



Observation Bee Hives¹

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There continues to be a great deal of interest from a variety of people in using observation bee hives. This is not surprising. The observation hive is one of the premier research and educational tools in apiculture. It can also be used as an adjunct to a diversity of public relations and selling programs.

Although its allure is universal, the observation bee hive may not always be the best choice of exhibit. This is because a great deal of time and energy is needed to set up a hive and keep it going. Most persons have few problems installing an observation hive for the first time. The headache is maintaining the unit. This is especially true if the hive is to be used as a permanent display for the general public.

Unfortunately, there is very little that is permanent about an observation bee hive without a lot of work on somebody's part. Even the largest units of 4 frames still only represent a portion of a full-sized colony. Because they are so small, observation hives do not usually survive major fluctuations in either population size or food availability. Anybody who has attempted to keep one of these marginal colonies for any length of time can draw up a long laundry list of potential problems. These can include swarming, queenlessness, starvation, and invasion by diseases, pests and parasites.

Constructing an Observation Bee Hive

There are many different plans available for building observation hives. See Figure 1 and Figure 2.

It will be up to each individual to determine how much time, effort and money he/she wishes to spend in constructing an observation bee hive. At the University of Florida, the best design continues to be one pioneered at the University of California which contains either three or four vertical standard frames (Figure 2). The sides are plexiglass (regular window glass is not recommended for public displays) and held in place by plastic mirror clamps. The base is wide providing good stability and a runway for bees entering and exiting the colony and is constructed out of one inch by six inch lumber with three-quarter parallel wood molding strips, covered with plastic or glass.

It is best to hang each frame separately by its ears from notches sawn in the main wooden frame. This way each can be removed independently. A "bee space" of five-sixteenths of an inch must be conserved around the frames sides, top and bottom. The bees will glue the frames to the sides if the space is less or build comb in any gap exceeding the "bee space." The plans in Figure 2 provide a guide to the style of hive mentioned above. Measurements are critical; if at all unsure, the best advice is to use the measurements of a colony already in operation.

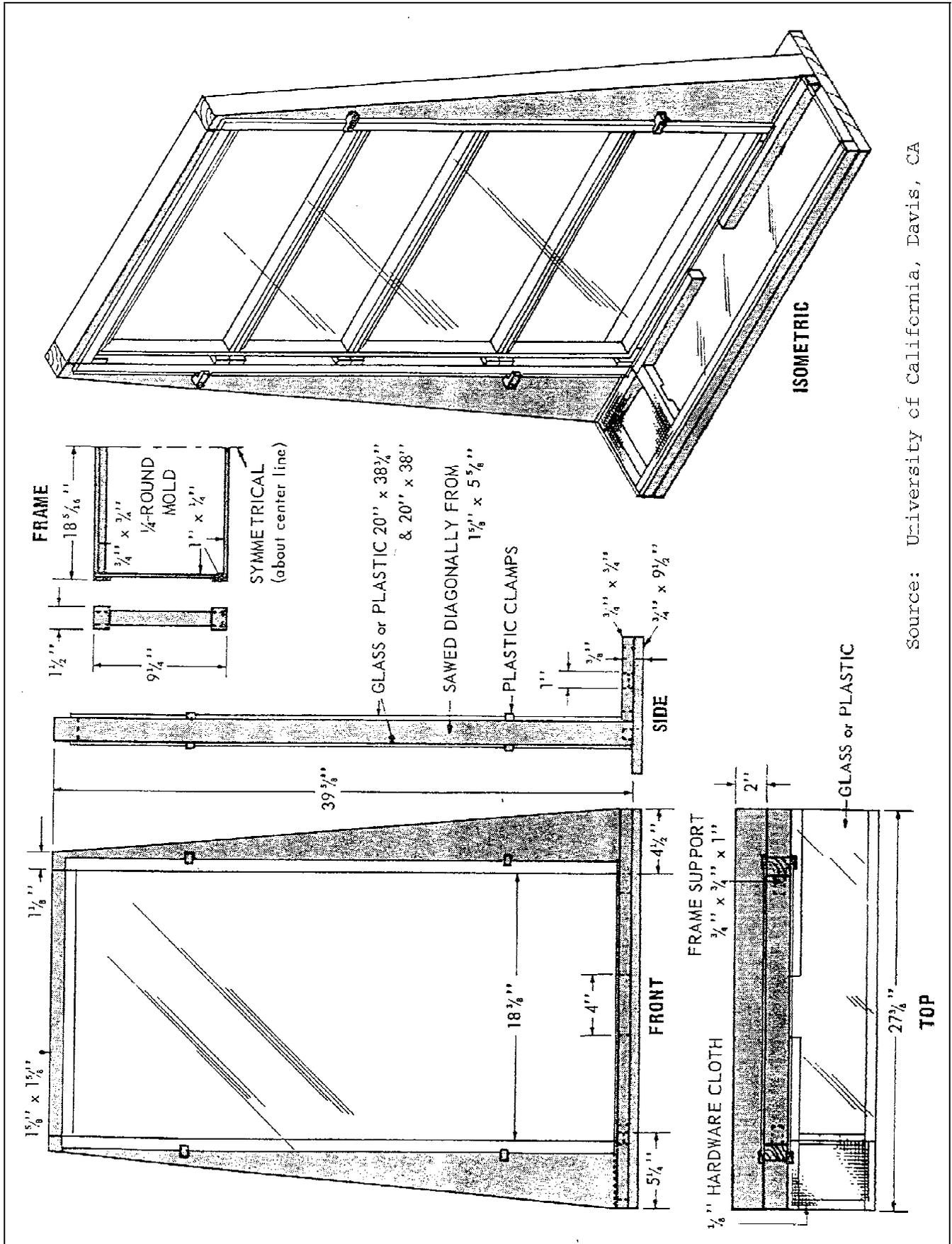
1. This document is Fact Sheet ENY-131, a series of the Entomology and Nematology Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Publication date: April 1994.
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Hive Maintenance

