Construction of an Inexpensive Lighted Sorting Chamber

Studies conducted by the Great Lakes Research Division have necessitated the examination of large samples from plankton net tows and benthic grab samples for fish eggs, fish larvae, and invertebrates. The sorting chamber described here (fig. 1) has proved to be an efficient and effective device for rapid examination of samples. It has greatly facilitated the sorting of fish eggs, fish larvae, and invertebrates from algae, phytoplankton, zooplankton, and suspended detritus-sediment unavoidably included in the sample during the collecting process.

The sorting chamber may be one of three diameters (16, 12, or 8 inches) depending upon the field of view desired. The following list includes materials required for construction, the total cost of which is less than $15.

1. A rapid start 32- or 40-watt circular cool-white fluorescent lamp—available in 16, 12, or 8 inch diameter sizes at electrical supply companies or lamp departments of various stores.
2. A circular fluorescent lamp fixture of corresponding size with ballast and mount (120 v, 60 cycle, line current 0.65 amp for one 32- or 40-watt rapid start fluorescent lamp)—available at most electrical supply companies.
3. Several feet of electrical cord with a plug at one end.
4. One single-pole, double-throw switch (optional, because the lamp may be unplugged rather than switched off if desired).
5. A glass observation dish with a flat bottom and vertical sides. The diameter of this dish will vary according to the inside diameter of the three available lamp sizes. The 16-inch lamp has an inside diameter of 14½ inches, the 12-inch lamp an inside diameter of 9½ inches, and the 8-inch lamp an inside diameter of 6 inches. Dishes of these sizes are available at chemical/biological supply stores under such names as moist chambers, culture dishes, observation bowls, and crystallizing dishes.
6. A piece of cardboard, hardboard, plywood or similar material with a diameter of 17, 13, or 9 inches, depending upon lamp size.
7. One-half pint of flat/black enamel paint.

Figure 1.—Assembled sorting chamber.

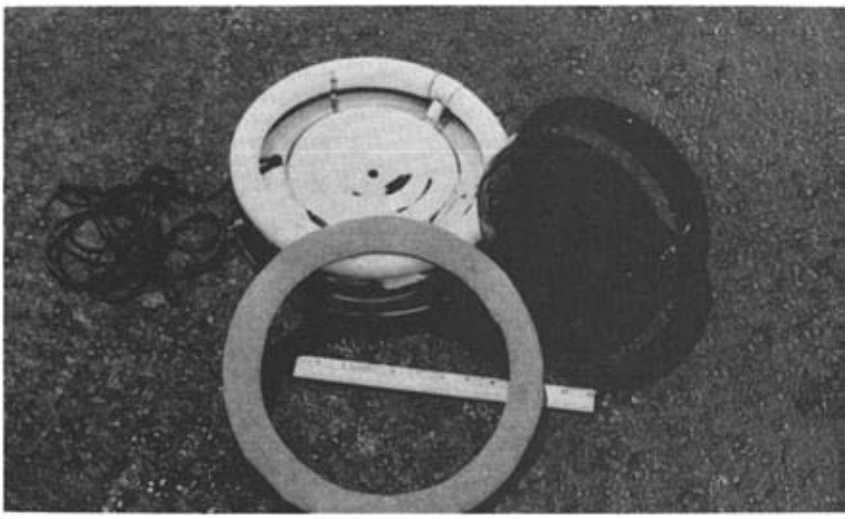

Figure 2.—Component parts of sorting chamber.

The electrical cord with plug is attached to the lamp fixture, and the optional switch is mounted on the lamp fixture as shown in figure 2. This wiring process is simple and requires only a drill, wire cutters, and pliers. The fluorescent lamp is then mounted in the fixture.

The entire outer surface of the observation dish is painted black (two coats) with the exception of a 1-inch ring around the base of the sides of the dish. Masking tape may be used to make this ring, and peeled off when the paint is dry. If desired a coat of shellac, polyurethane, or other clear coating may be applied over the black paint to retard chipping or scratching of the opaque surface.

The observation dish is placed inside the fluorescent lamp which, when turned on, provides an evenly lit field of view with a smooth, nonreflecting black background. To prevent the lamp from shining into the observer's eyes, a 2-inch-wide circular ring of cardboard, hardboard, or similar material is cut out, placed around the observation dish, and rested upon the fluorescent lamp.

An excellent, even illumination of the entire viewing field is obtained with very little reflection or glare. The even illumination and solid black background cause small objects such as fish eggs, fish larvae, and invertebrates to become well defined and therefore easily separated from other materials in the sample. The sorting chamber may be constructed to any of the three available lamp sizes depending upon the size of the field of view desired, which will vary with the volume, content, and density of the samples being examined. In our laboratory, this lighted sorting chamber has, on occasion, been used with an adjustably mounted magnifying lens (5-inch diameter, 3 diopter) suspended over it to provide field of view.

—JOHN A. DORR III, *Great Lakes Research Division, University of Michigan, Ann Arbor, Michigan 48104.*

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