1. To expose the electromagnets, use a hacksaw to carefully remove the steel rear end of the ignition coil. If the coil case is oil-filled, drain the oil; then close the case neatly with hot tar or plaster-of-paris.
2. Prepare a set of automobile points to use as an interrupter by attaching a very light piece of sheet metal (approximately ¼" x 5") to the movable arm of the points. This piece of sheet metal can be tied on with sturdy thread since its purpose is to pull the points open when acted on by the electromagnets in the rear of the coil.
3. Mount the coil on a wooden base (¾" x 8" x 12") and position the automotive points on the same base so that, when current is applied, the piece of sheet metal is pulled toward the base of the coil, thus opening the points. (A little repositioning may be required to set the distance between the coil base and the sheet metal exactly right, although ¼" is a good distance to start with.) Mount a wooden block under the points to insure that the loose end of the sheet metal is centered at the rear of the coil.
4. Mount an automobile condenser on the block with connections across the points to reduce excessive sparking and to increase efficiency.

A schematic diagram of the device is shown in Fig. 3.

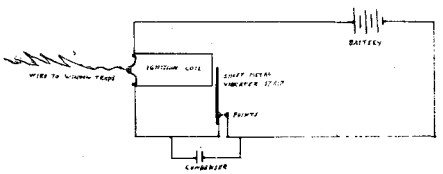

FIG. 3.—Schematic diagram of "monkey-buzzer."

Since monkeys were destroying the sides of the traps, a loose curl of light, uninsulated, galvanized or copper wire was fixed to both sides of each window trap in a group of huts. All of the curls of wire in each group were connected by a single strand of wire with the "monkey-buzzer" on one end of the wire. (The wires do not have to be insulated at their mountings if the huts are dry.) The machine has no off-and-on switch, because a small piece of paper placed between the points effectively cuts off the current. When the paper is removed, the device starts to operate.

Originally, the device was run only during early mornings when monkeys were most active. After two weeks, it was not necessary to operate it at all, because the monkeys had learned to stay away from the huts. The wire curls, however, were left in place on the windows as a warning to the monkeys.

PREDATION OF *Anopheles barberi* COQUILLETT ON FIRST INSTAR MOSQUITO LARVAE [1]

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At least three early reports mention the apparent predacious nature of larvae of *Anopheles barberi* Coquillett. Knab and Caudill observed that the species, though they fed in the normal manner of nonpredacious mosquitoes (filter feeding), was predacious on larvae of *Aedes triseriatus* (Say), *Orthopodomyia signifera* (Coquillett), and *Culex restuans* Theobald (Dyar 1904), and Dyar and Knab (1906) observed larvae of *Anopheles barberi* devouring larvae of *Aedes triseriatus* and *O. signifera*. Also, Baker (1935) reported that *Anopheles barberi* preyed on larvae of biting midges *Culicoides guttipennis* (Coquillett).

We first observed that *Anopheles barberi* was predacious when fourth instar larvae were adventitiously placed in a small container with late instar larvae of *Culicoides nanus* Root & Hoffman and *C. arboricola* Root & Hoffman; the next day the container contained only larvae of *Anopheles barberi*. Additional larvae of *Culicoides* spp. were therefore exposed to these larvae, and predation was observed. Also, when first instar larvae of *Culex pipiens quinquefasciatus* Say were placed into the container, they were devoured in essentially the same way (Fig. 1).

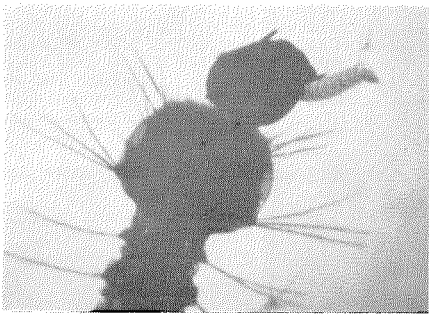

FIG. 1.—Fourth instar of *Anopheles barberi* preying on first instar of *Culex pipiens quinquefasciatus*.

The extent of predation was therefore determined by placing 10 first instar larvae of *C. p. quinquefasciatus* in each of 9 individual cells of a

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spot plate that each contained one fourth instar *Anopheles barberi*. After one hour, 51 of the 90 *C. p. quinquefasciatus* had been devoured; after 16 hours, 86 of 90 had been consumed.

