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*** START OF THE PROJECT GUTENBERG EBOOK SOFT CANDY FOR BEES ***

Apiary Inspection.

Bulletin No. 7A.

The Commonwealth of Massachusetts.

STATE BOARD OF AGRICULTURE.

SOFT CANDY FOR BEES.

BY DR. BURTON N. GATES.

FROM THE SIXTY-FIRST ANNUAL REPORT OF THE STATE BOARD OF AGRICULTURE.



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SOFT CANDY FOR BEES.

[3]

THE SO-CALLED "FULLER CANDY" FOR QUEEN CAGES, TRANSPORTATION OF COMBLESS COLONIES, STIMULATIVE AND GENERAL FEEDING.

The well-informed beekeeper has learned that it is unwise and hazardous to feed under any circumstances honey in any form, even though it be from his own apiary. There have been many sad and general infections with bee diseases by such unguarded feeding. Thus it has become almost an axiom, "Feed no honey." Consequently, substitutes have necessarily been adopted and among these are sugar syrups of various dilutions and compositions; "hard candy," which is virtually a taffy; and recently, the so-called "Fuller candy," which is a soft fondant, not dissimilar to the fondant of chocolate creams.

For several years Mr. Fuller of Blackstone, Mass., as well as others, has been experimenting with this modified English candy, which should not harden beyond usefulness. Beekeepers of Massachusetts and elsewhere about the country have found it advantageous to use this as a substitute for honey or syrup. So numerous are the inquiries and satisfactory the results, that it seems desirable to prepare information in printed form.

The soft candy has numerous advantages and possibilities. It is found to be a most satisfactory stimulative feed; a food for bees in transit, either full colonies on combs, in combless packages, or for queens in mailing cages. It is also found satisfactory and advantageous as winter stores. Colonies have been observed to leave natural stores for the candy. This has occurred in colonies out of doors or in the cellar during winter, as well as with colonies which are flying. Some of the advantages of the candy are the ease with which it is handled or supplied; the fact that it may be made up in quantities and stored until needed for use; its failure to excite robbing; the ability to provision colonies with known amounts or weights; and its freedom from bee disease infection. It is furthermore found to be economical, there being no waste by evaporation or spilling, as is the case with liquid feeds. It is proving exceedingly practical in all feeding purposes and methods. [4]

The candy may be made in any degree of hardness or softness, according to the preference of the individual or the needs of the season. As is inferred above, it may be made and stored for months and even years if properly handled. It may be molded in pulp, or wooden pie-plates, shallow tins or specially constructed feeders (see Figs. 1 and 2), "division-board feeders," overhead or super feeders, or boards may be nailed to the side of a frame and the candy poured and molded within the frame, allowing this to be hung in the hive adjacent to the cluster. With the candy may be mixed pollen substitutes, but these are as yet in the experimental stage, and their efficiency or satisfactoriness is uncertain.

The latest formula or recipe for the cream, or soft candy, fondant, which is practically a confectioner's recipe, is as follows:—

12 pounds granulated sugar.

1½ pounds liquid glucose.^[1]

1¼ quarts water (equals 40 ounces, which equals 5 cupfuls).

¼ teaspoonful (about) cream of tartar, added when the temperature reaches about 230° F. or 110° C.

Boil to 238° F. or 114.4° C.

[1] Granular or crystal glucose may be used, mixing it with the usual amount of water. It may be desirable to modify the amount of glucose.

The measurements should be accurate.

A wooden paddle whittled about a foot long, with a 2-inch blade, is found to be superior to a spoon in stirring or beating the candy.

A confectioner's thermometer is an advantage. Those experienced in making maple sugar may dispense with the thermometer, although more accurate results are obtained by using it.

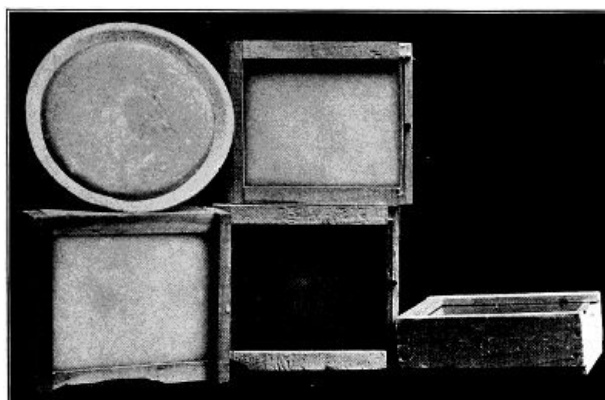


FIG. 1.—These are the usual and convenient types of candy box or feeder. The right-hand one is placed as it would appear on the top of the frames. Notice that one end is slightly elevated. To its left is a box of candy, which is darker, being made with "Coffee A" sugar; the glass side of this faces out, as also in the upper box. The box at the extreme left shows the surface of white candy, made with granulated sugar;

it also shows the projection which tilts the box. Upon it is a pie plate filled with the candy, which may be inverted upon the frames. (Author's illustration.)

