

The Minimum . . .

A minimum standard for a beekeeping operation.

Larry Connor

There is a question that has come back to me several times over the past few months that I want to discuss: What is the minimum a beekeeper should do to obtain successful colonies? As a beekeeper myself (now a struggling hobbyist with a mixed bag of colonies of vastly different strengths), I wonder what I need to do for myself, and wonder if my needs translate into something a majority of the *Bee Culture* readers need as well. In discussions with a range of beekeepers with a just one or two hives to those with hundreds of colonies, I've settled on three general ideas, themes really, that make up a suggested minimum standard for a beekeeping operation.

First, I do not enjoy working bees that are defensive. While on a recent truck ride to a commercial apiary location I noticed the bees striking the windshield of the truck before we even turned off the engine. That old line from the movie *Tootsie* passed through my brain: Brace Yourself Effie! It isn't that the bees were unnecessary defensive – nothing approaching African stocks – but a passing weather front and the forgotten smoker made the act of supering very much less than ideal. There are wide differences in the gentleness of bees, and I see no real reason to have unpleasant bees in an operation, especially in a sideline or hobby outfit.

Selecting stocks for gentleness is not usually my primary motive for selecting a particular line or queen source for propagation. But the decision to eliminate a queen from a highly defensive hive is often the first reason I give when I've decided to kill a queen. This is especially true when I visit an apiary and there is one defensive colony the beekeeper avoids or leaves until last. Lately I have been somewhat outspoken, asking "Why are you keeping a colony of such disagreeable bees?" Some beekeepers may have a perfectly well thought-out rationale for keeping such winged beasts, but honestly, I have to be convinced that the level of *Varroa* mite resistance or increased honey production justifies the additional stings and increased liability exposure.

One beekeeper showed me his face test, where he places his unveiled face right on the top of the brood frames after he smoked them. He says he is sniffing for American foulbrood while also checking the personality of the hive. The bees in his apiaries seem relatively quiet and were pleasant to work, but there are other perfectly acceptable ways to test a hive for defensiveness that do not involve putting one's good looks at risk! His approach does keep the overall apiary calm and pleasant to work. And that's good.

If a colony has AFB, I smell its sulphury odor through the veil, and usually at some distance. If I find something that smells suspicious, I am able to inspect the frames later after I have shaken the bees back into the hive.

Remember to wash your hive tool, smoker surfaces and hands with rubbing alcohol or hot soapy water after you find this bacterial disease in your apiary. Then plan for the elimination of the colony.

There are complex behaviors that have been documented to describe the defensive process in bees that leads to stinging. Some lines of bees stop this sequence before stinging, and hit the veil and exposed surfaces as often as they can, but do not sting. Others seem to sting first and then keep up the attack sans stinger!

This "temper" issue in bees can be complex. Yet there are many colonies of bees that do not attack when worked rationally with moderate smoke. Clearly, for the vast majority of the readers of this magazine, and for most beekeepers everywhere, we need gentle bees of good temper.

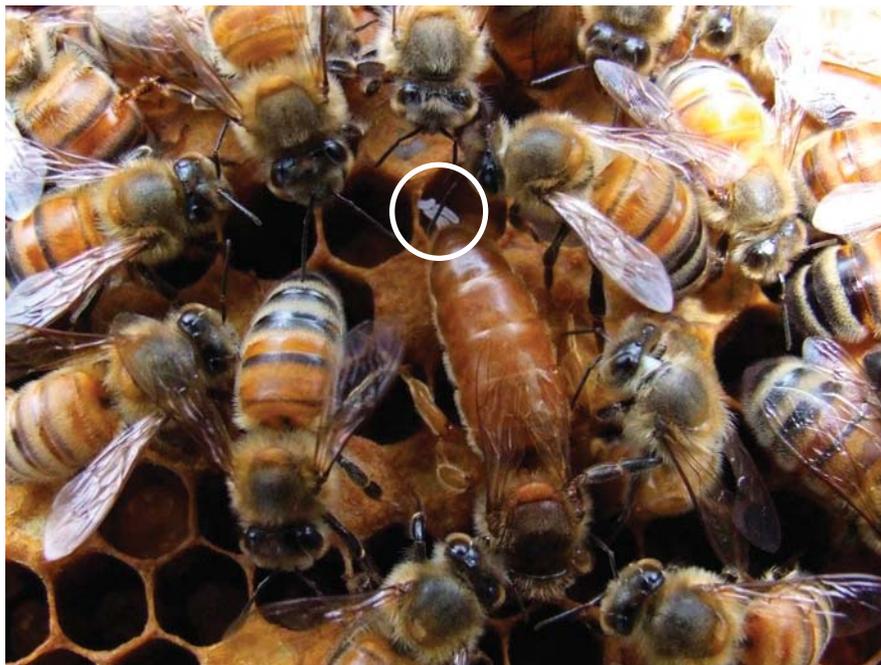
While we are at it, we should seek those colonies with good "temperament" as well. These are bees that stay quiet on the combs and do not run or drop off the frame as we work the colony. I gently place my fingers on the nurse bees of a colony of good temperament and find that the bees remain quiet and do not move away as I lift my hand. Not only are the bees gentle, but they remain quiet for a hive inspection, queen finding, or other activities. These are bees I want in my apiary.

