course of my bee journey. Honeybees face many obstacles. I have been reading **The Fable of the Bees** by Bernard Mandeville written in the early 1700's about 100 years after Charles Butler clearly identified the queen as the mother of the bees in a colony. The Fable of the bees draws a contrast between human life and bee life As we are seeing in our current age, honeybees without vice and corruption are facing problems – real problems – survival

This photo is provided by Ken Hover, a former Pennsylvania bee inspector. Note the use of gloves!

American Foulbrood **Very few beekeepers of today have seen it. But it is out there!**

A copy of Longstroth's ***A Practical Treatise on the Hive and Honey-Bee*** published in 1857 2rd edition includes a chapter on diseases. **He wrote mainly about the wax moth, birds and frogs that were the enemies of bees. Pages on disease start on page 242 and continue to page 275 before he mentions foulbrood. Wax moth details took up many pages. Only ½ of page 275 was about foul brood.**

And this is what he had to say, "There is one disease, called by the Germans, "foul brood," of which I know nothing by my own observation, but which is, of all others, the most fatal in its effects. The brood appear to die in the cells, after being sealed over by the bees and the stench from their decaying bodies infects the hive, and paralyzes the bees. This disease is, in two instances, attributed by Dzierzon, to feeding bees on "American Honey," or, as we call it, Southern Honey, which is brought from Cuba, and other West India Islands. That such honey is not ordinarily poisonous, is well known; probably that used by him, was taken from diseased colonies. It is well known that if any honey or combs are taken from a hive in which this pestilence is raging, it will most surely infect the colonies to which they may be given. No foreign honey ought therefore to be extensively used, until its quality has been thoroughly tested. The extreme virulence of this disease may be inferred from the fact, that Dizierzon in one season lost by it, between four and five hundred colonies!

By 1862 with his 3rd edition, Langstroth expanded the above to 4 ½ pages. I do not have room to repeat all the information he provided, but in the 5 years between his 1857 edition and the 1862 edition, beekeepers had taken notice that something worse than wax moths existed in their bee hives.

As far as managing a colony of bees with AFB, Langstroth pointed out that bees and comb removed from an infected hive did not make the equipment good again. He said, bees put back into infected hives with new comb will be speedily be infected with foul brood. He also observed that foul brood may be reintroduced from

Foreign sources. (He didn't say it, but that was likely referring to robbing bees stealing honey from infected hives.)

I am not sure if all this history interests you but American foulbrood does have a history. A 2nd source I checked was a book written by A.J. Cook called ***The Bee-Keeper's Guide or Manual of the Apiary.*** The 6th edition published in 1881, had this to say about foulbrood, " I having never seen but once case, and that on Kelly's Island, in the summer of 1875, where I found it had reduced the colonies on that Island to two. No bee malady can compare with this in malignancy." He mentions that he knew of a beekeeper who lost his bees two or three times by this same terrible plague. By 1910 in the 19th edition of his book, he writes, "There is no longer any doubt as to the cause of this fearful plague."

It is apparent that the disease was present in Europe well before we recognized it in the U.S. In fact, my internet search for the first report on AFB came up with this: Adam Gottlob Schirach when he first documented it in Germany in 1769 - the foul smell rising from brood frames that should have smelled like warm wax and pollen. He called it foulbrood.

Why is it called American foulbrood? It goes back to that statement found in Langstroth's Hive and Honeybee – the blame was on feeding colonies in Europe with "American honey."

Georgia bee inspectors in the 1990's inspecting hives from which I was selling package bees. If one colony was found to have AFB, the entire bee yard 60+ hive would be quarantined. I would have been prevented from moving them or taking any bees from them.

I should also mention that the plague that hit in the second half of the 1800's resulted in the creation of laws regarding honeybees in the U.S. We have universal state by state Agricultural inspection laws for moving colonies from one state to another, prohibit the importation of bees into the U.S. from foreign lands, and individual state laws requiring the inspection of colonies within each state. The Major disease state inspectors are concerned with is **American foulbrood**. It could easily get out of hand again without regulations.

Some states began passing laws to prevent the spread of AFB and later in 1922 it became a federal law regarding the movement of bees from outside the country. That law has been amended a number of times since.
The earliest state to enact a law regarding the movement of bees was passed in 1883 by California. By 1906, 12 states had similar laws.

Finally, I checked a few of the old Gleanings in Bee Culture magazines and found mention of it becoming more and more of an issue to the point that A.I. Root began adding information to his published ***ABC of Bee Culture*** started in 1877. Note the concern A. I . Root had regarding the disease. The information in the article is outdated but it is a good read to understand what beekeepers were being told. That information is in the attachment to this newsletter.
Today, we have a better understanding of what American foulbrood is but have found the best medicine is to strictly control the movement of colonies of bees and resale of colonies or bees.

What is American Foulbrood?

- First it is very contagious.
- Spores can be carried on gloves worn by beekeepers to other colonies.
- Bees can transport spores from colonies with the disease back to their own hive.
- Beekeepers can spread the disease when using equipment moved from a colony that has or had the disease. (making up splits for example)
- Letting bees rob extracted wet honey supers could spread the disease.
- Honey can be contaminated with AFB spores. (Don't use honey to feed bees if you don't know where it came from and even then, if it is not yours - avoid it.

