A Homemade Starter Incubator and Directions for Carrying Starter

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Fig. 1—Outside view of the homemade starter incubator.

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In order to carry a good starter of uniform flavor and acidity it is essential to hold the box, in which the culture is carried, at a uniform temperature. Starter incubators that depend entirely upon the insulation to keep the culture within at the correct temperature, have been constructed. The writer has not found such devices satisfactory for carrying a starter. A good starter cannot be carried unless a uniform temperature is carried within the incubator. Where electric current is available it is a relatively easy matter to keep the incubator at an even temperature by the use of a thermostat. The thermostat shown in Figure 4 has proved to be satisfactory for holding the temperature required to carry a good starter, namely, 72 degrees Fahrenheit.

The homemade incubator shown in the cut has proved satisfactory for carrying a starter where electric current is available. The box is made of two thicknesses of one-inch pine, with insulating material between. The door is insulated the same as the sides, and felt pads are placed around the jam to prevent transfer of heat or cold. The box may be built

Fig. 2 (Left)—A pint bottle of starter properly coagulated. Note the smoothness and the fat layer, which forms a seal over the top, limiting the air supply during the growth period; (right) a pint bottle of starter improperly coagulated. Note the roughness and the whey on the top of the starter. A starter of this kind should never be used.
by a local carpenter from materials that may be purchased locally. The thermostat is of a special type and should be purchased only from firms handling this type. (Names of dealers will be furnished on request.) One of the following insulating materials will be satisfactory for insulating: sheet cork, granulated cork, dry sawdust, dry shavings, or any other good insulating material that is available. Figuring from the average of incubators that have been built, the cost complete will range from $15.00 to $20.00, depending upon local prices for material and labor, and upon the amount of available material already on hand.

Precautions in Using the Incubator

1. The incubator always should be operated in a room where the temperature is lower than the temperature desired inside the incubator. This means that it should be operated in an unheated room in winter and in the refrigerator in summer.

2. Don't use too large an electric light bulb. A small bulb that gives just sufficient heat has proved to be the most satisfactory. (A ten-Watt bulb has proved satisfactory.)

3. Keep the door closed whether there is a culture in the box or not.

4. Keep the box in a dry place.

5. Adjust the temperature by the thumb screws on the thermostat.

6. Keep a thermometer inside to check the temperature.

Fig. 3—A homemade sterilizer placed over a steam jet and used to pasteurize the bottles of milk and to sterilize the tube used in transferring the starter. A tin cup should be inverted over the steam jet inside to keep the steam from striking the bottles directly. The steam should enter the sterilizer slowly.
Directions for Making and Carrying Starter

1. Select two pints of fresh, clean, flavored milk.
2. Pasteurize to a high temperature, (170 degrees to 180 degrees Fahrenheit) for from 40 minutes to one hour. This can be accomplished best by placing the bottles into a covered box and placing over a steam jet, letting the steam flow in slowly. (See Figure 3.)
3. Cool by letting the bottles stand at room temperature or in a water bath under a slow stream of water.
4. When cooled to approximately the right temperature, (72 degrees Fahrenheit) place in the incubator for a while before inoculating.
5. Inoculate with a commercial starter culture according to directions furnished by the commercial culture firm. The commercial cultures usually are made up in amounts sufficient to inoculate one quart of milk. Commercial cultures may be obtained from reliable firms who advertise in the dairy magazines.
6. Let the cultured milk stand in the incubator until coagulated. This will require from 15 to 20 hours.
7. As soon as coagulated, cool to a low temperature, but do not let the culture freeze. This may be best accomplished by placing it into a water bath into which cold water is flowing, or by packing in ice.
8. This first culture is known as the “mother” culture and it should be transferred every day in the manner previously described, using two to five drops for each pint of sterile milk.

Directions for Making a Large Batch of Starter to be Used in Ripening Cream

1. Select fresh, clean flavored skim or whole milk.
2. Pasteurize at 160 to 170 degrees Fahrenheit and hold for 30 to 50 minutes.
3. Cool to 72 degrees Fahrenheit.
4. Inoculate, with fresh mother culture. Use enough so that it will take 12 to 18 hours to coagulate. This will require about two or three tablespoonfuls of starter per gallon of milk.
5. Use the starter as soon as it is coagulated. If it is not used immediately cool it down with water, then place it in ice water or in the refrigerator; but do not let it get too old before using. The sooner it is used the better.

Practical Hints in Making Starter

1. Make the starter from good milk. It is not possible to make good starter from poor milk.
2. Keep the temperature constant in incubating a starter; 72 degrees Fahrenheit is the temperature recommended. This rule holds good for both mother culture and larger batches.
3. If coagulation is desired in a shorter time, inoculate heavier. Never try to shorten the time of coagulation by changing the temperature.
4. Transfer the mother culture by using a sterile glass tube. (Use like a pipette.) Sterilize the tube by wrapping it in paper and placing it in the box over the steam jet with the bottles of milk being pasteurized. (See Fig. 2.)
5. Be extremely careful in regard to sanitation, to avoid contamination from outside sources, i.e.:

a. Never touch the end of the sterile glass transfer tube, which is submerged into the culture, with the hands.

b. Never let a bottle of mother culture stand exposed to the air.

c. Avoid water spattering over the top of the mother culture when cooling it.

6. Never use an old mother culture. Starter must be made fresh every day and mother culture must be carried over. Good results cannot be obtained by transferring from the larger batches.

7. Keep milk to be inoculated, or starter cultures, away from the direct sunlight.

8. Fill the bottles full and use whole milk for carrying the cultures. The fat layer on top helps to exclude the air, absence of air being the best condition for the growth of a starter. Skim milk may be used successfully for large batches of starter, but whole milk is more satisfactory for the carrying of the mother cultures.

9. If a starter is not good, do not use it. Start a new one from a commercial culture.

10. It requires several transfers from the commercial culture before the starter is good. Do not plan on using a culture after the first coagulation from the mother culture.
Fig. 5 (left)—The glass inoculating tube, wrapped ready to be placed into the sterilizer with the pint bottles of milk. Keep the tube wrapped after sterilization and until used. In using, open one end of the package, draw out the tube, but do not touch the opposite end with the hands; (right) a close view of the thermostat. The temperature of the incubator is controlled by adjusting the thumb screws.

11. Liquid commercial cultures require less transfers before becoming fit for use than do powdered commercial cultures.

12. Starter cultures should not be shaken before transferring.

13. Transfer from the culture below the fat layer. (This may be accomplished by the use of the sterile pipette.)

14. It will be found advantageous to carry two pint bottles of mother culture; so that if one bottle becomes broken or unfit for use, the other bottle, perchance, may be fit to use and can be carried on.

15. Keep all utensils used in making starter absolutely clean and sterile.