A fourth instar larva of *Anopheles barberi* was then placed in a small container with many first instar larvae of *C. p. quinquefasciatus* and observed for one hour under a stereoscopic microscope. This one *Anopheles barberi* consumed 25 larvae in the first 20 minutes, 31 in 30 minutes, 37 in 45 minutes, and a total of 46 in 1 hour. The first *C. p. quinquefasciatus* consumed passed through the digestive tract of the predator in 7 minutes, one or two were subsequently passed every 1 to 2 minutes, and 31 passed through in 1 hour. In another observation a fourth instar *Anopheles barberi* devoured 34 larvae and passed the first in 13 minutes and passed 19 in 30 minutes. Generally the fourth instar larvae of *Anopheles barberi* were observed to consume 14 to 18 first instar *C. p. quinquefasciatus* as rapidly as they could catch them; thereafter, they consumed larvae only after they had eliminated previously eaten larvae. However, several *Anopheles barberi* continued to catch and kill large numbers without consuming them after they had consumed about 15.

Fourth instar larvae of *Anopheles barberi* were also observed to consume a few second instar larvae of *C. p. quinquefasciatus*, but they were much less efficient predators of second instar than of first instar larvae. Moreover, third instar larvae of *Anopheles barberi* that occasionally attempted to prey on first instar larvae of *C. p. quinquefasciatus* were always unsuccessful.

Thus, fourth instar larvae of *Anopheles barberi* are predacious and probably consume large numbers of early instar mosquito larvae and various sized larvae of *Culicoides* spp. that breed in tree holes.

Literature Cited

BAKER, F. C. 1935. The effect of photoperiodism on resting, tree hole mosquito larvae. Can. Entomol. 67:149–153.

DYAR, H. C. 1904. Brief notes on mosquito larvae. J. N. Y. Entomol. Soc. 12:243–246.

DYAR, H. C., and KNAB, F. 1906. The larvae of Culicidae classified as independent organisms. J. N. Y. Entomol. Soc. 14(4):177.

AN *Aedes vexans* GYNANDROMORPH

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When he compiled his list of gynandromorphs, Bates (1949) commented that they were "probably very rare" in proportion to the vast numbers of mosquitoes that had been examined up until that time. Brust's (1966) appended list, Taylor *et al.*, (1966), and Meadows (1966), along with a few more descriptions of individual specimens, substantiate the relatively infrequent occurrence of such anomalies in nature. The total number of reported gynandromorphs, and particularly the limited variety of species represented, remains small.

As a severe pest mosquito resulting from flood waters, *Aedes vexans* (Meigen) has received much attention from mosquito workers, but no sexually aberrant types have been described in the literature.

An antero-posteriorly differentiated form of *A. vexans* was collected in Salt Lake County 21 June 1968, in a New Jersey type light trap hung 5 feet above the ground in a grape arbor surrounded by shrubs and trees. The head of the specimen was entirely male with normal antennae and palpi. The tarsal claws appeared to be male. The terminal abdominal segments were characteristically female. Two ovaries were present, with no yolk in the oocytes. There was a bursa copulatrix, accessory gland, and three spermathecae. The hind gut contained six rectal papillae indicating a female digestive tract.

Literature Cited

BATES, M. 1949. The Natural History of Mosquitoes, Macmillan Co., N. Y. 379 p.

BRUST, R. A. 1966. Gynandromorphs and intersexes in mosquitoes (Diptera:Culicidae). Canad. J. Zool. 44:911–21.

MEADOWS, K. E. 1966. Gynandromorphism in *Culex* (Linnaeus) mosquitoes, Tampa Bay Area, Florida—1965. Mosq. News 26:587–589.

TAYLOR, D., MEADOWS, K., and BRANCH, N. 1966. Gynandromorphism in *Culex* (Linnaeus) mosquitoes collected in the Tampa Bay area 1962 through 1964. Mosq. News 26:8–10.

NOTES ON THE BIOLOGY OF *Culex territans* WALKER [1]

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In the summer of 1968 an attempt was made to colonize *Culex territans* Walker. From mid-June to late July, 8,000 fourth instar larvae were collected and identified. The identified larvae were placed in enamel pans (9″ x 15″ x 4″) containing filtered lake water and food (Takata and Harwood, 1964) in an outdoor cage measuring 6′ x 4′ x 6′, which had a ½″ plywood top and bottom, was covered with white netting, and had a polyethylene sheet over one side and the top for protection from wind and rain. Frogs and 10 percent sucrose were provided. The mosquitoes blood-fed readily and laid egg rafts, but did not

[1] Financial support by the Department of University Affairs.