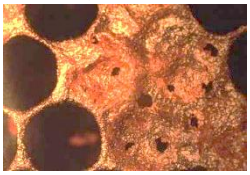
AFB is caused by a bacterium (*Paenibacillus lavae*) which can be in a vegetative (active growth) stage or spore stage (resting period). The bacterium are ingested by larvae during the growth period shortly after the eggs hatches. (The bacterium is in the food supplied by nurse bees). As the larva age they die just after the cells are capped. Capped pupal cells are sunken and may have small holes in them. The dying larva are an off-white color that turns to a dark pupa that begins to decompose. Many references point out that the tongue will extend outward until the remains develop a dark liquid sticky substance.

This is a photo of the late stage of the disease. As with most creatures that die, a strong smell from decomposing occurs. One common test (not confirming the fact that it is AFB until officially examined for spores present) is using a stick or cotton swabs pushed down into the cell and withdrawn. If it ropes as in this photo, one can assume it is AFB but state bee inspectors should be called in and samples sent to a lab for confirmation.
Should any of this mess end up on gloves or a hive tool, it could be spread to other colonies. Thus, burn gloves – hot water and washing will not kill the spores. Hive tool can be cleaned easily by torching the tool in a strong fire. Some beekeepers feel that clorox or some other disinfectant would work with the gloves or hive tool but why take the chance.

The problem with this disease is that there are treatments (short term) that can make it look like the bees have recovered from the disease. The problem is spores. According to various sources, the dried remains of a bee larva may contain as many as 2 billion spores. These spores stick to the walls of cells, or anything else that they can attach to. This makes AFB difficult to treat. Most treatments can only mask the disease. Since 2017, any bacterial medications that could be used to treat the disease require a prescription from an authorized DVM (Doctor of Veterinary Medicine). I should point out that some honeybees can become resistant as was done in the lab of Dr. Walter Rothenbuhler at The Ohio State University in the 60's,70's and 80's. In fact, bee inspections by states and hygienic behavior of bees in general has reduced the number of colonies with this disease to less than 2%.

One will most likely keep bees and never see it today because of the regulations in place for those selling bees. But the possibility exists that a neighbor with bees might have a colony with the disease. If that neighbor beekeeper would happen to have a weak hive with AFB, bees will rob it of honey stores contaminated with spores – you have a problem. This disease is still a nightmare if your bees get it. If your bees exhibit any of the features connect to AFB, you have a duty to contact your state Apiary Inspection services. When neighboring hives being infected, all that needs to be done is to draw a circle around that hive of bees maybe 3- 5 miles out to locate the offending hive of bees. By the way, buying used equipment can also spread the disease. Or think about used hive tools or gloves used by someone working with a AFB colony when they visit your apiary.

Some pictures to examine:



Cells sunken with holes like this should be an indication that AFB is present in the hive. If the cap is removed, no white larvae will be present but only a dark gooey matter that is impossible to remove completely from the cell. See the photo above for what is called roping. In my book, that is a very positive indication of AFB and that colony should be screened immediately against bees drifting to other colonies or to prevent robbing bees from getting inside the hive.

Dead larva melt down into a liquid something like tobacco juice/glue with a tendency to stick to anything you put into the cell is an indication that AFB is present. Visit the internet to check out AFB. There are many posts that will keep you well informed. This is not time to be a lazy beekeeper. Examine frames at each inspection for signs shown here.

The two photos above are from Government documents warning about AFB. These are signs to look for when you examine cells**. I believe that our bees have over a period of time developed more resistance to it because bee breeders have been working on mite resistance and hygienic behavior -- much like Rothenbuhler did many years ago for AFB. Just my opinion! Another thought is that old equipment of the past has been put out of service. My hat is off to the bee inspectors in the U.S. who have been responsible for eliminating much of it.**

Before you do this, contact your local bee state inspector -- Just to make sure you don't burn a hive that looks like it has AFB but doesn't. **This is the best solution to eliminating AFB!**

All equipment burned and destroyed in this way will not spread AFB spores. The hole needs to be covered with dirt after the burn because one stray piece of wood can still carry spores and bees will visit the site if they smell anything like wax or honey. This might not be an option if burning is not allowed.

My thoughts on individuals who do nothing! It might be the worst error one can make. A hive with AFB is a time-bomb to all the neighboring beekeepers who live within 2-3 miles. Bees from neighboring hives will rob honey from the AFB hive sooner or later. This can spread the disease to any number of colonies. It is not difficult to locate the source once this disease appears in an area. The State Departments of Agriculture can zoom in on a specific area and determine the center of the zone for the source of the outbreak. In fact, if the problem beekeeper is identified, that person may be responsible for damages caused to fellow neighbor's hives. This varies from state to state. In my book, Lawyers are far more expensive than burning a diseased colony of AFB bees. And while I mention lawyers, only lawyers can give legal advice. Ask any of them what "coming to the nuisance" means.