Second, I've decided I must have hygienic bees. After three seasons of chalk brood, a so-called minor brood disease that has killed tens of thousands of immature bees in some of the colonies I try to manage, I want a colony that removes all sick brood and takes all trash out of the hive. Hygienic bees give you a clean bottom board – one you do not have to scrape in the Spring or as you work the hives. The recent discovery that the SMR (suppressed mite reproduction) stain of *Varroa*-tolerant bees is actually a form of hygienic behavior shows the link between hygienic bees and low mite loads. The SMR bees were ones that were eliminating cells of worker brood that contained developing *Varroa* mites, leaving only mites that do not reproduce in the cells, leading to the concept of suppressed reproduction. The process of opening (uncapping) and emptying the parasitized pupa prevents *Varroa* mites from emerging. Apparently the hygienic behavior crosses over all infections, from American foulbrood, chalkbrood, and *Varroa* infestations and more.

For me to add hygienic stock to my little apiary is to obtain daughters from instrumentally inseminated hygienic bees or stocks mated in isolation that carry these traits. I put these queens into colonies this year and produce large armies of drones from them next year when I will set up new colonies as part of Summer increase. By adding some hygienic material to my local drone gene pool, I hope to influence all the colonies in the neighbor-



Notice the worker grasping the queen's abdomen.



She lets loose with a cluster of eggs.

hood so there is a reduced rate of AFB, chalkbrood and *Varroa* mites, just for starters. I hope you all join me in this effort. After a year or two I will test the level of hygienic bees by using pieces of nitrogen-frozen brood.

If you are like me (and I realize most of you are not) when you were taught beekeeping, you learned about the classic genetics study of the double recessive gene disease resistance mechanism worked out by Ohio State's Walter Rothenbuhler. It took two genes, both recessive (one for uncapping infested cells and one for emptying them), to get a colony to demonstrate resistance to American foulbrood. (Later other diseases were shown to be controlled by these two genes).

Additional disease resistance mechanisms undoubtedly exist. That we may not have given them a proper definition and description does not prevent them from helping us in the bee yard. So you and I both can have colonies with clean bottom boards, disease and mite free brood – colonies we are pleased to

show off to others. I'm not there yet, and I have some distance to go to get there. Considerable distance.

Third, I want a productive colony. Well, of course I do! By productive I want one that survives the Winter, builds in the Spring without swarming and generates a honey crop and pollinates a huge number of flowers. Bees that die over the Winter automatically lose my vote. Likewise, colonies that swarm when other colonies do not are placed on my list of colonies to be broken apart and made into new Summer increase colonies to over Winter with new queens. This is a little bit like "I don't get mad, I get even" as a method of keeping colonies. I don't get mad at a colony for swarming, I just deal with its lack of cooperation in such a manner that the colony no longer exists when I am finished making nuclei. As I have written before, a lot of readers have one major honey crop each year, and if they lose a huge chunk of their nectar-gathering workers just as that flow begins, the colony will not fill supers with honey. So, I might as well take that colony and rework it into three or more hives that may give me young and hopefully desirable queens mated to wonderful disease resistant drones, all ready to over Winter as a nucleus.

What have I lost? A honey crop? Probably not much of one, if the swarm was large and the population took a big hit. A special queen? Maybe, but only if she was otherwise productive and was gentle. I hope she made a lot of drones before she accidentally ran into my hive tool.

