after feeding on experimental hosts from which no evidence of infection was obtained. As the third pool of engorged specimens (15 *Ae. sticticus*) was collected in a turkey brooder house, it is not known whether they were infected prior to or after feeding.

The isolation of virus from a pool of 100 non-engorged *S. meridionale* collected in a brooder house on June 8, indicated that this species may serve as a biological vector when exposed to the virus. This fly takes at least two separate blood meals and is one of the known vectors of the protozoan blood parasite, *Leucocytozoon smithi* L. & L. of turkeys (Skidmore, 1932; and Anderson and DeFoliart, 1961). Since field studies revealed two major feeding peaks (May 31 and June 8) of the first generation females, it appears that at least one of the non-engorged specimens collected on June 8 may have served as a biological vector of EEV.

Both blackfly species from which the virus was isolated are ornithophilic. All previous investigations on the potential of simuliids as vectors of viruses in North America have, apparently, involved mammalophilic species (Knowlton, 1934; Knowlton and Rowe, 1934; and Hammon, *et al.*, 1942).

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NOTES ON A MALE *AEDES AEGYPTI* WHOSE TERMINALIUM FAILED TO ROTATE [1]

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In a series of studies on the physiology of the reproductive system of *Aedes aegypti* (Linnaeus) in which many males of the Bangkok strain were being routinely force-copulated with females using a slight modification of the McDaniel-Horsfall technique (McDaniel and Horsfall, 1957), a single, six-day-old male was discovered whose terminalium had failed to undergo the normal 180° rotation (Christophers, 1915). This male was presented successively for five minutes to each of five virgin females of suitable age, but he made no attempt either to

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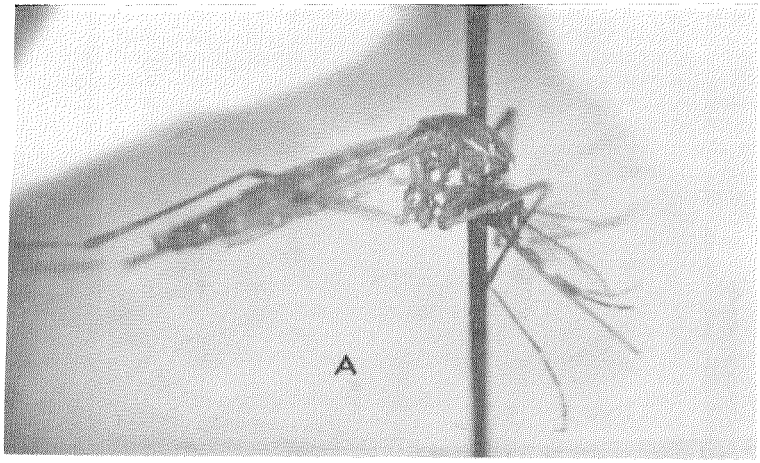
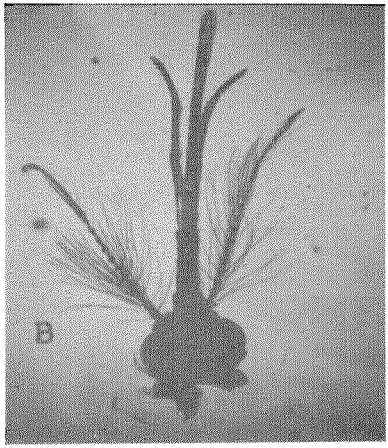
clasp or copulate with any of them. He was then released into a separate cage. Two days later he was still alive with his terminalium still completely unrotated; he was then examined in some detail before being dissected.

The external examination of the unrotated male revealed that he was not a gynandromorph (Figure 1, A). The flagellum portion of his antennae was less densely clothed with long hairs (Figure 1, B) than those of normal males (Figure 1, C). Between the seventh and eighth abdominal segments of the unrotated male





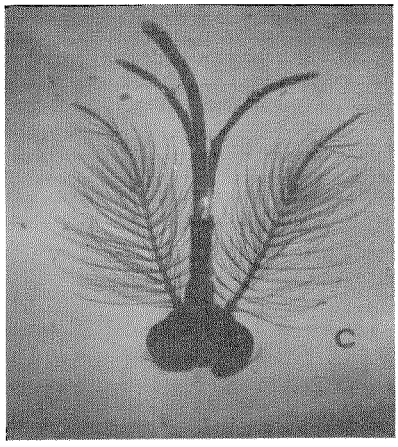


FIG. 1.—A.—Lateral view of a freshly impaled 8-day-old adult *Aedes aegypti* male with unrotated terminalium. The metathoracic legs broke off during handling. B.—View of head of the unrotated male *A. aegypti*. C.—View of head of a normal *A. aegypti* male.

(between these segments rotation of the terminalium takes place), a thin band of pale greyish material (dried secretion?) was visible at the anterior end of the eighth abdominal segment. The basimeres (sometimes referred to as basistyles or side pieces) possessed notably fewer long hairs on the ventral and lateral surfaces than are present on the basimeres of normal males. The ninth segment appeared to be somewhat more retracted than in normal males; the median fleshy lobe of the ninth sternum, for example, could not be seen in the intact specimen.

When the internal reproductive system was extracted from the unrotated male into a drop of *Drosophila* saline (Ephrussi and Beadle, 1936), it was observed to be essentially indistinguishable from that of normal rotated but unmated males of the same age, except that the vasa efferentia were not crossed. The testes were of normal size and shape and possessed a normal number of testicular compartments filled with germinal cells in various stages of development. The terminal chamber of the testes contained actively undulating spermatozoa as did the vasa efferentia. The vasa deferentia and seminal vesicles were full of spermatozoa. The accessory glands were also normal in size, shape, and color. Spermatozoa removed from the seminal vesicles vigorously undulated in the saline in a normal fashion.

This particular abnormality reveals some very interesting facts about the physiology of the reproductive system of the male mosquito. It is evident that rotation of the terminalium is not a prerequisite to the undulations of the spermatozoa in the terminal compartment of the testes or vasa efferentia, nor is it a prerequisite to the descent of the spermatozoa to the seminal vesicles, nor to the secretory activity of the accessory glands. It is also evident that when rotation of the terminalium fails to occur, the male, even though possessing normal looking internal reproductive organs, and only slightly abnormal external organs, makes no attempt to copulate with females and cannot be induced to copulate with them. Unfortunately no observations were made on the question of whether this male was attracted to females. It is conceivable that the decrease in the number of flagellar hairs could have effectively prevented the free male from locating females (see Roth, 1948). Since no information now exists on the factors involved in either the act of clasping or ejaculation, it is not known why this male could not be forced to copulate with females. It is conceivable, however, that the dried secretion between the seventh and eighth abdominal segments and the abnormally retracted ninth segment made copulation mechanically impossible.

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