

Monday Notes: 2020

By Dana Stahlman Date 1-13 -2020

Topic: Foundation

Basic Beekeeping Foundation

Wow, Monday comes around pretty fast around here. This morning the bees were flying and bringing in a lot of pollen – two colors. Judi and I drove around the neighborhood and saw some flowering cherry trees in bloom. Frogs or toads are out hopping all over the roads. Bees are starting to raise a lot of brood. This indicates an early swarming season even if it gets colder for a few weeks in February. The birds were chirping away like spring is here.

In the early years of beekeeping frames did not have foundation to put into them. The beekeeper started with a strip of wood attached to the top bar cut into a triangle to help the bees build a straight comb within the frame.

Shown here is an early illustration of the Langstroth hive and a frame.

Note the very thin top bar and the support for a triangular beveled frame for the bees to attach comb to. I might point out that Langstroth did not claim to have discovered the frame.

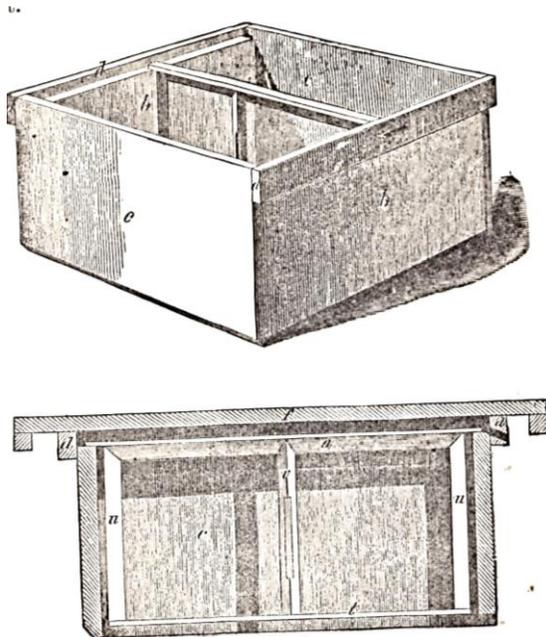


Fig. 54.

ORIGINAL LANGSTROTH HIVE.

b, b, front and rear of hive; *d, d*, pieces forming the rabbets for the frames to rest upon; *c, c*, sides of hive; *f*, movable cover; *u, u, t*, movable frame.

Bees naturally attach comb to edges and this design allowed the bees to build straight comb. Straight comb is a valuable asset for beekeepers.

Even today many new beekeepers find that the bees refuse to build comb the way the beekeeper desires them to do so. This is true especially with plastic frames and plastic foundation. This was also an issue with the amount of drone comb built in frames without foundation.

Many of those problems have

been solved by using foundation for bees to build cells either worker or drone in a frame.

Many materials have been used to make foundation for frames in a bee hive.

A.I. Root was the first to manufacture comb foundation in the U.S. in 1876. He worked with a German (F. Weiss) to build a large roller-mill along with a skilled mechanic, (A. Washburne). The foundation became popular because all the cells were worker cells.

So much for history: First the question of plastic or beeswax foundation!

The choice between the two has pro and con answers.

First imagine you want to make your own foundation and you decide you will cut a sheet of smooth plastic and put it into a frame for the bees to draw comb. What the bees will do with that plastic is absolutely nothing. They will build a natural comb down from the frame edge – thus using the bee space to separate the comb from the plastic sheet. We often see this with plastic frames with plastic foundation. Rather than drawing out the wax cell impressions in the foundation in the frame, they will build comb from the top bar and not use the cell impressions supplied on the foundation.

Another issue is placement of frames. Even with frames with foundation, the bees may decide to use extra space between the frames to build comb. For example, a 10 frame hive body with 8 or 9 frames gives bees a lot of room to build free comb (often called burr comb) between frames. What happens if you forget to remove a package from the center of a hive after installing bees into a hive?



My thoughts after I checked out bee supply catalogs is that a new beekeeper may have some issues figuring out what to buy. Many catalogs are offering plastic foundation and frames which seem to be a good choice. I rather think that natural beeswax foundation is better for a new beekeeper because bees adapt to it much better than plastic. For more advanced beekeeping plastic is a good choice if the beekeeper has learned how to get frames drawn without burr comb. The secret for plastic is to double wax the foundation and place frames with new foundation between frames of drawn comb.

Plastic is used almost universally by commercial beekeepers. It is tough! Honey frames can be run at a higher speed to remove almost all the honey from cells without damaging the comb. Wax moth damage can be repaired using a power washer to remove webbing and junk on the frame and the plastic can be re-waxed. One problem is the higher cost for each frame and the added weight plastic gives to a hive body. One cannot heat plastic frames without causing buckling to the plastic to remove disease (such as dipping plastic frames into a boiling water bath).

