References

Banks, N. 1912. At the *Ceanothus*. Ent. News 23:102–110.

Blickle, R. L. 1955. Observations on the habits of Tabanidae. Ohio J. Sci. 55(5):308–310.

Frost, S. W. and Pechuman, L. L. 1958. The Tabanidae of Pennsylvania. Trans. Amer. Ent. Soc. 84:169–216.

Hine, J. S. 1903. Tabanidae of Ohio with a catalogue and bibliography of the species from America north of Mexico. Ohio State Acad. Sci., Spl. Paper No. 5.

Pechuman, L. L. 1957. Tabanidae of New York. Proc. Rochester Acad. Sci. 10(3):121–179, Figures 1–88.

Philip, C. B. 1931. The Tabanidae of Minnesota. Tech. Bull. Minn. Agric. Exp. Sta. 80:1–132, Figures 1–21.

Stone, A. 1930. The bionomics of some Tabanidae (Diptera). Ann. Ent. Soc. Amer. 23: 261–304.

AN INTERSEX OF *MANSONIA PERTURBANS*

ROBERT R. PINGER, JR.

Department of Zoology and Entomology, Iowa State University, Ames, Iowa 50010

An intersex of *Mansonia perturbans* (Walker) was collected on July 22, 1971, at Dewey's Pasture, in Clay Co., 5.4 miles northwest of Ruthven, Iowa (T97N R35W SEC 25). The specimen was one of 11,787 specimens of *M. perturbans* collected with dry ice-baited CDC miniature light traps at this site during July of 1971.

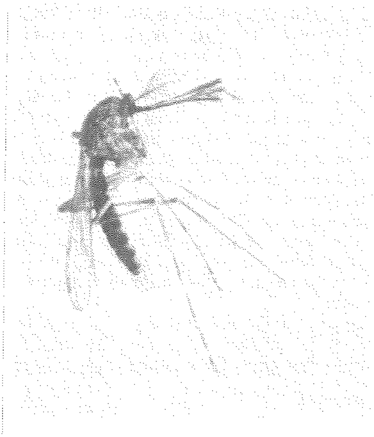

FIG. 1.—Intersex of *Mansonia perturbans.*

FIG. 2.—Terminal segments of the abdomen showing female cerci and three spermathecal capsules.

Although several appendages of this mosquito were lost during sorting and identification, the mosquito is an obvious intersex. Figure 1 shows the mosquito as it was discovered by the author. The left antenna is missing; the right antenna is plumose. The terminal segment of the right maxillary palp is missing, otherwise, the maxillary palps are typically male. The right foreleg, the 2 apical segments of the left foreleg and the 2 apical segments of the right hindleg are missing.

The specimen was mounted on a slide for further examination. The terminal segments of the abdomen (Fig. 2) bear female cerci and three spermathecal capsules.

Since the head is male and the abdomen female, the midposttarsal ungues were examined and compared with male and female midposttarsal ungues of normal individuals of *M. perturbans.* They were found to be female in nature.

Intersexuality in insects is discussed in some detail by Engelmann (1970). A gynandromorph is an individual with male and female tissues lying side by side in the body, while an intersex is an individual in whch all the cells have the same genetic make up but in which male and female tissues are differentiated. Intersexes may be caused by environmental factors such as abnormal external temperatures or internal parasitism (Wigglesworth, 1934; Engelmann, 1970). It is not know for certain whether the individual mosquito in question is an intersex or a gynandromorph as the two types of intersexuality are indistinguishable without genetic and histological analyses (Engelmann, 1970).

The specimen has been deposited in the Iowa Insect Collection, Iowa State University, Ames, Iowa.

Literature Cited

Engelmann, Franz. 1970. The physiology of insect reproduction. Pergamon Press, Oxford. 307 p.

Wigglesworth, V. B. 1934. Insect Physiology. Methuen & Co. London. 134 p.

A NEW BOTTOM-DRAFT LIGHT TRAP FOR MOSQUITO STUDIES[1]

LCDR R. H. GROTHAUS, MSC, USN AND S. C. JACKSON

Naval Medical Field Research Laboratory, Camp Lejeune, North Carolina 28542

Light traps are commonly used for surveying mosquito populations. Most collections fall into two categories: those samples where the mosquito density and diversity are of interest, and those where live specimens are needed for disease vector or rearing studies. When population data are desired, most workers use the New Jersey light trap designed by Headlee (1932). This trap can be modified into a live trap, Floore and Grothaus (1971), but the trap does not perform as well as others for this purpose. The CDC miniature light trap developed by Sudia and Chamberlain (1962) has proven to be one of the most popular traps for collecting live material. This trap also has the advantage of being portable since it is very lightweight and is powered by batteries. Workers desiring a portable kill-trap have modified the CDC trap using a design by Stewart (1970).

In 1970 the second author began working on a trap to provide the field worker with a sampling device that could be used for multi-purpose collecting. His goal was to develop a trap that would provide the features of both the New Jersey and the CDC trap, without the disadvantages of either.

DESIGN. The trap is basically a tube within a tube. The exterior portion of the trap is constructed from lightweight galvanized metal, and is 16 cm in diameter by 42 cm high (see Fig. 1). The holding or killing cage consists of a No. 10 can with the top replaced by a removable screen and the bottom replaced by an inverted screen cone. The internal system consists of a 6-12-volt (Allstate) automobile defroster fan mounted in an inverted position (Fig. 2). An automobile headlamp bulb (Westinghouse, No. 1195, 50 c.p. 12v) is mounted below the motor and the light beam is directed downward and through the collecting cylinder (Fig. 2). The trap receives electricity from a 12-volt lead acid battery which operates the fan motor and the light. The system is activated at dusk by a photoelectric switch[2] which automatically turns the trap off at dawn.

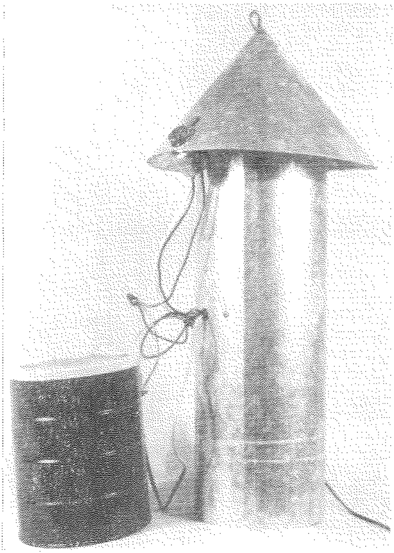

FIG. 1.—Exterior view of new bottom—draft light trap and the internal holding cage.

DISCUSSION. This trap has several advantages over older types. The system can be designed for AC current or DC current without loss of efficiency. The trap is configured so that the entire holding cage is protected from rain, resulting in perfect specimens. Insects caught in the trap are not submitted to damage from the fan blades. The updraft principle appears to enhance collection efficiency for many species of mosquitoes, but larger insects are seldom caught. The elimination of extraneous flying insects from the cage greatly reduces damage to the mosquitoes and also decreases the amount of time necessary for specimen sorting.

Because of the protected cage, live specimens are easily obtained. However, by attaching Vapona® strips to the collecting cage, it is easy

[1] The opinions or assertions contained herein are the private ones of the authors and are not to be construed as official or reflecting the views of the Navy Department or the naval service at large.

[2] Purchased from Concession Supply Company, 3916 Secor Road, Toledo, Ohio 43613.