

A DEVICE TO AID SURVIVAL OF *Aedes aegypti*
(L.) ADULTS IN EMERGING FROM THE
PUPAL STAGE

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The failure of some adult *Aedes aegypti* (L.) to complete emergence has been noted while rearing this species of mosquito in the laboratory. Snodgrass (1959) indicated that this condition might be caused by improperly nourished larvae. The authors have observed that some mortality

and eliminate the use of cork, it became apparent that an ideal device should have three distinct features: (1) float on the water surface and increase the stability of the water-air interface, (2) separate pupae at the water surface, and (3) provide sufficient dry surface for emerging adults.

A material which has these features is dacron cloth, warped knit, 49 squares per square inch, openings 4.76 mm. square (available from Nature Laces and Textiles, Inc., New York 16, N. Y.). Material was cut to form a disc 15.9 centimeters in diameter, then sprayed with acrylic resin lacquer (available from Illinois Bronze Powder Co., Chicago, Illinois) to provide rigidity

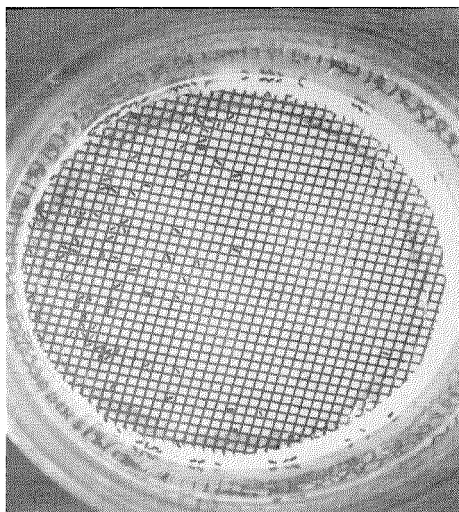
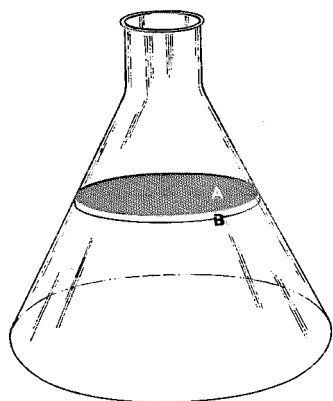


FIG. 1.—Flask containing emergence disc and enlarged view of disc surface. A—Dacron cloth, 49 squares per square inch. B—Sealed plastic tube. C—View of disc from above showing distribution of pupae.

of emerging adults was caused by physical disturbance of the water-air interface. Pieces of cork placed in rearing vessels as suggested by Trembley (1955) and Christophers (1960) have been routinely used by many investigators to aid adults in emerging. The use of cork presents certain inherent difficulties, e.g., manipulation and cutting cork into pieces is cumbersome and time-consuming.

In order to reduce mortality of emerging adults

and water-proof the material. Plastic tubing, 15.9 mm. inside diameter, .08 mm. wall thickness (available from Alpha Wire Corp., New York 14, N. Y.) was cut into 49.8 centimeter lengths. The ends of the tubing were sealed together with 3M cement, EC 847 (available from Minnesota Mining and Manufacturing Co., St. Paul, Minnesota) and glued to the underneath side of the discs to increase the buoyancy (Fig. 1). These discs will be referred to as emergence discs.

Ten 2.8 liter Fernbach culture flasks were each filled with 1500 ml. of distilled water. A disc was placed in each of five flasks, and 18 pieces of cork, having an average diameter of 20.6

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mm., in each of the remaining flasks. Eighty-four to 125 pupae were placed in each flask and the number of adult mosquitoes that emerged was recorded.

Significantly more adult mosquitoes (94.8%) survived in flasks containing emergence discs than in those containing pieces of cork (59.6%). Additional tests using 40-60 and 150-200 larvae per flask had adult survival averages of 92.6 percent and 91.2 percent respectively.

Emergence discs have small areas that resist the movement of surface water, thus increasing the stability of the water-air interface. They also increase the amount of dry surface area for resting adults. Discs allow pupae to be more evenly distributed over the surface, therefore permitting a larger number of pupae per flask.

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Aedes aurifer (COQUILLET) and *Wyeomyia smithii* (COQUILLET) IN PENNSYLVANIA. (NEW STATE RECORD)

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Brown (1948) listed 37 species of mosquitoes as occurring in Pennsylvania and Carpenter (1947) added 3 more to the list bringing the total to 40. Although Rutschky, Mooney and Vanderberg (1958) noted *Wyeomyia smithii* on their list of Pennsylvania mosquitoes, there was never any reference to location or distribution within the State. The authors have not found any in the collections at State College. The addition of

Aedes aurifer and *Wyeomyia smithii* brings the present total of mosquito species in Pennsylvania to 42.

April 17, 1963 six 3rd instar larvae of *Aedes aurifer* were collected from a small woodland pool one and one-half miles northeast of Sharon, Pennsylvania, at Western Reserve. April 26, three more 4th instar larvae, of this species, were collected from the same area and June 18, one female was taken in a midmorning biting collection. The larvae were associated with larvae of *Aedes abserratus*, *Aedes stimulans* and *Aedes canadensis*. A light trap operated in this vicinity from May 28 through July 28, failed to capture any adults of *Aedes aurifer*.

On May 20, 1963 the junior author located a privately-owned sphagnum bog on Route 318 about two miles southwest of the Borough of Mercer. This area is probably one of the largest quaking bogs in the State; pitcher plants (*Sarracenia purpurea*) are very abundant in it. On May 23, fifteen 2nd and 3rd instar larvae of *Wyeomyia smithii* were collected from the leaves of these pitcher plants and taken to Sharon where six were reared to adults, five were preserved at 4th instar, and four were lost. Of the six reared to adults, all were females.

Mr. Richard Sivel of the Bucks County Mosquito Control Commission has also collected larvae of *Wyeomyia smithii* from a small pitcher plant area at Bowmans Hill Wild Flower Refuge in Bucks County. However, as late as June 20, 1963 it was not possible to collect specimens from this area due to lack of rainfall.

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