

## SCIENTIFIC NOTES

A NEW METHOD FOR PRESERVING ADULT MOSQUITOES<sup>1</sup>

W. KEITH HARTBERG

University of Notre Dame, Notre Dame, Indiana

In teaching collections of adult mosquitoes, a specimen with all parts intact is uncommon. Pinned specimens dry up, become brittle, deteriorate with age, and lose their scales. Adults cannot be preserved in fluids or in plastic mounts because scale color patterns are obliterated. We have developed a new method which allows storage of adults on microscope slides.

Materials needed for this new method are glass slides, circular cover glasses 22 mm in diameter, DEK-ADHESE plastic laboratory cement (Donald Tulloch, Jr., Box 17, Chadds Ford, Pa.), and aluminum rings 22 mm in diameter. We found that inexpensive rings could be made from aluminum pipe cut into 2 mm thick sections by a machinist.

The live specimen to be preserved is anesthetized with ether and the legs are positioned with forceps. The specimen is then etherized heavily to kill and fix it. Ether is preferable to chloroform or carbon dioxide in that the specimen remains more pliable. DEK-ADHESE is brushed on a clean slide and the specimen is set down on the fresh adhesive. An aluminum ring is pressed around the specimen, the adhesive is applied to the rim of the ring and a cover glass is applied. After the adhesive has set for a few minutes the slide is ready for use.

Mosquitoes prepared by this method hold up well in use because the specimen is never touched. Scales remain in place and pleural scale patterns can be observed by tilting the slide. The eyes of the specimens dry out and some distortion of the

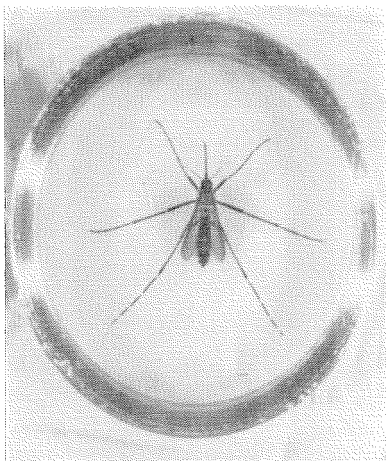


Fig. 2.—Close up. Note preservation of scaling pattern and positioning of legs.

abdomen is present but it is considerably less than that observed on pinned specimens. The legs remain in place and are not readily broken.

The expense in making these preparations is relatively slight and with a little practice several slides may be prepared in less than an hour.

A GYNANDROMORPH OF *Aedes (F) togoi*  
(THEOBALD)

W. T. CHELLAPPAH

Department of Parasitology, University of  
Singapore

The occurrence of mosquito gynandromorphs has been recorded by a number of workers and a total of 35, belonging to 18 species, has been listed by Christophers (1960). Colless (1958) collected a gynandromorph of *Armigeres giveni* in Singapore, and three more instances have been recently reported by Pratt and Sudia (1964), Rigby and Blakeslee (1964) and Happold (1965).

The specimen described here came from a colony of *Aedes togoi* reared in the Department of Parasitology, University of Singapore. The colony was established from Japanese material and has been in the above Department for over 2 years. During an experiment in which the mosquitoes were allowed to feed on a cat, one specimen, apparently female, was observed to probe but failed to penetrate the skin and engorge. On closer examination, its peculiarities were observed.

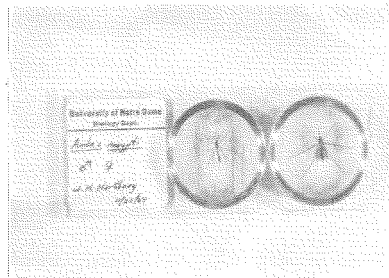


Fig. 1.—Male and female mounted on same slide.

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The specimen clearly showed an anterior-posterior organization in which the head is that of a typical female, with two normal short palps and female-like antennae, while the abdomen, with well formed terminalia, is that of a typical male. No other abnormalities in external features were noted.

Many attempts were made to force-feed the mosquito on different hosts but with no success. Although it was placed together with normal females, no attempt at copulation was observed over a 4-day period. Dissection of females did not reveal any spermatozoa in the spermatheca.

Longitudinal sections show no development of reproductive organs; gut and malpighian tubules are evident and there are a few associated cells that may be a rudimentary sex organ, but nothing more. These findings were confirmed by Dr. D. H. Colless, C.S.I.R.O. Canberra.

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#### GYNANDROMORPHISM IN *Culicoides hollensis*.<sup>1</sup>

KAMEL T. KHALAF

Loyola University, New Orleans

Gynandromorphism in American *Culicoides* has been reported by Curtis 1962 for *C. variipennis* (Coq.) and by Hawkins 1962 for both *C. furens* (Poey) and *C. leopoldi* Ortiz. In mosquitoes, this abnormal morphological condition has been reported in many genera.

In the present work on the *Culicoides* of south Louisiana, *C. hollensis* (Mclander & Brues) was found to be one of the most prevalent species. Males, however, were extremely rare in light-trap collections. For this reason, special attention was paid to each male secured, and this led to the recovery of two gynandromorphs from light-trap

collections at Carlisle, La., one in the collection of Jan. 3/65 and the other in April 11/65. A permanent slide mount in polyvinyl alcohol was prepared from the former specimen.

The two gynandromorphs were similar to each other in appearance. They were both males, with slender abdomen and male genitalia. In the slide mount this did not differ morphologically from the genitalia of a normal male of this species. Furthermore, there was no spermatheca.

These two male specimens also possessed certain definite features of the female, namely, the wings and the head, with its appendages. Similarity to the female wing is manifested in the following characteristics:

- 1—The high value of  $\frac{\text{width}}{\text{length}}$
- 2—The shape and nature of the two radial cells.
- 3—The maculation which is less extensive than that of the average male. In this regard, however, a considerable variation is encountered in (normal) females, but very little in the relatively limited number of males secured.

Similarity of the head to that of the female is summarized in the following:

- 1—The shape of the head sclerites in relation to the eyes, which are separated by a distance greater than the diameter of one facet.

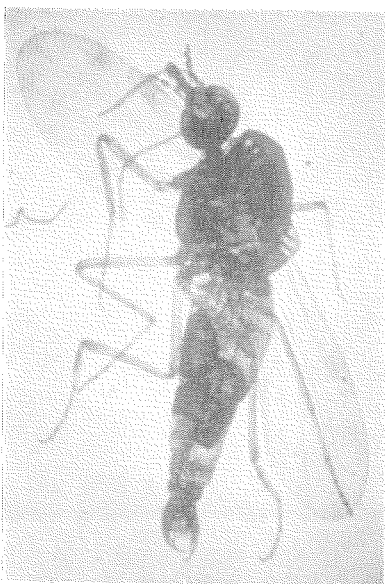


FIG. 1.—A gynandromorph of *C. hollensis*, with male abdomen and genitalia, and female head and wings.

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