The following tips are provided for those who wish to maintain observation beehives as a permanent display:

1. For every observation hive, always maintain at least one full-size colony as a backup. It is also advisable to have an identical observation bee hive in reserve which can be easily switched with an original if problems develop.
2. Be sure the hive's entrance is located away from those who are viewing it.
3. Make the entrance tube as short as possible. Ensure the entrance to the outside is straight or goes down. Tubes that bees must ascend are the most problematical. Curves in entrance tubing are also potential problem areas because dead bees can accumulate at bends and may become infested with fly maggots. If the entrance tube is very long, bees will exit, but may not find their way back. To ensure that the bees learn how to exit and enter, it is best to train them slowly over time by gradually lengthening the entrance-exit tube.
4. Examine the observation hive at least once a week to monitor its population and food supply. Accumulated dead bees must be cleaned out periodically or the display will take on an unkempt look. Often bees in observation hives will be unable to do a complete cleaning job. Other concerns include too many bees to be able to adequately see the brood nest (as a result of spring buildup), or too few individuals to take care of the brood that is present (subsequent to swarming). Swarming by observation hives many times results in queenlessness. A good balance between colony volume and number of bees must always be maintained to ensure the best possible display.
5. Although a number of beekeepers may be assigned the responsibility for maintaining an observation hive over time, it is best to have only one individual who is in charge and has the final say.
6. It is recommended that the bees, frames and queen be replaced in an observation bee hive if there is any doubt about its condition. To conserve valuable time, as already mentioned, a backup observation hive ready to fill or already filled is the best strategy. Thus, when a problem arises with the colony on display, the replacement is ready to go. This will provide important continuity to any exhibit. The backup observation hive or colony from which replacement bees are taken must be at least two miles from the exhibit area or they will return to their old location.
7. Always mark the queen in observation bee hives so she can be easily located.
8. Be ready to feed the colony on a perpetual basis. The food supply, however, must be continually monitored to prevent storing so much food the queen's egg-laying room becomes restricted.
9. The observation bee hive should be as large as possible. Not only will this provide a more substantial display, but also a larger population base, better ensuring the colony's survival.
10. Design the hive entrance so it can be easily stopped off. Often slots are cut in the runway so that a vertical piece of tin can be inserted between the colony's entrance and that to the outdoors. This provides an easy way to either remove a hive for short-term portable display or switch it out when problems develop.
11. Do not enter into a long-term observation bee hive commitment without all the facts. As a minimum, consult others who have been involved in observation hive projects for their guidance.

