OPERATIONAL AND SCIENTIFIC NOTES

A TIMESAVING DEVICE FOR THE REARING OF MOSQUITOES IN THE LABORATORY[1]

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The routine maintenance of mosquito colonies in the laboratory can be a time consuming effort. Especially tedious is the task of separating pupae from larvae using the bulb-pipet method. Over the years other techniques have been described which replace this with more rapid separation methods (McKiel 1957, Fay and Morlan 1959, McCray 1961, Bar-Zeev and Galun 1961, Weathersby 1963, Hazard 1967, Gerberg 1970, and Gerberg 1977). However, in 1968, a device was described that eliminated altogether the need of separating pupae from larvae (Lowrie and Gubler 1968). Although this device worked well, it was crudely designed and rather difficult to assemble which might discourage its use. Now this device has been modified extensively making it easy and inexpensive to construct. However, the basic principles underlying its use and operation have remained unchanged, and the reader should refer to the original paper for this information. The model described in this report has been in use in our laboratory since 1972.

The larvae and pupae are condensed into a white enameled pan measuring approximately 42 × 25 × 10 cm, hereafter referred to as the emergence pan. The lid covering the emergence pan is constructed of ¼" plexiglas. Affixed to the bottom of this lid on all edges are strips of ¼" plexiglas which extend downward approximately 2.5 cm; permanent bond is made with methylene chloride. The *inside* dimensions of the assembled lid measure slightly more than the emergence pan it covers (approximately 42.3 × 25.3 × 2.5 cm). The plexiglas strips are essential because they prevent the top from warping and keep the device firmly in place on the emergence pan. Next, a 2.5 cm diameter hole is cut in the center of the lid. The outer surface of the lid then is coated with several applications of black enamel paint leaving only a small area (10 × 13 cm) unpainted in the center of one half. To complete the lid assembly, the *top* portion of a 60 mm diameter plastic petri dish, also with a 2.5 cm diameter hole in the center, is placed over the hole in the plexiglas lid. The two units are fastened together using small brass bolts, nuts, and washers. A piece of ¼" foam rubber weather stripping is fastened to the lid surrounding the outer circumference of the petri dish. In addition, ½" foam rubber weather stripping is attached around the inside perimeter of the lid. This rubber cushion helps seal spaces that otherwise might occur when the lid rests on the emergence pan. Hereafter, this lid device is referred to as the emergence lid (Fig. 1).

Next, a 6.2 cm hole is cut in the floor of a 1-cubic foot Gerberg cage. The center of the hole is about 15.5 cm from each cage side and 8 cm (outside dimensions) from the wall opposite the sleeve opening. The *bottom* portion of a 100 mm diameter plastic petri dish, with a 6.2 cm hole in it, is placed over the hole in the floor inside the cage. These two units also are fastened together with small brass bolts, nuts, and washers with the bolts inserted from the underside (Fig. 2).

When all of the component parts are in place (Fig. 3), the positive phototaxis and negative geotaxis of mosquitoes causes them to fly upward through the hole in the emergence lid. However, unlike the earlier device, this modified model permits the mosquitoes to fly directly into the holding cage rather than into a glass globe. Thus the process of transferring specimens from the globe to cages is eliminated.

To observe the progress of emergence under the lid, simply place the *bottom* portion of a 60 mm diameter plastic petri dish inside the 60 mm dish top which is fastened to the emergence lid. Then the 100 mm petri dish bottom attached to the cage floor is covered with its corresponding top portion. Thus, all of the holes are covered by interfitting petri dishes, and the cage can be lifted from the emergence lid. The unpainted window in the emergence lid, which is covered by the cage when it is in place, allows one to see under the lid.

When emergence is complete, the few

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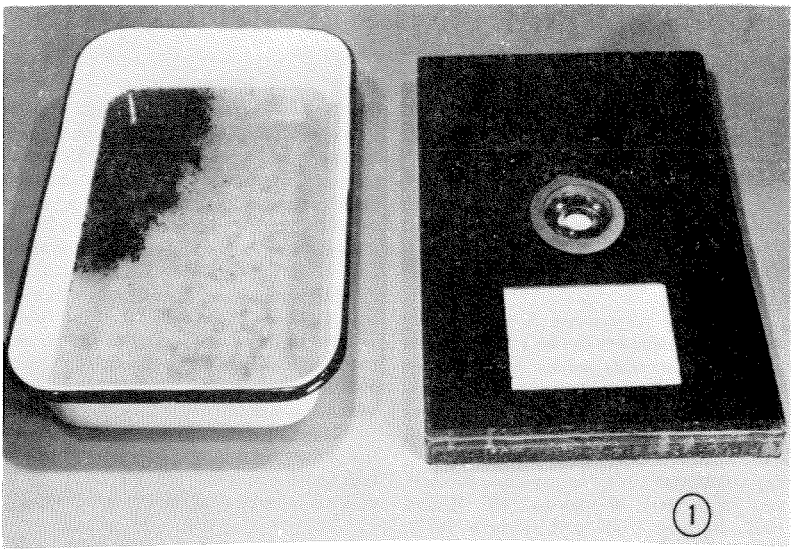

Fig. 1. The emergence pan (left) with larvae and pupae, and the assembled emergence lid (right) that fits over the pan.

