FLASHLIGHT BODY AND TIMER UNIT FOR POWERING CDC LIGHT TRAPS [1,2]

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As a power source for CDC miniature light traps, lead-acid batteries have been found difficult to use in remote areas of Ethiopia due to weight, acid corrosion, and problems related to recharging. For several years, therefore, 6-volt dry cell batteries have been a standard power source for operating these traps in the collection of mosquitoes for virus isolation studies. An alternative power system, however, has been seriously needed since large dry cells have become increasingly expensive and difficult to obtain locally. Johnston *et al* (1973) describe two alternative systems using standard flashlight batteries mounted on the plastic body of the trap. By modifying the wiring connections of the motor and lamp, either 3- or 4.5-volt systems can be employed. These utilize, respectively, two size "D" alkaline or four standard carbon-zinc "D" batteries. Because the necessary mounting and connecting materials were not available in-country, we devised another system using 3- and 4-celled flashlight bodies which requires no modification of the CDC trap. A manual, spring-wound timer is an integral part of our system making it possible to pick up a previous night's catch and to set the trap for the following evening during a single visit. This has significantly minimized traveling and trap servicing time, since many of our mosquito collections must be made in areas some distance apart over

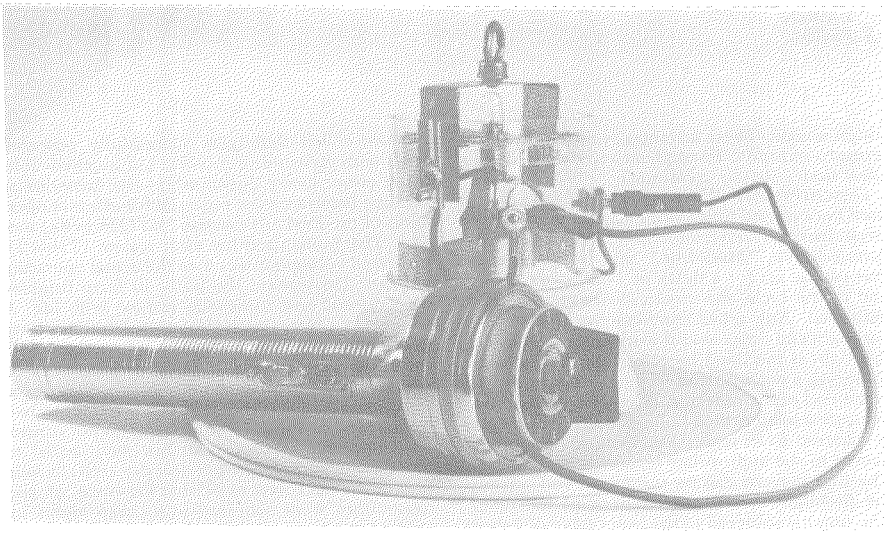

FIGURE I. Three-celled flashlight body and timer unit.

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TABLE I. Comparison of alternative power supplies and motors for CDC light traps.

Motor	Aristo-Rev	Barber-Coleman
Rated Volts	3-4.5	6.0
Airflow (F.P.M.)	510-535	525-550
Light Bulb	GE 1490	GE 1806
Rated volts	3.4	5.1
Rated amps	0.16	0.15
Flashlight Unit		
Type	3-celled	4-celled
Operating voltage	4.5	6.0
No. trap nights (12 hrs.) operation; "D" batteries		
Regular, carbon-zinc*	1	—
Heavy Duty carbon-zinc**	2	1
Alkaline*	5	3

* Eveready
** Phillips

rough terrain. These advantages should be of interest to mosquito researchers working in similar areas under similar conditions.

DESCRIPTION. "Pifco" flashlight bodies are used because the timer will fit partially inside the large diameter, reflector end. The timer used is a spring-driven, "Marktime," with a timing cycle that can be set for a delay of 1-12 hours. At the end of the cycle, the circuit closes and power is delivered. Any other combination of a suitable flashlight and timer would work equally well. The flashlight is modified by removing the bulb and soldering a positive lead to the (+) bulb contact at the end of the reflector. A ground wire passing through a small drilled hole in the metal reflector is soldered to its underside. Both wires are connected to the appropriate terminals of the timer. The unit thereby can be turned on and off with the flashlight switch independent of the timer. The timer is soldered to the inner edge of a sheet metal ring with an outside diameter equal to that of the flashlight lens. It is then substituted for the lens and held securely in place by the flashlight's outer screw cap. After connection to the terminals of the timer, the positive and ground leads are passed through two small drilled holes in the rim of the sheet metal ring. Banana jack connectors on the ends of the leads facilitate attachment to the trap's terminals. For protection from the weather, the unit (Figure I) can be suspended by a cord running from the end ring of the flashlight through a small hole in the trap's cover to a branch or other attachment.

Three-celled flashlights successfully powered traps with Aristo-Rev motors, but 4-celled units using either heavy duty, carbon-zinc batteries or alkaline batteries were required for efficient operation of the Barber-Coleman (BYQM 2184) motors. The bulbs used for each system (Table I), had rated voltages lower than the actual operating voltage. This caused the bulbs to burn brighter than normal and somewhat reduce bulb life. A significant advantage, however, was the increase in mosquitoes collected compared to traps with the same bulbs operated at or near their rated voltages. While the traps could be operated for at least one additional trap night for each set of batteries listed in Table I, the airflow was not considered optimal. Mosquito catches were equal to those from traps utilizing 6-volt dry cells. In field tests at Bulcha Forest in Sidamo Province, 41,400 mosquitoes were collected in 24 trap nights including over 12,000 taken in one trap operated overnight in Ethiopian tukul (dwelling). No battery or bulb related failures were encountered in over 100 trap nights of operation.

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Literature Cited

Johnston, J.G., Weaver, J.W. and Sudia, W. D. 1973. Flashlight batteries as a power source for CDC miniature light traps. Mosq. News 33(2):-190-194