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A REVISION OF THE CULICINE MOSQUITOES  
OF INDIA.

BY

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(In Charge Enquiry upon Indian Culicidae, under the Indian  
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Part IV.

*The larvae of some Indian species of Finlaya, Theo.*

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IN recent papers I have pointed out that *Finlaya assamensis* (Theo.) is evidently a distinct species, and that there appears to be considerable doubt whether *F. magna* (Theo.) is the same species as *F. gubernatoris* (Giles).

In this paper the larvae of *F. magna*, *F. assamensis*, and *F. deccana mihi* (a new species recently described in this Journal), are described, and figures given illustrating important points in their structure.

***Finlaya magna* (Theo.).**

*Larva*, fourth stage, or instar, identified by the isolation method; described and figured from skins cast at the time of pupation, and from full-grown larvae collected at the same time and place.

*Antenna* (Plate XVII, fig. 4), resembling that of some *Stegomyia* species; shaft smooth, tuft reduced to a single hair, arising at a point two-thirds of the distance from the base to the tip, and placed apparently towards the outside of the shaft. Tip furnished with three hairs or bristles, one rather long, another about half the length, the third small; papilla about twice as long as the shortest hair.

*Mentum* (Plate XVII, fig. 1), with from nine to eleven teeth on either side of the central one, the teeth towards the base larger than those towards the apex.

*Thorax* with two pairs of subventral processes arising at the bases of the tufted hairs (Plate XVII, fig. 8).

*Eighth abdominal segment* with a triangular patch of from 30 to 38 teeth of curious form, on either side. One of these teeth highly magnified is shown on Plate XVII, fig. 7.

*Siphon* (Plate XVII, fig. 5) chitinised portion short and broad, from  $1\frac{1}{2}$  to  $1\frac{3}{4}$  times as long as the diameter at the base. Pecten consisting of a row of strong teeth, 14 to 17 in number. The larger teeth have near the base two denticles, one very small, the other larger. The three or four teeth nearest to the base of the siphon are usually very small. Siphonal hair tufts, a single pair of sub-posterior tufted hairs arising just before or just beyond the most apical of the pecten teeth. Each tufted hair consists of about six blade-like and plumose branches. The appearance of one of these under a high magnification is shown on Plate XVII, fig. 9.

*Anal segment* (Plate XVII, fig. 10), dorsal plate forming a large saddle enclosing the dorsal and lateral surfaces, but not continued as a complete ring ventrally; posterior border produced into minute teeth towards the dorsum. Subdorsal, lateral, and anal fan hairs strongly chitinised and blackish. Subdorsal hairs of two pairs, as usual; the outer, or more dorsal, pair divided into subplumose branches, eight to ten in number; these branched hairs are comparatively short compared with similar hairs upon the larvae of species in some other genera, and all the branches are of approximately the same length. Inner, or more ventral, pair, single and long as in many other genera. Lateral hair single, bristle-like, and subplumose. The anal fan consists of about ten branched hairs. Anal papillae (Plate XVII, fig. 10), both pairs short, the dorsal pair longer than the ventral.

The larvae have been found chiefly in water, in tree-holes, and in the following localities:—Surroundings of Bombay Harbour and Islands; Belgaum, and other places in the Bombay Deccan. (Barraud.)

#### ***Finlaya deccana*, Barraud.**

*Larva*, fourth stage, or instar; identified by the isolation method; described and figured from skins cast at the time of pupation, and from full-grown larvae collected at the same time and place.

The larva resembles that of *F. magna* described above in many respects, as is only to be expected from the close similarity of the adult mosquitoes, and evident close relationship. There are however several distinguishing characteristics which are constant in a series of about fifteen larvae of each species. I have not been able to discover any intermediate forms. The chief differences are as follows:—*Antenna* (Plate XVII, fig. 2), about half the length of that of *L. magna*; tuft arising only slightly beyond the middle point, instead of two-thirds from the base. Chitinised portion of the *siphon* shorter, usually about  $1\frac{1}{4}$  times the length of the diameter at the base. Outer, or more dorsal, pair of subdorsal tufted hairs of the *anal segment* divided into three, four, or five, branches, more usually three (Plate XVII, fig. 14), instead of eight to ten. Posterior border of anal segment with more pronounced teeth. The following further observations are of minor importance. The *mentum* usually has fewer teeth than *L. magna*. I have however found a good deal of variation in this structure in many species of various genera, and reliance cannot be placed on the actual number of teeth for identification purposes. The number of pecten teeth on the siphon appears to be subject to considerable variations, it is usually from 13 to 16, but one specimen has 20. I have figured one of the smaller branched hairs of the anal fan (Plate XVII, fig. 11). The fan plate in this and allied species is short, and several of the smaller hairs arise from separate bases, attached apparently to the soft membrane on the ventral surface of the segment.

The larvae of this species were found breeding in the same situations and places as *F. magna*, mentioned above.

#### **Finlaya assamensis** (Theo.).

*Larva*, fourth stage, or instar, identified by the isolation method, described and figured from skins cast at the time of pupation.

In general characters this resembles the two species described above, but there are several well-marked differences; the most easily seen are the characters of the hairs of the *anal segment*. These are much less heavily chitinised than in the other two species referred to. The outer, or more dorsal, pairs of the subdorsal hairs are split into two slender long branches (Plate XVII, fig. 13), and the branches of the anal fan are much finer.

The *antenna* (Plate XVII, fig. 3) resembles that of *F. deccana*, but the hair arises nearer to the tip. The *siphon* is about  $1\frac{3}{4}$  times as long

EXPLANATION OF PLATE XVII.

