

OPERATIONAL AND SCIENTIFIC NOTES

SALVAGING INSECTICIDE DRUMS

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Open head 30-gallon insecticide drums (such as

those used to ship Dibrom) may be salvaged or re-cycled for use as trash containers, storage bins and other purposes. Before a can may be used it is necessary to remove the plastic liner. This can be done in approximately one minute by floating the liner out with water from a garden hose. The open head metal lid must be removed first.

OBSERVATIONS OF AN UNUSUAL OVIPOSITION HABIT IN *ARMIGERES (LEICESTERIA) ANNULITARSIS* (LEICESTER)

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In a study of bancroftian filariasis conducted in Kanchanaburi Province, Thailand during 1974 and 1975, female *Armigeres (Leicesteria) annulitarsis* (Leicester) were frequently collected biting humans. Dissections of these mosquitoes resulted in the recovery of larval stages of filariae belonging to the genus *Setaria* (6 positive of 544 dissected). While attempting to colonize this mosquito in order to test its susceptibility to infection with *Wuchereria bancrofti*, we observed, as did Macdonald (1960), that during oviposition the females attached their eggs in masses to the first tarsal segment of the hind legs (Figs. 1 & 2). Observations on this unusual oviposition behavior, some of which differ from those reported by Macdonald, are presented in this paper.

To obtain eggs from wild-caught *A. annulitarsis*, they were first given a fresh meal of human blood and then isolated in 10 dram (ca. 12 g) glass shell vials covered with cloth mesh. Initially, 5 blood-fed mosquitoes were isolated in vials with an oviposition substrate of moist cotton covered with filter paper. These mosquitoes failed to lay eggs, so on the 20th day following their

blood meal water was added to the vials; by the following morning all 5 mosquitoes had completed oviposition. Between 7 November 1974 and 17 June 1975, eggs were deposited by 27 *A. annulitarsis* females from 6 to 14 days (mean \pm 8.6 days) following their blood meals. The number of eggs laid by each mosquito ranged from 8 to 36, with an average of 21. In all instances, eggs were laid during the night.

After oviposition, the females rested on the water surface with their hind legs lowered so that the egg masses were in contact with the water and remained in that position until hatching occurred (Fig. 1). When first observed the eggs were a light cream color, but they darkened to a light brown color prior to hatching. Hatching occurred during the night and early morning hours approximately 2 days after oviposition. After hatching was completed, the mosquitoes alternately moved their hind legs from front to rear until the empty egg shells were dislodged. Once a leg was freed, it was used to rub the egg shells from the other. On several occasions, when females were disturbed before their eggs had



Fig. 1. Female *Armigeres (L) annulitarsis* with hind legs lowered so the eggs are in contact with water surface.

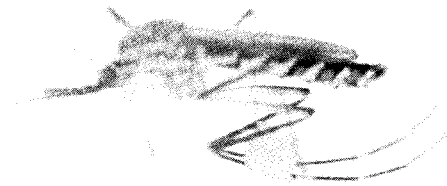


Fig. 2. Actual photograph of female *Armigeres (L) annulitarsis* showing attachment of eggs to first tarsal segments of hind legs.

hatched, they dislodged the eggs from their legs in the fashion mentioned above. When this occurred, the eggs usually failed to hatch. These observations differ considerably from those of Macdonald (1960) who stated that "... the normal behaviour is for an egg-batch to be laid on the hind legs and then after a delay, which in the laboratory may last several hours, the eggs are released on the water."

Strickland (1917) and Barraud (1934) observed egg masses attached to the legs of *Armigeres* (*L.*) *flavus* (Leicester). Strickland reported that a larva was protruding from each egg and that emergence was completed when the mosquito flew down and dipped its legs into the water. Barraud speculated that the attachment of eggs to the legs was an adaptation for introducing larvae through small holes into bamboo internodes, but in the light of the above observations we doubt that this is true in the case of *A. annulatus*. There would appear to be considerable

variation in oviposition habits displayed by members of this subgenus, for during the same period we observed that a third species, *Armigeres* (*Leicesteria*) *omissus* (Edwards), laid its eggs directly on the surface of wet filter paper as do members of the subgenus *Armigeres*.

Literature Cited

- Barraud, P. J. 1934. Fauna of British India, Diptera, Vol. V: Family Culicidae, Tribes Megarhinini and Culicini. London: Taylor and Francis. 463 pp.
- Macdonald, W. W. 1960. Malaysian parasites, XXXVIII. On the systematics and ecology of *Armigeres* subgenus *Leicesteria* (Diptera, Culicidae). Stud. Inst. Med. Res. Malaya 20, 110-153.
- Strickland, C. 1917. A curious adaptation of habit to its environment of a malayan mosquito. J. Straits. Br. Asiat. Soc. 75, 39.

EXTENSION ENTOMOLOGY SPECIALIST—on mosquitoes and related insect pests of man and animals. PhD degree with minimum of five years experience in biology and control programs. Must coordinate mosquito control research projects of the University with over 60 mosquito control agencies. Organizational skills needed in program development, analysis and evaluation of research technology and operational budgets, in communication and staff training plus the ability to conduct applied research activities and demonstrations, particularly related to agriculture.

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