

NINE FRAME BROOD CHAMBER? NEVER!

Walt Wright

Old Steve stomped out in disgust. On his way to the door, he announced to those seated behind him, "That guy don't know (bleep) about bees." Steve considered some things sacred about beekeeping, and a 10 frame brood nest was one of them. He had kept bees all his life, and had the last word on any issue at that club. When I got to the part in the presentation where the manipulation was described, it was mentioned that I use nine frames from the bottom board – up. The concept of a nine frame brood nest was more than Steve could tolerate.

In a way, Steve was correct. The (bleep) I know was not the (bleep) he knew. He was well versed in the conventional wisdom of the literature, and he believed it without question. If you learn something early in your interest in a subject, and that opinion is continually reinforced over the years, it becomes a *fact*. Like the faith elements of religion, you believe it to be true, whether there is any supporting evidence or not.

Steve has gone on to that great outyard in the heavens, but he is remembered fondly. He taught me two things not related to beekeeping: Bucking conventional wisdom is a thankless task and no amount of persuasion or evidence to the contrary will make a dent in conviction.

Fortunately, there are some beginners and hobbyists without strong convictions, yet. I will devote what time I have left to getting those open-minded individuals to think about what they see.

My early beekeeping was done without benefit of conventional wisdom. There was no Uncle Fred (fictional family member), club or association group exposure, or how-to books on hand. Three hives were purchased from a co-worker and "winging it" was under-

TIP OF THE MONTH

For a starter colony, (package, split, or natural swarm) be sure to use the deep side of the reversible bottom board if they must draw foundation. Using the shallow side to limit the entry may result in exposed reinforcing wires between the bottom of the comb and the frame bottom bars. They have a minimum "jump up" space between the floor and the bottom of the comb. Use the deep side of the bottom board and an entry reducer.

way from the beginning. Learning by trial and error has advantages and disadvantages. The errors are an obvious disadvantage, but they are lessons not easily forgotten. Although having some how-to guidelines might be an asset, having them, and following them, tends to limit your thinking about what you see. When using a technique blessed by the experts, you are less likely to observe any adverse effects on the colony. The advantage to trial and error is that you tend to look for effects in the colony of things you do.

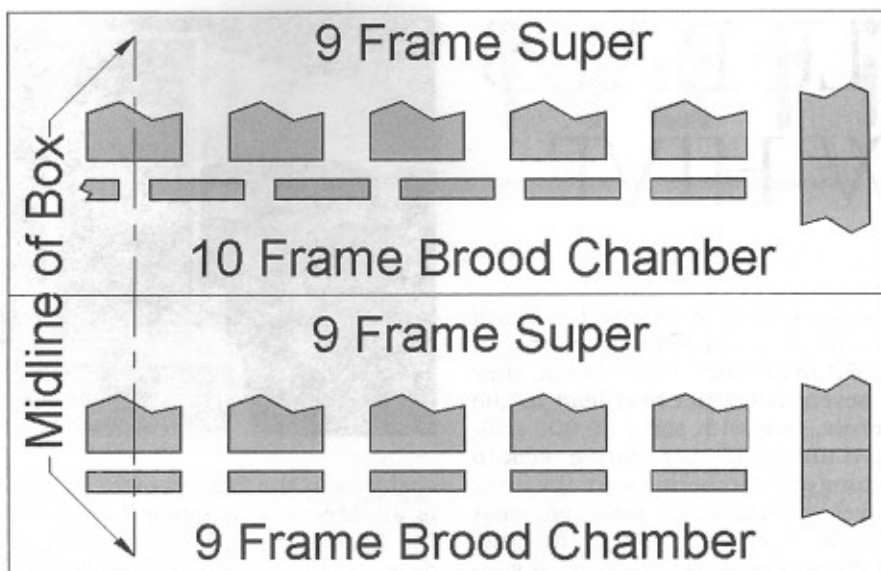
With the excessive introduction out of the way, let's get to the subject of this article. My beekeeping started with nine frames in all new boxes. It just seemed reasonable to maintain a straight line of comb from bottom to top. If we were going to use nine frame supers, the brood chambers should be nine frame also. No new box left the assembly room without nine frame spacers installed. In a pinch, they might go out unpainted, but they had spacers. It should be noted here that this is not an infomercial for the devices the Stoller family still sells. They didn't know that this article is pending, and, from the ads that have appeared in the past, it appears they may not recognize all the advantages of their product use. All of those other advantages will not be treated here.