*Drawings illustrating the larval structures of three species of the genus  
Finlaya Theo.*

- Fig. 1. *Finlaya magna* (Theo.) Mentum.  
" 2. *Finlaya deccana*. Barraud. Antenna.  
" 3. *Finlaya assamensis* (Theo.) Antenna.  
" 4. *Finlaya magna* (Theo.) Antenna.  
(Figures 2, 3 and 4, drawn to the same scale.)  
Fig. 5. *Finlaya magna* (Theo.) Siphon.  
" 6. *ditto* Pecten tooth.  
" 7. *ditto* Comb tooth (of eighth abdominal segment).  
" 8. *ditto* Subventral thoracic tooth.  
" 9. *ditto* Branch of siphonal tufted hair.  
" 10. *ditto* Anal segment (bases of subdorsal and fan hairs indicated).  
" 11. *Finlaya deccana*. Barraud. One of the smaller branched hairs of anal fan.  
" 12. *Finlaya magna* (Theo.) One of the outer subdorsal branched hairs of anal segment.  
" 13. *Finlaya assamensis* (Theo.) ditto.  
" 14. *Finlaya deccana*. Barraud. ditto.  
(Figures 12, 13 and 14, drawn to the same scale.)

PLATE XVII.

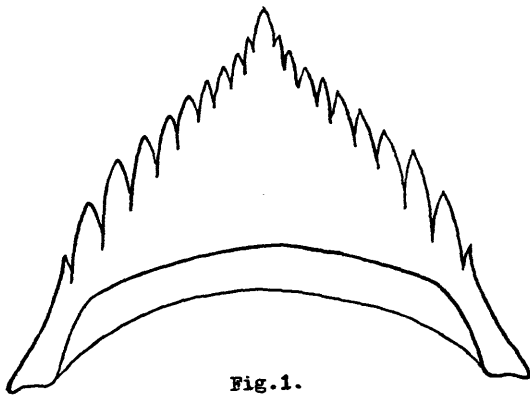


Fig. 1.



Fig. 2.

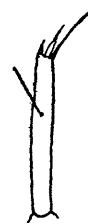


Fig. 3.

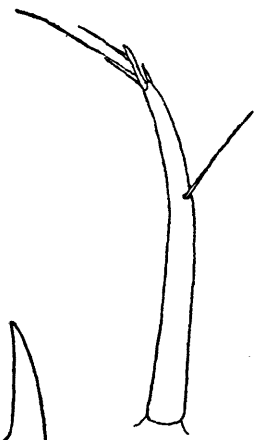


Fig. 4.

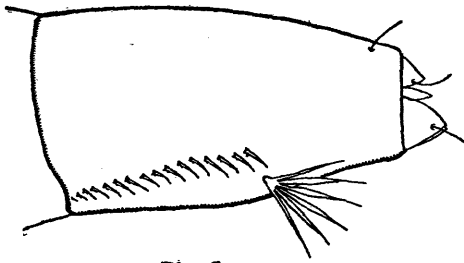


Fig. 5.



Fig. 6.



Fig. 7.



Fig. 8.



Fig. 9.

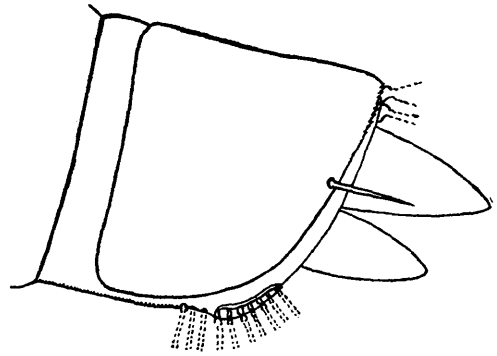


Fig. 10.

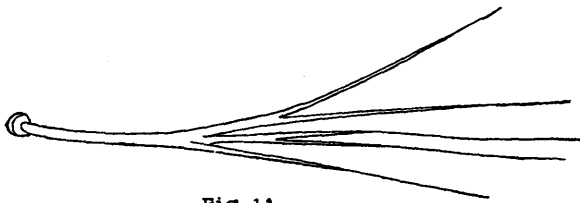


Fig. 11.

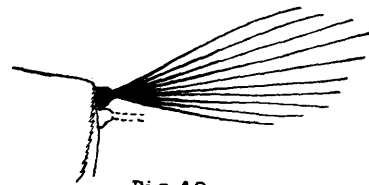


Fig. 12.

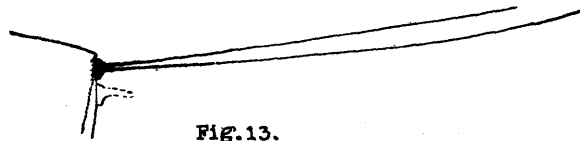


Fig. 13.

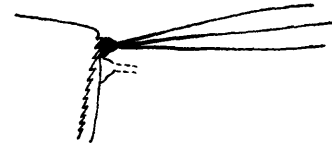


Fig. 14.

Magnification:-

Fig. 1.

0.1 mm.

Figs. 2; 3; & 4.

0.2 mm.

Figs. 5; 10; 12; 13; & 14.

0.5 mm.

Figs. 6; 7; 8; 9; & 11.

0.1 mm.

as the diameter at the base ; tufted hair of five branches, not blade-like, and only very minutely subplumose. Pecten usually of 17 teeth, similar in shape to the one figured on Plate XVII, fig. 6. *Mentum* with only six or seven teeth either side of the central one. Comb of *eighth abdominal segment* composed of similar teeth to the one figured on Plate XVII, fig. 7 but larger in number (about 50 in the patch in my specimens).

The larvae were found in some numbers in water in tree-holes in Assam, and Eastern Bengal, at the following places :—Nongpoh, Dibrugarh, Haflong, Rangamati, and Sukna, all July, August, and September, 1922 (Barraud).