With all that said, I looked at my bee supply catalogs and looked up foundation. (Rite-Cells, Natural color, Max wax, unwired, standard waxed, quick draw, small cell foundation, Thin surplus foundation, Crimp wired, Cut comb foundation, Drone cell foundation, Beeswax foundation 4.9 & 5.1, Plasticell, Janolia Honeycomb bee Wax foundation, double waxed Pierco frames, and Ross Rounds. That is a mouth full of words for a new beekeeper!

Most bee supply businesses will handle few choices for the beekeeper to make. So let's look at a few of the choices one will face in deciding on a particular foundation.

Beeswax foundation

Natural Beeswax foundation is available by sheets [the number of sheets per pound will depend on the size of the sheets and thickness of the wax]. The major suppliers for wax foundation are Mann Lake, The Kelley Beekeeping Company, and Dadant & Sons.

The beeswax choices are generally referred to as Brood, medium brood, thin and comb honey thin wax foundation. Beeswax foundation can also be purchased with crimp wire for additional support for the comb built on it.

(Pure Beeswax) Foundation is subject to sagging during hot weather. Thus, it is wise for a beekeeper to buy wired foundation for either Deep or medium frames. One of the major mistakes I have observed with new beekeepers is trying to secure wax foundation into deep frames with pins. If you want good straight comb in your frame when using bees wax foundation, you should cross-wire the foundation to the frame. I will cover how to do that in upcoming articles.

The Choices:

Deep frames Foundation size (8 3/8 x 16 3/4) It is sold in 10 sheets or a 25 lbs. box. The number of sheets to a 25 lbs. box is approximately (175). Foundation can be bought as deep unwired brood foundation, but it definitely does require cross-wiring.

Medium frames Foundation size (5 5/8 x 16 3/4) Sold as 10 sheets or 25 lbs. box Number of sheets to 25 lbs. box (275) Medium foundation sizes can be bought unwired or wired. Medium brood foundation also needs cross wiring to reinforce the comb in the frame. Cross-wiring is highly recommend for any frame to be extracted.

Medium frames for the production of a honey products which includes comb. Brood comb is too thick and not suitable for eating honey in the comb. Most thin cut comb or honey comb in section boxes or Ross Round require a wax thin enough to see newsprint behind the sheet of wax and it improves the appearance of the honey when light passes thru the comb.

What about small cell foundation?

[There are a number of beekeepers concerned about the standard 5 worker cells to the inch. (5.4 mm size worker cells are made naturally by the bees). Some individuals are sold on the idea that small cell sizes such as 4.9 mm or 5.1 mm work in reducing Varroa Mite's ability to reproduce. Before you buy this foundation check out the research done by reliable scientist. Most bee suppliers selling the smaller cell sizes post statements saying the research is not yet confirmed and warn the buyer that it is up the beekeeper to make the decision to buy small cell foundation. I would like to hear from members of our club if they are finding small cell foundation giving a hive the protection from Varroa as claimed by some beekeepers? I personally have not seen it.

Next week I will be sharing thoughts on plastic frames and foundation. The major problem with wood frames (which have to be built and that takes time) and inserting wax foundation into frames (that takes time as well + some skill) is the amount of time and effort to do the job correctly. I have seen enough beekeepers who started a hive with foundation to understand the frustration when sheets fall out of frames or ends up slipping from the wedge top bar and hang in various positions within the hive body. The bees try to build comb but the guide that foundation gives them is no longer straight and evenly spaced. Bees do the best they can under those situations

Tid-bit information: What should the distance be between the center lines of top bars to maintain the normal bee space between frames? From center line of one frame to the center line of a frame next to it, the distance should be _____ inches.

Who is credited with discovering the term bee space? _____

What is the size of a bee space? Either give the fraction of an inch generally regarded as a bee space or give detail on what a bee space is?

Who developed a roller mills to make selling wax foundation as a commercial product?

Pick the best answer from the choices given below:

If a beekeeper places a small strip of foundation into the wedge of a top bar and bends the strip of wax straight down (vertical to other frames) what should be the expected result. This is usually referred to as a starter strip and is used by beekeepers who want the bees to build natural comb in a frame without using a full sheet of foundation.

Answer choices: The bees would:

- A) Build a bridge of wax over to the next frame.
- B) Build the starter strip straight down toward the bottom bar. The comb would most likely include mostly worker cells.
- C) Build the comb down toward the bottom bar but the comb would most likely be mostly drone cells.
- D) Ignore the starter strip and build comb as they do in a natural cavity attaching comb to anything that would support burr comb.

Every square inch of comb contains about _____ cells?

Super tough question:

Who was the first person to patent the first comb-foundation made in the United States?

Choices:

- A) A.I. Root
- B) Charles Dadant
- C) Louis Hoffman
- D) Samuel Wagner