OPERATIONAL AND SCIENTIFIC NOTES

AN EFFICIENT AQUATIC SAMPLE CONCENTRATOR [1]

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In quantitative sampling of aquatic organisms it is necessary to have an effective means of water removal without loss of specimens in a minimum amount of time. During the course of investigations on the population dynamics of pond organisms the author [4] reviewed sampling techniques available to date. The standard 1-pt dipper technique was utilized for collecting of samples from biased sampling sites. Knight (1964) presented a detailed discussion of the use of the mosquito dipper. Initially 125 mesh screened cup strainers (Mulla *et al.* 1969) were employed in the 1971 study but their use was considered to be excessively time-consuming. A hinged funnel concentrator was developed by Husbands (1969), but specimens could be lost from this device when algal cells clogged the screened containers. In a similar aquatic study Hagstrum (1971) utilized muslin cloth placed over the top of a 2-lb coffee can. Removal of mayfly nymphs and other small delicate organisms is difficult and time-consuming with this method. The direct use of plankton nets (Hurlbert *et al.* 1972) was not practical because mosquito larvae would escape due to the bow wave set in motion. To overcome these complications the author developed a funnel and gas valve based aquatic concentrator (Fig. 1).

CONSTRUCTION. The design of this device was based on having an unobstructed smooth wall leading to the sample vial without using pastes, glues, or fillers. Also simplicity and replicability were achieved. The construction of this concentrator is greatly facilitated by selecting parts for tight fits. Because various brands have changed designs from time to time, trade names have been omitted. Several different brands have proven equally effective. The design and materials used in the gas valve are important. The valve in the closed position should be watertight and when opened present no obstructions. It must be adjusted so that a flick of the wrist will turn it from closed to fully open. And it must be of noncorrosive metals and easily dismantled should it stick. On the valve utilized in this concentrator, the handle and conical cylinder containing the hole can be instantly removed by unscrewing the single screw on the spring tension cap opposite the handle. The valve seldom stuck even though it was used continuously in silty, mineral waters for several years.

Detailed assembly of the valve and sample vial cap is shown in Figure 2. The diameters are given in inches with those in parenthesis being inside diameters and the remaining being outside diameters. The bottom of the funnel is cut off in such a way that when the plastic coupling is pushed into it the coupling top will coincide with funnel neck constriction. Usually a 1 in. length is retained. Four brass pins are used to secure this fit. They are cut so that they will pass through the funnel ribs up to their heads and

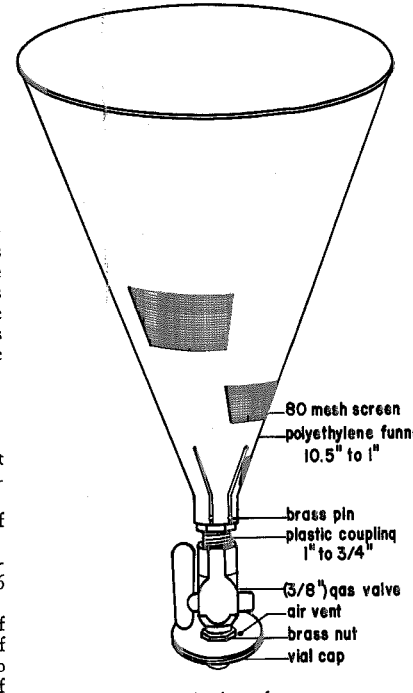

FIG. 1.—Overall view of concentrator.

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[4] D. M. Fanara. 1971. Population dynamics of pond organisms in the Lower Sonoran Desert of California under biological and chemical mosquito suppression regimens. Ph.D. Thesis, University of California at Riverside. 105 p.

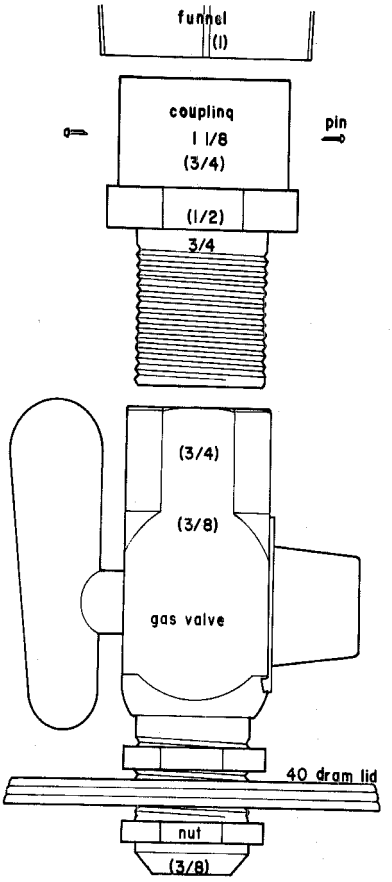

FIG. 2.—Details of valve and coupling assembly.

lodge in the coupling, but not penetrate its interior. Before insertion the pins are heated red hot. The gas valve is screwed on while the coupling is held firmly by a wrench. The valve should screw in until it seats firmly at the constriction point for the change from ¾ in. to ⅜ in. Some trimming of the threaded coupling tip may be necessary for a tight fit. At the bottom of the valve the plastic lid of a 40 dram vial is held by two nuts after being punched through by a cork borer.

OPERATION. The funnel portion is easily handheld by the rim and the dipped aquatic sample can be completely dumped into the large 10.5 in. opening. The 80 mesh screens are staggered so that centrifugal motion, when applied to the concentrator, will cause the water to be expelled under force. This does not damage the organisms and they are rapidly swirled as a bulk to the bottom of the funnel. Rapid release by the gas valve dumps the material into the 40 dram vial. A brief, forceful spray of 95 percent ethyl alcohol from a plastic wash bottle results in complete cleaning of the concentrator and yields a sample of 30 ml at about 40 percent EtOH concentration. This quickly narcotizes the specimens while color and form can be retained if the capped vial is placed in an ice chest. The sample should be analyzed within 72 hours or more preservative must be added.

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LARVAL REARING TECHNIQUE FOR *CULISETA INORNATA* (Will.) [1]

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J. McClintock (1952) stated that the greatest obstacle to the continuous rearing of *Culiseta inornata* in the laboratory was the lack of a suitable technique for the rearing of larvae. Fier, Lengy and Owen (1961) used a technique, modified from that of McClintock, incorporating commercial dog biscuit for whole wheat bread in the diet of the larvae. The main disadvantage of this

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