



FIG. 2.—Head and its appendages of *T. digitatum* gynandromorph.

In common with a number of gynandromorphs in other mosquito species, the *T. digitatum* specimen described shows a progression from structural features of one sex at the anterior end to structural features of the other sex at the posterior end. The only exception to this arrangement is seen in the basal whorl hairs, which in respect to both number of elements and lengths are intermediate between those of typical males and females. This "intersexual" feature is the only one such noted, the other external parts compared being either male or female in character. Examination of internal reproductive organs was not made.

The specimen has been slide mounted and deposited in the entomology collection of the Department of Preventive Medicine, Universidad del Valle.

Photographs were prepared by Sr. Mario Ponce de León, medical photographer at the University Hospital, Universidad del Valle.

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Mansonia uniformis MOSQUITOES IN VIETNAMESE TUNNELS¹

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While on duty with the 1st Infantry Division in Vietnam, the author explored Viet Cong tunnel complexes in a jungle area 20 air miles northwest of Saigon. On one occasion, in a 300 foot stretch of tunnel six feet underground, large numbers of mosquitoes were encountered. A sample of 42 was collected by hand off the clothes and bodies of individuals upon whom they were feeding, and were subsequently identified. Identifications of the mosquitoes were confirmed by the 20th Preventive Medical Unit, Saigon, RVN.

Of 42 female mosquitoes examined, 39 were *Mansonia uniformis*, and the remaining three could not be identified.

The tunnel collections were made during the so-called dry season in South Vietnam. At the time of capture, tunnel temperatures were recorded and relative humidities were determined with a Bendix Psychrometer, Model 566. Comparison of the meteorological data taken within the tunnel, with data from the surrounding jungle, suggests that the tunnel is more favorable to mosquito survival than the surrounding jungle at this time of the year.

Meteorological records made at the various collection sites within the tunnel included the following data, in which the first set of figures is the temperature in degrees F. and the second is the relative humidity. At tunnel entrance, 77°-85 percent rh; at 60 feet, 79°-92 percent rh; at 130 feet, 81°-98 percent rh; at 200 feet 80°-100 percent rh, at 300 feet, 80°-100 percent rh; at tunnel exit, 84°-82 percent rh. In two other readings at the same sites, the corresponding figures did not differ by more than 1 degree or 1 percent, respectively.

Meteorological data taken in the nearby jungle (in the ANSON Area or "Iron Triangle", by the USAF weather station, PHU LOI RVN) afford an interesting comparison. For example, the average annual rainfall was given as 70 inches, (60 inches in the wet season, May through October and 10 inches in the dry season, November through April). Average temperatures and average percents rh for the same periods were: *Annual*: Minimum 74°-64 percent rh; maximum 89°-93 percent rh; mean 85°-79 percent rh. *Wet Season*: Minimum 75°-72 percent rh; maximum 88°-95 percent rh; mean 83°-84 percent rh. *Dry Season*: Minimum 69°-56 percent rh; maximum 94°-90 percent rh; mean 86°-73 percent rh.

The tunnel complex in which the mosquitoes were collected is located in the relatively dense

¹ Cleared for release by MACO.

jungle area known as the Iron Triangle. This jungle consists primarily of indigenous hardwoods which constitute the initial canopy. A secondary canopy is formed by tall shrubs, bamboo, and trees similar to scrub pines. During the two-week period prior to exploration of the area, only .07 inch of precipitation had been recorded. Hence, no ground pools or other water sources were found in the immediate vicinity of the tunnel. The Saigon River, however, with its bordering rice paddies, was within 1,000 meters of the jungle area.

Within the tunnel the humidity was very high, as shown by the data presented above, and although no actual pools of water were found, the tunnel floor was muddy in places and the walls were damp. Pottery jars containing water or other liquids were found throughout the tunnel complex.

Blood meals for these tunnel-dwelling insects were apparently obtained from Viet Cong soldiers who lived in the tunnels, and/or from the rodents and bats which flourished there. Although the Viet Cong had recently occupied the tunnel (as evidenced by cooked food and fresh feces), the mosquitoes apparently had not had their fill, since they attacked and fed on the search party with great vigor and persistence.

Mansonia uniformis breeds in swamps and ponds and slow moving streams containing various types of vegetation (1, 2, 3). Adults rest in the vegetation bordering these breeding habitats. The present observations demonstrate that *Mansonia uniformis* will readily exploit a subterranean shelter with a proper microclimate. Normally the mosquitoes probably seek dry season shelters on the forest floor and beneath vegetation where suitable meteorological conditions occur. Invasion of the tunnel would be an important supplemental mechanism of surviving unfavorable weather. It would be interesting to determine whether the mosquitoes were attracted to the tunnel because of favorable resting conditions, or because of the presence of a source of blood. Perhaps both factors were responsible.

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A PORTABLE ASPIRATOR FOR COLLECTING MOSQUITOES

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An apparatus that was designed and manufactured to be used as a portable, hand-held, vacuum cleaner¹ has been adopted for the purpose of collecting adult mosquitoes from hibernating and resting stations. This aspirator has been researched and developed as a replacement for the mouth aspirator in this department. The health hazards of collecting mosquitoes by mouth aspirating are great. This aspirator does away with the intake of wing scales, wings, legs, fungi, dust, and other foreign agents that might cause irritations and infections in the respiratory system. This article will describe and illustrate the apparatus as used by the Insect Vector Division of the Memphis-Shelby County Health Department, Memphis, Tennessee.

DESCRIPTION OF APPARATUS. The vacuum aspirator is approximately 20 cm. long and the head portion extends out about 17 cm. The unit, which operates on two regular flashlight batteries size "D", is shown, complete, in Fig. 1. Steps to use in constructing the mosquito aspirator from the vacuum brush are as follows:

1. Clip the brush bristles from around the air-intake to allow the funnel to fit snugly against the head.
2. Obtain small funnel with the same diameter (approximately 7 cm. in diameter) as the vacuum brush air-intake, and a small piece of nylon mosquito netting.
3. Stretch the nylon netting tightly over the air-intake opening of the vacuum and secure with two or three very strong rubber bands.
4. Secure the funnel to the air-intake of the aspirator with masking tape.
5. Trim the edges of the nylon net.
6. The mosquitoes are voided from the area inside the funnel by gently blowing the air back through the air outlet. (Arrow in photograph)

APPLICATIONS. 1. Sampling in a specific area to determine the density of various species of mosquitoes. During the regular mosquito surveillance program, adult mosquito hibernating and resting stations are inspected on a routine basis in order to determine the population of individual species present. These shelters are located under bridges, inside culverts, sewers, storm inlets, and in many cases are nearly inaccessible. The small size of the aspirator makes it useful for the collection of mosquitoes in these

¹ Manufactured by the Chadwick Co. under Pat. No. 468693.