

Making DOOLITTLE'S NUCS

Larry Connor

The break in the writing thread concerning teaching beekeeper instructors continues this month to cover another topic. On pages 64-66 of Ed Simon's book *Bee Equipment Essentials*, he discusses the use of a Conversion Board to 'convert' a five-frame nucleus to a ten-frame hive, or the reverse. Last Summer, at the Heartland Apicultural Society meeting I found an elaborate version of this system that is easily used to make a new colony in small size, a nucleus hive, from a larger colony. I hope the maker of this box, one of the vendors at the HAS show, writes a letter to the editor to lament that he did not get credit, because I cannot find any identification of this person! The frequency of my losing information is increasing.

This design adds a queen excluder to the conversion board, and as you will see below, it allows an eight- or 10-frame beekeeper to make a nucleus hive with a minimum amount of fuss and bother. G.M. Doolittle was the first person I've found who described this method, so I am going to call this the G.M. Doolittle Nucleus System.

My city apiary has two colonies. One is a new package colony from California. The other is a very nice colony that made it through the Winter as a five-frame nucleus. With the boost of warm weather in March, the colony exploded. A daughter of a Carniolan breeder queen (from Tom and Suki Glenn), this hive survived on five frames in a polystyrene nucleus box kept on the ground against the south garage wall. I would like to tell you how I carefully fed the colony during warm days last Winter, but I was not home much during the Winter. These bees were

completely on their own. They were well provisioned with stored honey and had a good bee population.

In early April I moved the bees to an eight frame deep hive. In late April I added a second box to handle all the emerging bees that were started as brood in March. In early May I added the third deep hive body just in case the black locust hit. A few days later I returned to make up a nucleus hive using the Doolittle system.

Sometime in late April or early May this colony swarmed. I was a few days late adding the second hive body with drawn combs and foundation. I think it was when I was in Denver doing a class.

Today (May 14) when I checked the hive the third box was basically untouched, but all the frames in the first and second boxes were filled with brood, pollen or honey. A lot of honey is being collected from the black locust bloom.

I was very surprised that there were just two frames of brood. What does that mean? Either the colony swarmed (as I suspected earlier) and this is the last of the brood from the old queen, or this is the first brood from the daughter queen. I think it is from the old queen because it is mainly old sealed brood with new bees emerging.

The colony behaves as if there is a queen about the start egg laying because there are patches of worker cells that are empty, surrounded by cells filled with nectar and honey. This is in the center of the hive, in the center of the old brood nest, where one expects to find eggs and young larvae. This suggests strongly that the daughter queen has mated and will soon start laying eggs.

There is also a chance that when I visited the colony earlier I may have damaged the old queen or replacement virgin, unintentionally, of course. If that is the case the colony may be queenless, hopelessly since all the young larvae are grown into emerging workers.

My motivation for this article is simple. I find many beekeepers who have similar experiences this Spring, so there needs to be a discussion about what to do in this scenario.

G.M. Doolittle Nucleus System

The modified conversion board serves multiple roles with this colony, but first I will explain what I did to make a new nucleus. The key features of the conversion board



Bees in the lower hive body. The frame on the side is from the second box.



Conversion board with a piece of queen excluder inserted. Note the rails hold a five frame nuc in center location.

are the section of queen excluder, and a migratory cover that provides 'wings' to cover the entire brood area of the colony below. This is more elaborate than what Doolittle used. He used only a queen excluder and two boards, one on either side of the nucleus box. Or he simply used a hive body that was the same dimension of the full colony. He would have used more brood than one frame in an effort to make a very strong colony of maximum potential. The process below is designed to produce a weaker colony, one that may be used to mate queens, or simply made up with the goal of wintering as a reduced-size unit. It all fits into my concept of keeping two and a half hives.

Here are the steps I took to perform this 'split'.

1. I inspected all the frames, looking for the queen, but did not find her, and setting aside the following: A frame of sealed and emerging brood, a frame of honey and a frame of pollen. The bees were on these frames but were later shaken off.
2. I filled the three empty spaces with drawn comb (in the brood nest) or foundation (in the honey super). The two boxes were returned more or less as they were when I started working, except I had removed the three frames.
3. I placed the Conversion Board with queen excluder on top of the upper hive body. This allowed me to perform the rest of the process and keep the queen out of the nucleus hive.
4. With a five-frame nucleus box in place, *I shook all the bees off each the three frames, right at the entrance of the hive.* All bees, queen (if present), drones and workers, were forced to walk back into the colony and reorganize after my intrusion into their world. Almost immediately the bees started to expose their Nasanov gland and produce the scent pheromone to attract their sisters in the air and on the ground. Most of the bees were back in the hive within 15 minutes.
5. The three shaken, and thus nearly bee-free frames, were placed into the nucleus box along with two empty frames of foundation. More brood would be ideal, but I wanted to leave one frame of brood below in the colony. *By shaking the bees at the entrance, I was pretty sure that there was no queen in the nucleus box!*
6. I had brought a newly emerged caged virgin queen from the farm during a morning visit. I checked to



