eventually in a better understanding of the rôle and importance of natural control agents.

ACKNOWLEDGMENTS

The writers are indebted to Dr. G. B. Reed and Dr. J. H. Orr of the Department of Bacteriology, Queen's University, for providing animal house facilities and for valuable suggestions. Particular thanks are due to Dr. R. J. Defalco, Department of Zoology, Rutgers University, for frequent advice and criticism.

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ARTICLES

CONSTRUCTION AND USE OF A SIMPLIFIED WINDOW TRAP FOR INSECTS

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In the course of studies on the nocturnal activities of anopheline mosquitoes in the Western Ghats of Mysore State, India, it became desirable to construct a number of window traps. The device here described was designed in the course of studies performed by the Mysore State Health Department in cooperation with the Division of Medicine and Public Health of The Rockefeller Foundation. Because of budgetary limitations, shortage of personnel, and the large number of proposed experiments in distantly separated villages, it was necessary that the traps be sturdy, cheaply and quickly made, easily operated, conveniently transported, and adaptable to any sort of window or other aperture of houses and cattle sheds. After numerous models had been made and tested, the design described below was adopted as a standard.

1. MATERIALS REQUIRED FOR ONE TRAP.—(a) A sheet of thin transparent celluloid, 24″ x 24″. (b) A sheet of light plywood, 3′ x 6′. (c) A small quantity of any sort of 1″ boards that can be cut and drilled. (d) A dozen binding staples, 1½″ long. (e) Six-inch Barraud cage frames. (f) Barraud cage nets.

Barraud cages may be of various sizes, but most commonly they are cubes of 6″ or 12″. They are easily made by soldering or welding metal rods or stiff wires at the eight corners of an imaginary cube, so that a framework representing the 12 edges of the cube results. A net is then prepared by sewing together eight square pieces of 26-mesh bobbinet, each piece having the dimensions of one face of the cube. Tapes are attached at the corners so that the net may be tied within the metal frame. One face of the net is pro-