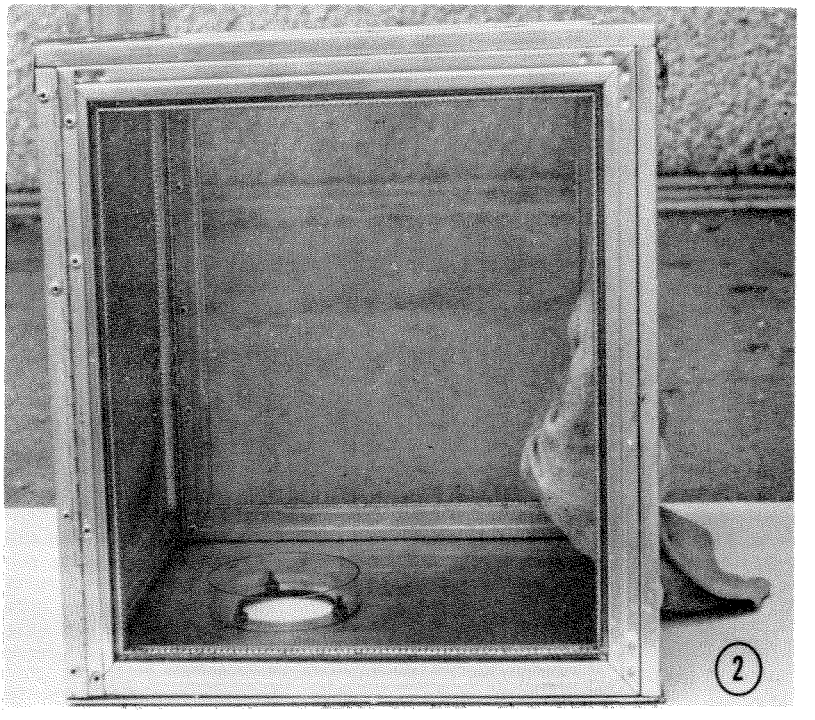

Fig. 2. The mosquito holding cage with the floor modified to fit over the emergence lid petri dish.

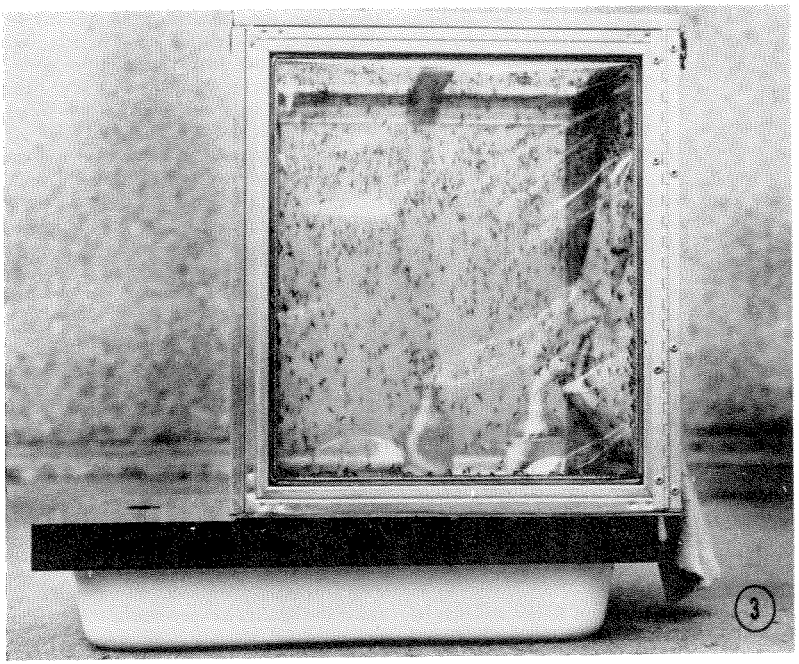

Fig. 3. All three components (a) emergence pan, (b) emergence lid, and (c) holding cage in place.

specimens that remain under the emergence lid can be killed in the following manner. Instead of a plain 60 mm plastic petri dish bottom, use one that is plugged with cotton. Saturate the cotton with chloroform and follow the same sequence of steps just described for removing the cage from its emergence lid. Fasten the 100 mm petri dish top to its base and the cage floor using masking tape.

The proper sequence of interfitting petri dish components must be followed exactly, but it is a logical pattern which will become apparent as the components are constructed. Lastly, it is recognized that in certain kinds of research there is a need to separate pupae. However, for the routine harvesting of mosquito specimens, this device has enabled us to collect thousands of adult specimens each week with only a few minutes of insectary work required.

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