Brood frame being placed into the nucleus box over the conversion board.

make sure she was still alive. I put on the pink cap and placed the cage next to the brood frame in the nucleus hive.

7. The lid was put in place.
8. The three remaining frames in the third box were placed on a package hive installed less than three weeks ago. I put the frames over the inner cover to hold the heat in the brood region.

What Happens Next?

9. I trust Doolittle's observation that nurse bees will be attracted to the brood paced above the queen excluder. Because there is pollen and nectar on the surrounding frames a number of the house bees (especially gland producers, comb builders, honey processors and temperature regulators) will be attracted to this area of the hive to continue their work.

Since I had other matters to attend to, I let the nucleus stay on the hive until the next day. Then I moved the frames into the same polystyrene five-frame hive that I had used the over Winter the colony that had given up the three frames.

10. My plan is to rotate several queens through this nucleus during the Summer months, since there is



Placing virgin between brood and honey frame.



Frames transferred to new home.

a very strong demand for Michigan-raised survivor stock with *Varroa* resistance. In late July or August the last queen will be installed, allowed to mate, and fill the nucleus with bees and stored honey for the Winter.

11. If anything happens to the parent colony or the package colony, I will have a laying colony at hand to requeen and or repopulate the affected colony. Should this happen, I would be able to recharge the nucleus with a new queen from my production of virgins at the farm.
12. Giving each queen about three weeks buildup in the nucleus, I hope to produce four and perhaps five queens (the last one over wintering with the colony). At current market prices each queen is worth \$30 (maybe more) and the over-wintered nucleus \$150. A month later it will be in a full deep hive body and will sell for \$200. The gross income from such a colony could be between \$270 and \$320. Those are theoretical numbers, but for this colony to be put on a truck and sent to California for almond pollination (which is not a consideration for me) or used strictly for honey production (which may area beekeepers are doing well at) it will still be difficult to reach this level of income for a single colony.

This is a fantastic way to evaluate a queen, and let her build in strength if she is superior. Her offspring can be evaluated for temper, temperament, honey and pollen foraging, wintering ability and mite levels by using a powdered sugar dusting. I will record any observations or data on the metal lid of the hive.

13. The queen in the nucleus will form a new colony, either this year (if I put the bees into a eight-frame hive), or next year (when we hope the colony will NOT swarm and produce a large honey crop).
14. Finally, all the drones ultimately produced by the mated version of this queen will be haploid reflections of their mother - in this case pure Carniolan



Other uses for the conversion board and box—here are three swarm cells from one of Sheldon Schwitek's cut-out hives. I have them over the hive to emerge. The bees will cover the cells if alive. Frames need to be added to encourage proper comb construction.

drones. Given the mite-resistant lineage of this queen, it provides a simple yet elegant way to help saturate the area with mite-resistant, Winter-hardy stock. It does not matter which of my beekeeping neighbors drones this virgin mates with as far as the drones she will produce. Should she be superseded, the resulting drones from that queen will still be fifty percent Carniolan bees, and pass on the characteristics of these bees, but at a reduced level.

The primary advantage of this system is to make a new colony without finding a queen, or multiple queens, as I have seen in many colonies this Spring (sister virgins caged in cells by worker bees). Shaking bees may be disturbing for new beekeepers, but it does not hurt the bees as far as I have observed, and they put all matters back to order rather quickly. It is worth a try, even in June or July, and even by first year beekeepers. At this time of season most of the brood you remove will not be producing a honey crop, and you develop a new colony with a break in the brood cycle to reduce mite loads. **BC**

Bee-sentials: A Field Guide by Dr. Connor is available from bee supply dealers or Wicwas Press, 1620 Miller Road, Kalamazoo, MI 49001, for \$29.95 postpaid in the United States. Foreign email LJConnor@aol.com for a quote payable via PayPal, or www.wicwas.com for PayPal purchase. This full color book is ideal for use in bee classes and training programs. Contact us for quantity discounts. See the ad in this issue for further information.


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