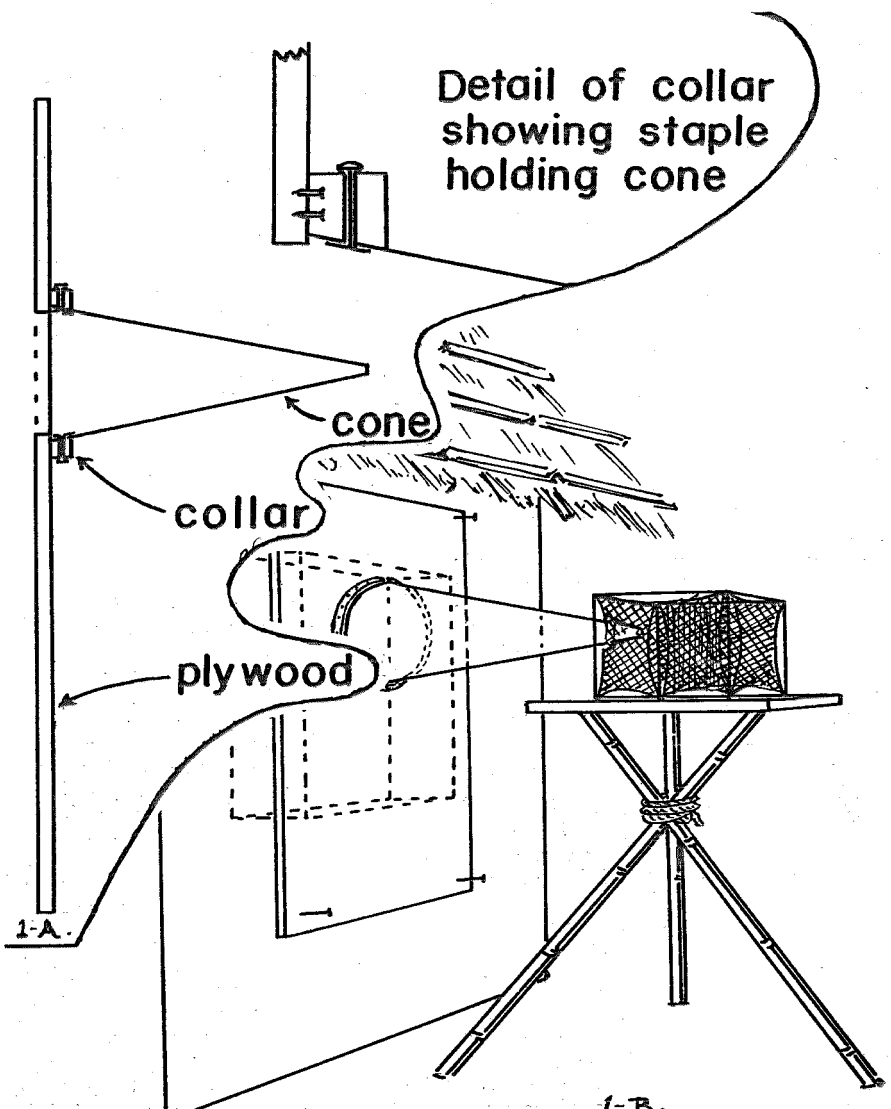

FIG. 1. A. Construction of wooden collar. B. Celluloid funnel trap in position.

vided at its center with a circular collar or sleeve, about 3″ long and 1″ in diameter. This permits the insertion of test tubes or aspirator tubes for introducing or removing insects. The sleeve can be knotted so that the insects do not escape.

Barraud cages are useful for storing or shipping insects. In case of shipment, wooden boxes are built so as to accommodate individual cages snugly. A piece of damp cotton wool is placed on top of each cage to provide moisture in transit.

2. PROCEDURE FOR BUILDING AND SETTING TRAP.—(a) With one corner of the celluloid square as the center, mark off and cut a 90° arc of radius 24″. Trim off the inner corner according to the size of the insects to be caught. Mark off ¼″ or ½″ margins on both sides of the sector and then make perforations at 2″ intervals along the mid-line of these zones, which will eventually overlap. Bend the celluloid into a cone and sew or wire the overlapping edges together through the perforations with heavy thread or light wire. The cone thus produced, if untrimmed at the apex, will have an altitude of 23¼″. Its base is 11.9″ in diameter and just over ¾ sq. ft. in area. The taper is gradual enough so that insects will traverse its length without undue hesitation.

(b) Cut a circular hole, 11.5″ in diameter, in the plywood sheet, with the center of the hole 2′ from one end of the sheet and in the mid-line of its width.

(c) Nail a circular wooden collar, 1″ wide and 1″ thick, around the hole in the plywood, but make the inner diameter of the collar 12″ in extent. This will allow the base of the celluloid cone to impinge against the plywood but also to fit within the collar. The inner surface of the collar may be bevelled to fit the slope of the cone.

(d) Drill a dozen evenly spaced holes radially through the collar; punch corresponding perforations around the base of the celluloid cone; and affix the cone to the collar with the binding staples, (Fig. 1A).

(e) Nail the plywood board across a window or door, with the aperture situated so as to receive maximum illumination from the outside. Seal off all irregularities at the edges of the board by stuffing them with cotton wool, paper, rags, straw, or other litter. If the doorway is large, additional scraps of plywood may be nailed up to complete the blocking of the entrance.

(f) Insert the apex of the cone into the rolled sleeve of a Barraud net so that the open tip of the cone projects into the interior of the net for at least ½″. The Barraud cage may be suspended by wires from outside eaves or it may rest on a platform improvised by piling up boxes, logs, or the like (Fig. 1B).

3. OPERATION OF TRAPS.—During the daytime the Barraud cages should be shaded or frequently changed. Otherwise, houseflies and various Hymenoptera may enter the cages and damage more delicate insects.

At night the cages may be changed according to the time intervals being studied. If mosquito densities are high, the cages should not be allowed to become overcrowded; they should be changed more frequently or else a larger size cage should be used.

4. ADVANTAGES OF THE CELLULOID CONE.—A cone made of window-screen wire was found to trap fewer mosquitoes than the celluloid cone. Furthermore, it was noted that many mosquitoes perched on the wire for some time before entering the cage. Hence the time of ingress into the cage did not correspond to the time that the mosquitoes first attempted to emerge from their shelter. Perching on the smooth celluloid cone is difficult, and entry into the cage is therefore prompt. The chief asset of the celluloid cone, however, is that mosquitoes can be collected directly in the Barraud cages. This eliminates most of the drudgery of night collecting. One man can easily manipulate six or more traps throughout the night, merely changing the cages at desired intervals and labeling them according to the period during which mosquitoes entered.