There were several years of building hive count before a test of the nine frame brood nest was conducted. What "seemed reasonable" to this novice beekeeper was supported by the results of the test. A ten frame deep was installed below the nine frame basic brood chamber. The amount of congestion created by the frame count change was surprising. Incoming foragers were backed up to the bottom board and outgoing were backed up to the top of the brood chamber above. An interesting observation of the congestion was that it was peaked at the center of the brood nest. There was almost no up/down traffic at the hive sidewalls. This would lead to the conclusion that up/down traffic prefers to travel through the brood nest.

When you superimpose a nine frame box over a 10 frame box, frame five of the upper is squarely centered over the travel space between frames five and six of the lower. The offset is reduced in either direction as we move away from the center. And the congestion peaks in the center. Is the offset responsible for the congestion above and below? In my opinion, the congestion results from up/down traffic backed up waiting their turn to negotiate the frame change offset.

The bees have given us a clue as to the space desired for a direction change. If you have done residential tear outs, you will know that the colony builds comb down from the top, and stops about $\frac{3}{4}$ of an inch from the lower surface. This is their access space to transition from crawling on the floor to work in the combs. The deep side of the standard reversible bottom board is about $\frac{7}{8}$ inch and close to correct. The reasons for the bottom board dimension are lost in antiquity, and those reasons are not considered higher in the hive. When you change frame count from 10 to nine, you are forcing the bees to change direction, not once but twice, in less than a half inch.

A queen excluder makes it worse. An article on



use of the QE has already been written but was too long. But, by treating the direction change here, that too-long article can be pared down.

There are other advantages to the nine-frame brood nest that are related to convenience for both the bees and the beekeeper. Travel through the brood nest is made easier. Although the up/down travel space is only increased by roughly an eighth inch between combs, every little bit helps. The same small increase helps ventilation by improving upward airflow through the brood nest if the top provides sufficient warm air overflow.

The eighth inch between frame spacing shoulders speeds up inspection time for the beekeeper. By gently slicing the propolis between spacing shoulders with the hive tool, a frame can be lifted out from the center of the brood nest. The extra space also reduces the rolling of bees when the frame is lifted out. When the spacing shoulders are touching and propolized, it is advisable to work your way into the brood nest one frame at a time from the outside.

To be fair, the disadvantages of a nine frame brood nest should be identified. The major disadvantage is the reduction in brood cells within a given cluster size for the winter start-up of brood rearing. With the increased spacing between frames, my four-dollar calculator reports there are 13% fewer cells within the warmed cluster area. While that sounds like a significant handicap to start build-up, my bees are able to overcome it. Locally, my feral stock are able to build two and a half stories of brood volume in three brood cycles in a typical build-up season. I don't know how that plays out in more northerly areas where wintering is marginal.

A second disadvantage is that the extra space also allows the building of "clunkers." That's my word for those lumps of drone cells built in late winter. An associate beekeeper calls them "queen killers." The bees have a need to rear drones during that season that will not be denied. If they do not have sufficient drone cells in reach, they will make provision, by building clunkers or converting worker brood comb to drone cell

size. The tendency to build clunkers can be offset by providing drone cells in reach. I've got a piece on drone management in the planning stage.

The literature admonition to *always* draw foundation in a 10 frame configuration is over-reaction to a minor problem. In our novice years, one colony built a double slab of comb from the top bar spaced at nine frames. This year, another small, natural swarm did the same thing. In between, literally thousands of frames of foundation have been drawn with nine frame spacing that were well done. Since I'm not naturally lucky, and the odds so great, I'm inclined to dismiss the literature recommendation.

The bees are inclined to draw foundation that is in line with developed comb so as to continue the comb in line. This is true whether the foundation to be drawn is above or below the comb already in use. They also do better if the frame of foundation is between two frames of developed comb. The colony will sometimes draw foundation that is alternated with honey or nectar when they will not start on a full box of foundation. This is especially true in the main flow trail off.

To get perfect frames of worker brood comb for expansion of hive count or comb replacement, try this gimmick: Place a full deep of worker brood foundation between the brood nest and the first honey super that is being filled. Do this early in the main flow. The colony may use it for a ladder for two or three weeks, but eventually it will get filled and capped. Carefully uncapped and extract the honey to maintain brood depth cells. Care is needed because the comb is delicate, but when extracted, it is a valuable asset. **BC**

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