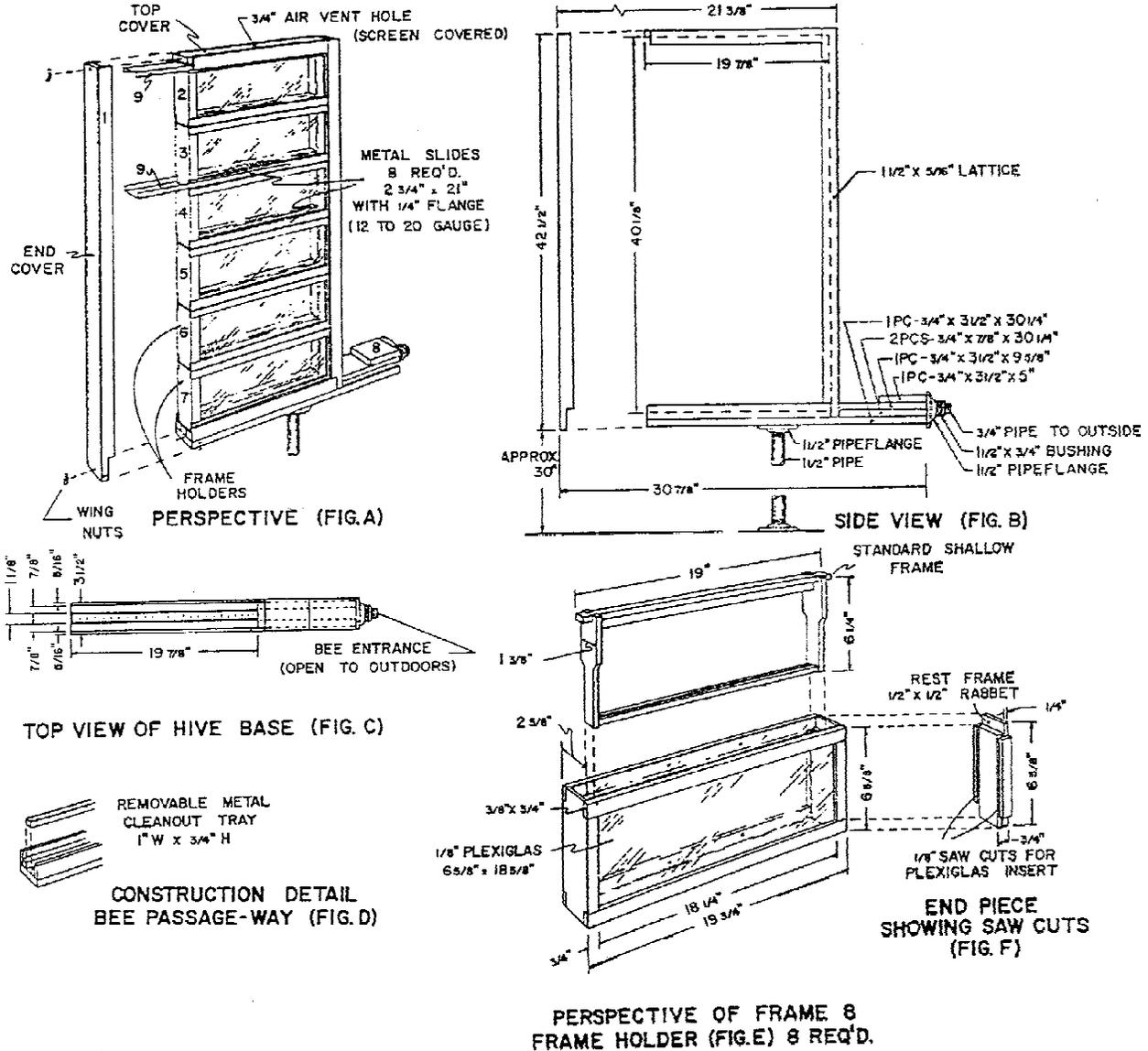


Source: University of California, Davis, CA

Figure 1. Typical plan for an observation bee hive.

Source: Agricultural Engineering Dept.
University of Wisconsin, Madison

The type of hive described in Figure 3 is unique in that conventional observation hives must on occasion be dismantled and the components readjusted. This hive's component parts (frames) can be manipulated indoors without loss of bees.



INSTALLATION (of Wisconsin Hive)

First, locate the observation hive exactly where you want it and check that the opening to the outside is not blocked.

Place the frame in a frame holder with honey in position (7-Figure A). Then place another frame in a frame holder with sealed brood in position 6, and the frame containing eggs in position 5. While these positions are not absolutely essential, the bees tend to move the honey from position 7 upward. This will open cells for the queen to lay eggs. You will want to keep the queen and the brood in the lower portions of the observation hive. Normally honey is stored in the top of the hive. Place either comb or foundation in positions 4, 3 and 2, and as the population increases, bees will either store honey or the queen will lay eggs in this area.

Figure 2. Hive which can be easily manipulated indoors without bee loss.