Johnson, W. W. University of New Mexico, Albuquerque, New Mexico. An improved Drosophila population cage.

The weakest feature of Drosophila population cages has been the means by which food bottles are added to the cages. What is desired is a sturdy cage that not only remains fly-tight when it is handled or moved, but also provides for convenient replacement of food containers. A cage with these properties can be built by permanently mounting screw-type bottle caps in the floor of the cage to receive the food bottles. One advantage of this arrangement over others is that no matter how many times bottles are added and removed, a tight seal between the bottles and the cage is assured. Although the body of the cage can be fashioned from any polystyrene storage box that has a close fitting lid, a box measuring approximately 9-1/2" x 12-1/2" x 4" should be satisfactory for most purposes. A cage of this size will accommodate 15 food bottle sites arranged in three rows of five and will support a population of from 300 to 400 flies. Most adaptable for use as food containers are 1/2 ounce bottles with molded bakelite caps.* The actual construction of the cage is very simple.

For a number of reasons it is more convenient to have the lid of the polystyrene box serve as the floor of the cage. Therefore, the 1-1/4" diameter holes into which the bottle caps are fitted are drilled in the box lid. These holes can be made with an electric drill and a hole saw. Before the caps are inserted, a 1/4" diameter hole is drilled in each to furnish communication between the food bottles and the main chamber of the cage. Then, with the mouths directed outward, the caps are pressed part way through the holes in the lid and epoxy glue or acetone based cement applied to the joints between the caps and the plastic on both sides of the lid. Legs to lift the weight of the population cage from the food bottles can be affixed to the bottom of the cage by drilling a 1/16" diameter hole in each corner of the lid and fastening a 3" length of wooden dowel tightly up against the plastic with a screw. Felt washers should be used to cushion the screws and the legs to prevent the plastic from cracking.

In one end of the cage a 1" diameter sampling hole and a 1-1/2" diameter hole for ventilation are drilled with a hole saw. A sample of the population in the cage can be made by pulling the cork stopper from the sampling hole and inserting a test tube with slanted food medium either to obtain a sample of the population's egg production or for the direct removal of adult flies. Fine mesh organdy glued over the ventilation hole allows adequate air circulation but makes it impossible for flies to escape.

When flies are to be placed in the cage, the seam between the two parts of the box is sealed with masking tape to insure that the floor and the top of the cage remain securely together.

*Bottle #2854 and black molded cap #28400 are obtainable from Twin City Bottle Company, 1227 East Hennepin Avenue, Minneapolis, Minnesota 55414.

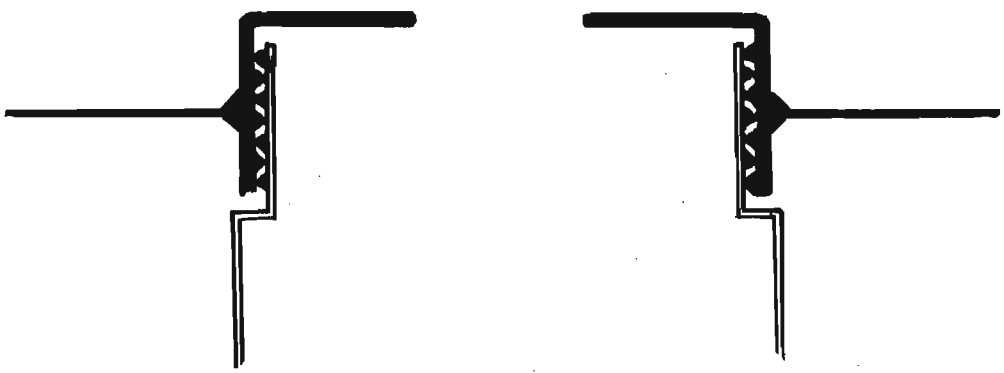

Diagram showing the assembly of a cap and the cage floor.