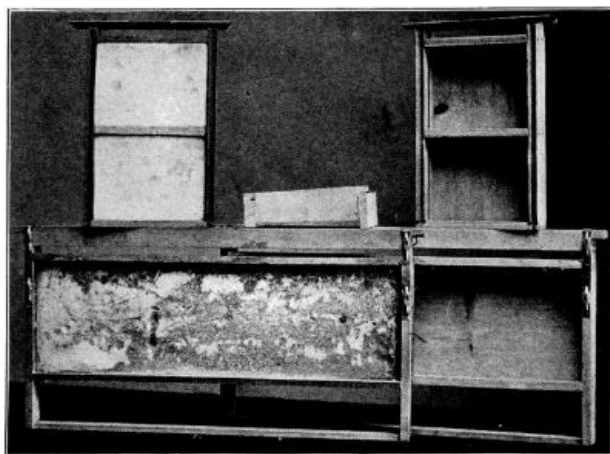


FIG. 2.—Molds in the form of division-board feeders (left-hand mold filled with candy; right hand, empty). The lower frames are the standard Langstroth dimensions; the upper are Benton nuclei frames. The central box shows the position of a feeder on top of the frames. (Author's illustration.)

As soon as the sugar has begun to dissolve, *prior to boiling*, the spoon or paddle used in stirring should be removed from the kettle. *The candy should not be stirred while cooking*; to do it will cause a coarse grain. Remove from the stove and cool to 125°-130° F. (or 51.6°-54.4° C.), when the specified boiling point has been reached. While cooling, in order to equalize the temperature, the mass may be stirred; or preferably, when cooled to the specified degree, it should be stirred until it commences to grain. Mr. Fuller's directions are to stir vigorously until the mass appears in color and consistency like boiled starch or paste. At once pour into molds or feeders and cool. [5]

Fine-grain Fondant for Queen Cages.—Another way to cool the candy is to prepare a marble slab 2 or 3 feet square with bars of square iron, making a form. The candy may be poured upon the marble, and with broad putty knives, similar to those used by paper hangers, the mass may be beaten or worked upon the marble. Experience teaches that this, which is virtually a confectioner's method, produces a finer grain and usually a whiter fondant than when stirred in the kettle. This is the process in preparing candy for use in queen mailing cages, or the transportation of bees. By it, a firmer consistency is usually obtained.

As a warning or explanation it may be said that the higher the temperature at which the candy is boiled the harder it will become; consequently, by varying the boiling point at which the candy is removed from the stove, the hardness or softness of the product may be governed. Furthermore, as is the experience of confection makers, candy should be boiled to one or two degrees higher on cloudy or humid days than on a clear, dry day. By means of a thermometer and a little experience, these features are readily learned.

Storing the Candy.—The fondant is best stored in earthen crocks, either as a mass or in the feeders. These preserve the normal moisture. Over the mass should be placed a sheet of paraffin paper upon which is a moist cloth or towel. The crock should be covered. Queen-cage candy should always be kept in this way in order to preserve its consistency. Similarly, candy molded in feeders may be stored in large crocks or tins. [6]

Remaking the Candy.—If at any time the candy hardens from any cause, either in making, storage or in use, it may be softened by the application of a few drops of water. Furthermore, it may be removed from the molds and recooked to the desired consistency. To recook, add a small amount of water and boil as before.

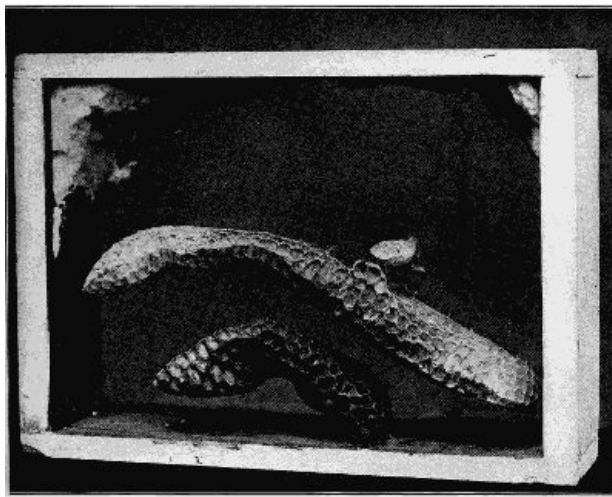


FIG. 3.—When the bees of a strong colony eat up the candy almost entirely, they not infrequently build combs, and have been known even to rear brood, in the box. This shows (upper part of the picture, in corners) the remaining candy upon which the bees were still at work, also having attached combs to the glass. Some beekeepers have removed such a box of combs and brood, starting there from a new colony. In order to get the correct relation of the picture, hold it directly above your head. The combs will then appear pendulous from the glass, and in their correct position, as if lifted off from the tops of the frames.

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