

complex problem, the solution of which requires detailed knowledge of the life history and bionomics of each individual species concerned. However, when adequate information is available, one may then concentrate attacks at those vulnerable points which provide the most effective and most economical control. To illustrate: (1) in control of the greenhead fly, only that small portion of marsh marked by high tide shrubs and the thatch piles from which the majority of adults

emerge, need be treated; (2) in the control of the biting gnat, treatment is confined to that section of saturated marsh containing pot holes, and the vegetative borders of the slightly brackish ponds located adjacent to the seashore; and (3) in *Mansonia* control, treatment is limited to those hard bottomed ponds or lakes containing floating marsh, since the irritating mosquito cannot survive on cattails or water willow when their roots are imbedded in a hard bottom.

AN *ANOPHELES QUADRIMACULATUS* LARVA WITH THREE INNER CLYPEAL HAIRS¹

GEORGE J. BURTON

Engineer Research and Development Laboratories, Fort Belvoir, Virginia

In checking over some fourth instar larvae of *Anopheles quadrimaculatus* Say, which were collected in 1944 at the Naval Advance Base Depot, Davisville, Rhode Island, an abnormal specimen was found having three inner clypeal hairs instead of two (Fig. 1).

Under the compound microscope, it was seen that the two outer hairs are the normal ones, whereas the middle one is in excess. The outer ones are wider apart than is usual for the species. The tubercle of the middle hair lies ventrad to the other two tubercles at a distance equal to one-half the diameter of a tubercle. All the other hairs and characteristics are normal.

This larva was collected in a large, clear pond having grassy margins, together with

about fifty other larvae of the same species, but no other abnormal specimen was found.

The writer has seen mosquito larvae with abnormal gills, siphons, siphonal hairs, and anal segments, but this was the first one seen having a third inner clypeal hair.

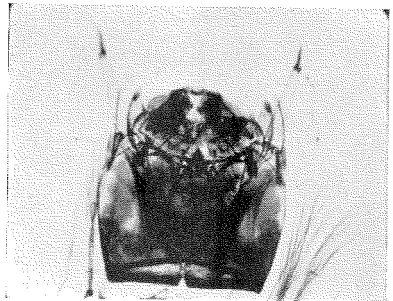


FIG. 1. Fourth-instar larva of *Anopheles quadrimaculatus* Say having three inner clypeal hairs.

¹The material presented here in no way constitutes an indorsement by the Department of Defense.