

THE INTERNAL REPRODUCTIVE ANATOMY OF STERILE MALE *Aedes Aegypti* (LINNAEUS)¹

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In the course of studies on the morphology of the reproductive system of *Aedes aegypti* (Linnaeus) (Bangkok strain; reared in this laboratory since 1959) in which numerous male adults were being dissected, three sterile males were encountered. One of the sterile males had been kept with an excess of females, the other two had been kept only with other males.

The terminalia of all sterile males had rotated at the time of dissection. All three were dissected in Ephrussi-Beadle saline (Ephrussi and Beadle, 1936), and notes were made on the living systems after which they were fixed in formalin-acetic acid-ethanol, then treated with 90, 70, and 50 percent ethanol, and washed in distilled water. Two reproductive systems were mounted unstained, and one was stained with Mayer's acid hemalum for 30 seconds before mounting in glycerine.

The testes of the sterile males (Fig. 1, T) were about one-half the length and about one-fourth the width of those removed from non-sterile males reared in the same batch (Fig. 2). One testis was smaller than the other in the same male, a condition also found among normal males. The testes of the sterile males were essentially colorless with both direct and transmitted light, possessed only a few, poorly defined, small testicular compartments, and were entirely devoid of germinal cells. Nuclei were clearly evident in the testicular sheath. Normally the testes of both mated and unmated adult males contain 15 to 20 or more testicular compartments filled with numerous germinal cells in various degrees of development, and, with direct illumina-

tion the lower half of the testes appears

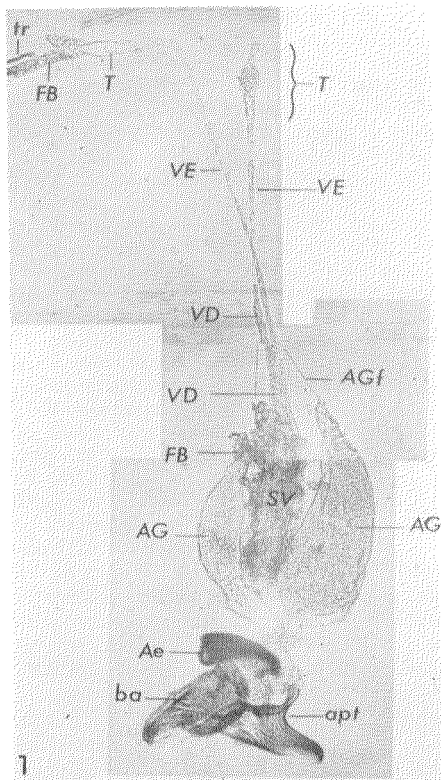


FIG. 1.—Unstained whole mount of reproductive system of a sterile adult male *Aedes aegypti* (Linnaeus) (Bangkok strain) showing testes (T) with fragment of testicular fat body (FB, in upper left hand corner) and tracheal branch (tr), vasa efferentia (VE), vasa deferentia (VD), and accessory glands (AG) and their filaments (AGf). The seminal vesicles (SV) are largely obscured by dense fat body (FB), the aedeagus (Ae) is displaced. The apical paraproct is shown at apt, and a portion of the basimere at ba.

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whitish; with transmitted light it has a distinct brownish cast. In whole mounts of the testicular sheath of normal males

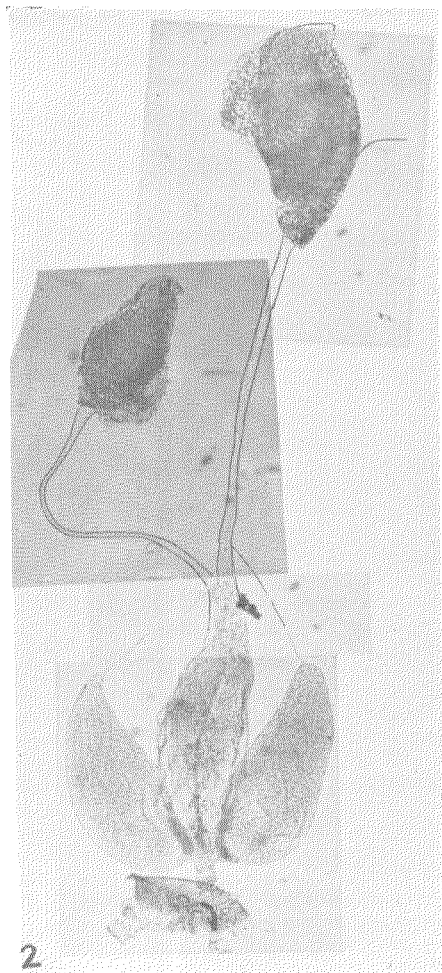


FIG. 2.—Unstained whole mount of reproductive system of a normal adult male *Aedes aegypti* (Linnaeus) (Bangkok strain).

nuclei are generally seen only with difficulty. In sterile males, the vasa efferentia (Fig. 1, VE), vasa deferentia (Fig. 1, VD), and seminal vesicles (Fig. 1, SV) were also colorless and devoid of spermatozoa. The vasa efferentia were smaller in diameter than those of normal males. The vas to the smaller testis was somewhat shorter than the other vas, a condition found also in normal males. Fat bodies on the seminal vesicles (Fig. 1, FB) seemed to be more abundant than in normal males. In two of the sterile males one of the accessory glands was considerably larger than the other (Fig. 1, AG), a condition never seen in normal males whether mated or unmated. The accessory glands in two of the sterile males contained little secretory material (i.e., they did not have a large anterior opaque and dense zone and a clearer, less dense posterior zone). In the third sterile male, however, the accessory glands were entirely normal in appearance, size, and shape. The external genitalia of the sterile males did not appear obviously abnormal.

The present findings on sterile male *Aedes aegypti* reveal several interesting facts about the reproductive system: (1) rotation of the terminalium is entirely independent of the presence of germinal cells, (2) abnormalities of one portion of the male reproductive system are not necessarily associated with abnormalities in another portion of the system, (3) the absence of germinal cells from the testis, while having no effect on the general shape of the gonad, is clearly associated with a marked reduction in the size of the gonad and with a very striking decrease in the number of testicular compartments, and (4) the presence of a few testicular compartment in gonads devoid of all germinal cells suggests that the compartments are produced by the testis itself.

Literature Cited

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