What I have lost is a potential "welfare" hive that may slumber through the Summer and may or may not have enough honey to survive the Winter. Cut bait, fish, catch fish, clean fish, eat fish. Get on with it and stop fooling around with these hives that tie up your time and drag down your production. I mean it, get busy. Take your bee losses *now* and make up new colonies for the next season.

Hopefully these "minimum" suggestions will be helpful to you.

I am pleased to be writing this from my mother's kitchen in Michigan, where a cool, late evening Spring breeze cools the large brick house after a warm and sunny day in mid June. Mom has gone to bed and left

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me to work by myself. At 91, she fixed a meal for life-long neighbors this afternoon and we took it up for supper tonight. With my very minimal help she thinks of many things she can do for others; because she so enjoys doing it. She struggles with vision and drives only a little. Today we went to a favorite store that she no longer feels confident to drive to. The trunk was filled with staples, but when I put it away in the cupboards, it was already well stocked. I think it was the cookies she ran out of long before I arrived on the doorstep.

This trip includes workshops and talks in Ohio, Nebraska, Michigan, Indiana and then Ohio again. My new book, *Beekeeping Essentials*, is finally in the hands of the Root/Bee Culture team who will electronically ship it off to the printer, so I really do hope the book is ready for distribution when you read this. I am reminded that all good things take time. I hope that is true in this case.

Beekeepers along the trip speak of entirely different conditions. In Connecticut, many colonies swarmed, even one of my three package colonies (the one that had an entrance reducer left in by mistake). Taking my own advice, I made up three new colonies with the frames of brood possessing swarm cells. The three packages did not experience queen failure, and I am hoping that by holding queens in the cage for at least five days helped this Spring. The package was installed on a Monday and the queens released on Friday. The first thing all three queens did was rush over to an open cell of honey/nectar and take a long drink. Then a few worker bees attended to her with their antennae. Acceptance is not a flashy moment in the beehive.

When I return I will requeen or tear apart the only colony that survived the Winter. In early April the colony had less than a thousand bees and about one-third frame of brood. I was intrigued to see what might happen. Before I left for this trip (second week in June) the bees had built to about three and a half frames of brood and bees. Swarming was clearly not on this colony's agenda. I shot a number of photos of the queen, purchased from Hawaii last Summer, and when looking at the pictures found an interesting sequence. I caught one worker hugging the queen's abdomen – something I have not seen before – and rapidly brushing the tip of the body with her hind legs. When viewed on the computer, one of the next frames showed a mass of eggs just below the end of the abdomen. It makes me suspect that the queen has some sort of blockage in her median oviduct, perhaps residual mucus from mating. Because she is producing a normal number of eggs, she has not been superceded. That's my theory.

So, okay, sometimes you keep a few welfare hives around to learn from them. When things like this happen to me I am reminded how little we really know about bee behavior. How did that worker know to move her legs

over the tip of the queen's abdomen? Is this a behavior the bees use following mating? If I find out more, I will share it with you.

In Kansas in early June the season was quite advanced. The white sweet clover was coming in as the yellow sweet was fading. Cecil Sweeney (Mid-Con) and I drove to an apiary where he and wife Jolie Winer had made Spring nucs with purchased queens. The queens were from California, and even the queen producer knew the unsunny California weather had affected the quality of the queens.

Every hive but one in the apiary was in the process of supercedure. It was sad, for while the nectar flow was on the bees were occupied replacing their queens. Colonies that should have been moving from two deeps into the supers were still filling the brood chamber with stores because of the break in brood rearing. To make it worse, the farmer had disked down the sweet clover for a green manure crop. It hurts to see dozens of acres of open soil with sprigs of sweet clover sticking out. It's just not right to do that.

So far this Summer I've given twilight meetings for about three-dozen beekeepers interested in queen rearing. The goal is to keep it simple and direct, using a classic starter and finisher unit, and giving everyone a try at grafting. Not everyone can carry that off, and we review other methods. But it is encouraging that there may be so many motivated beekeepers raising queens, Summer queens, for use in northern states. Maybe they will be able to supply queens, cells and virgins for local beekeepers in years to come. Such a step is essential to the self-dependence of queen stocks.

Proofed in Iowa on the way to Nebraska! **BC**

*Larry Connor is on the road most of this Summer, but can be reached by email at LJConnor@aol.com. His new book *Increased Essentials* should be available now.*
