

# OPERATIONAL AND SCIENTIFIC NOTES

## A DEVICE FOR PROTECTING EXPERIMENTAL HUTS FROM MOLESTATION<sup>1</sup>

SHAMBU LAL SHRESTHA,<sup>2</sup> A. MOHAN RAO,<sup>3</sup> AND BRYAN T. WHITWORTH<sup>4</sup>

In February 1968, special entomological studies were begun in Butwal in southern Nepal as a part of the Nepal Malaria Eradication Organization. Malaria incidence is high in the Butwal area, a resettlement area which was formerly dense jungle but is now broken by small cultivated plots. As a part of the special study, a number of experimental huts were built in the area; window traps were designed for each hut to determine how often mosquitoes entered and left the buildings.

Shortly after the project began, monkeys were attracted to the screened window traps and, in many cases, destroyed them. Although the monkeys were probably only curious or seeking food, the damaged window traps were ineffective and created a great problem for the entomological study team. Therefore, a device was made to prevent the monkeys from molesting the window traps (Fig. 1).

It was nicknamed a "monkey-buzzer." It used an automobile ignition coil rigged with an interrupter and a condenser, powered by an automobile battery (Fig. 2). On a full charge, the machine will operate for approximately 100 hours and will deliver an unpleasant, but quite harmless, shock. The device may be useful to other workers whose projects are subject to molestation by monkeys or other animals.

The materials used to build the "monkey-buzzer" included:

- |   |        |
|---|--------|
| 1. Ignition coil (6-volt or 12-volt) . . . . .    | \$5.00 |
| 2. Ignition points (Used ones adequate) . . . . . | .00    |
| 3. Ignition condenser . . . . .                   | 1.00   |
| 4. Insulated wire (for circuit) . . . . .         | .50    |
| 5. Screws, bolts, and nails for mount . . . . .   | .50    |
| 6. Wooden base . . . . .                          | .50    |

TOTAL . . . . . \$7.50

<sup>1</sup>From the National Communicable Disease Center, Health Services and Mental Health Administration, Public Health Service, U.S. Department of Health, Education, and Welfare, the Nepal Malaria Eradication Organization, and the World Health Organization.

<sup>2</sup>Entomologist, Nepal Malaria Eradication Organization.

<sup>3</sup>Entomologist, World Health Organization.

<sup>4</sup>Entomologist (Nepal), Operations Section, Malaria Eradication Program, NCDC.



FIG. 1.—Wire "curls" protecting half-destroyed window trap.

A battery of the same voltage as the coil should be used. The shocking wire (light, one-strand, uninsulated) can be virtually any length. (We used 300 feet with good results.)

The method of construction is as follows:

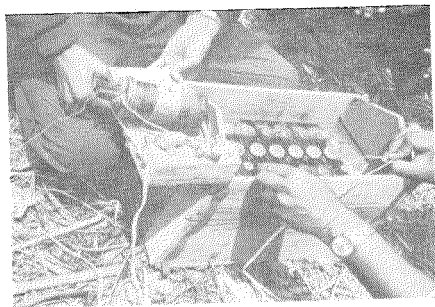


FIG. 2.—Hooking up "monkey-buzzer." Shocking wire is shown protruding from coil head.

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  $\frac{1}{4}$ " 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 ( $\frac{3}{4}$ " 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  $\frac{1}{4}$ " 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.

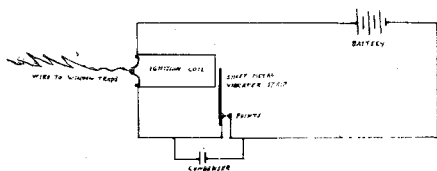


FIG. 3.—Schematic diagram of "monkey-buzzer."

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* COQUILLET ON FIRST INSTAR MOSQUITO LARVAE<sup>1</sup>

J. J. PETERSEN,<sup>2</sup> H. C. CHAPMAN,<sup>2</sup> AND O. R. WILLIS<sup>2</sup>

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).

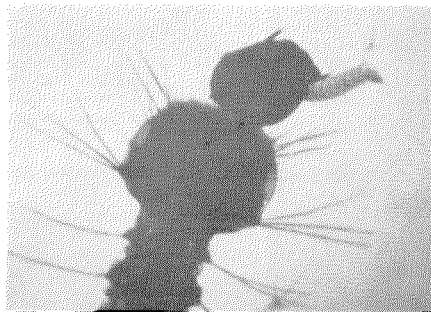


FIG. 1.—Fourth instar of *Anopheles barberi* preying on first instar of *Culex pipiens quinquefasciatus*.

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

<sup>1</sup> In cooperation with McNeese State College, Lake Charles, Louisiana 70601.

<sup>2</sup> Entomology Research Division, Agricultural Research Service, U. S. Department of Agriculture, Lake Charles, Louisiana 70601.