

local climatic conditions, reflecting simultaneously any changes in the susceptibility of the mosquitoes to the insecticide used.

The proposed method has several advantages:

1. The necessary equipment which is simple and cheap, is easily available and can be handled, used and transported anywhere without difficulty.
2. As the mosquitoes can be collected

and immediately tested on the spot, all damage to them through transportation, climate or other negative influences is avoided, and the results of the tests are obtained within 1-2 hours only.

3. This method provides a means of measuring roughly but quickly the effectiveness of the spraying operations in the field under local conditions everywhere, even in the tropical regions of Africa.

METHOD FOR OBTAINING LARGE NUMBERS OF UNMATED *Aedes Aegypti* (L.)

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Males of *Aedes aegypti* (L.) are attracted to the females by the flight sound of the latter (Roth, 1948). Therefore both sexes must fly before mating occurs. Unmated individuals of both sexes often are needed for experimental purposes. The following is a method for obtaining such individuals readily and in large quantities. The principle is to rear them at a temperature sufficiently high to permit the adults to emerge from the pupae and to arrange that the adults are then immediately held at a temperature low enough to inhibit flying and thus prevent mating.

After several preliminary tests, the apparatus shown in Figure 1 was devised. The cage, A, is similar to that described by Nicholls (1963: Figs. 16 and 17) except that the dimensions are 10 inches by 10 inches by 16 inches high, one of the screen sides was replaced by masonite bearing a cotton sleeve and a hole 6 inches by 6 inches was cut in the bottom. The ledge left in the bottom rests on the top edge of the stainless steel rearing container, B, which is 6¾ inches by 6¾ inches by 10 inches high. Two holes in the side of B, 3 inches from the top, permit the insertion in a slanting manner of a thermostat, C

(American Instrument Co., #4-235) and a dial type thermometer, D (Cole-Parmer

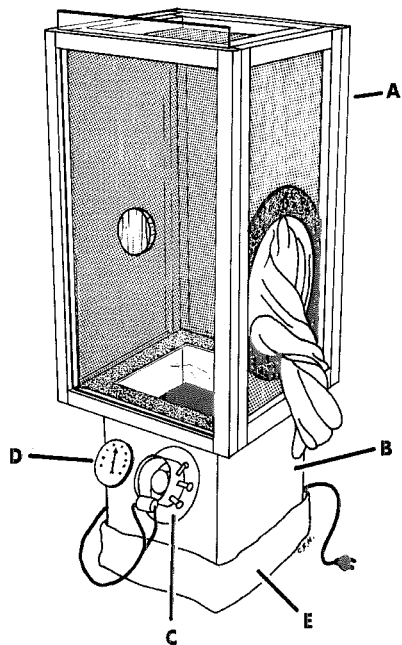


FIG. 1.—Temperature-controlled rearing container and cage.

Instrument and Equipment Co., #8105). The thermostat is operated in the 'break' mode and controls, via a relay, the current to a flexible heating tape, E (Cole-Parmer, #3105-4) which is wrapped around the lower portion of the rearing container and overlaid with asbestos tape. The inside of the upper 4 inches of the rearing chamber is covered with adhesive medical tape to provide a better footing than the stainless steel for the emerging adult mosquitoes.

Last instar larvae and pupae of *A. aegypti* are placed in the rearing container which is filled with distilled water to just below the holes for the thermostat and thermometer. The thermostat is adjusted to maintain a temperature of 25° C. A small fluorescent light (two 6-inch, 4-watt tubes) is set on top of the cage. The whole apparatus is placed in a cold room at a controlled temperature of 12° C. Under these conditions the adults that emerge from the pupae crawl up the side of the rearing container into the cage. Individuals of the required sex can then be selected and collected with an aspirator. Repeated tests have proved that the mos-

quitoes do not mate in the cage, however long held there. This is attributed to the absence of flight, although sexual maturity is also delayed as shown by the fact that in a sample of males held at 12° C. for five days after emergence only 50 percent had genitalia fully rotated; in a control sample 95 percent were fully rotated 24 hours after being transferred to 23° C.

The method should be adaptable to other species of mosquitoes and also to other species of insects in which the larval forms inhabit a liquid or solid medium, provided that the adults must fly before mating and that prevention of flight will prevent mating.

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References Cited

- NICHOLLS, C. F. 1963. Some entomological equipment. Information Bulletin No. 2. Research Institute, Canada Department of Agriculture, Belleville, Ontario.
- ROTH, L. M. 1948. A study of mosquito behaviour. An experimental laboratory study of the sexual behaviour of *Aedes aegypti* (Linnaeus). Amer. Midland Naturalist 40(2):265-352.

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