

IX THE LARVA OF *MICROMERUS*
LINEATUS, BURM.

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(With Plate XXIII).

Head: the central part of eyes projecting slightly, this part alone being faceted and therefore probably the only functional part during the larval stage; the antennae with a very long pedicel, as long as $\frac{2}{5}$ ths the whole length of antennae, the base and tip of the pedicel pigmented; a strong, robust, backwardly directed horn behind each eye; ocelli distinct in the final instar.

Mask long and narrow; median lobe deeply hollowed out and moderately deeply cleft, the two corners of the cleft rounded and overlapping; the free border of the lobe with blunt, tooth-like crenations; lateral lobes bifid, each bifurcation bearing a strong claw, the inner with a long moveable hook which overlaps its fellow at the middle line.

Prothorax with two forwardly directed, robust horns at the anterior and outer part.

Legs long and slender, practically free from hairs, the femora adorned with four pigmented annuli.

Abdomen twice the length of the wing-cases, moderately stout, covered sparsely with short hairs and pigmented with a definite pattern; each somite bearing a row of closely-set, short spines along the apical border.

Caudal appendages only two in number, easily fractured off, not functioning as gills, covered with short, stiff hairs, triquetral in section, all the three surfaces being flat and the broadest below. The two lateral surfaces meeting above to form a crest which is furnished with two rows of short, stout, strongly imbricated spines. Similar spines along the inner and outer borders.

Habits: Always in fast running water, clinging to roots, submerged twigs and other debris, rarely to the stems of weeds or reeds.

The exuviae of these insects are extremely common, being found usually on the trunks of trees adjacent to streams, sometimes as high as seven feet above water-level, although generally at not more than two. The living larvae are obtained with great difficulty owing to their clinging so tightly with their long legs to the objects mentioned above and at a comparatively great depth. In Poona I have generally managed to obtain them by pulling out submerged branches of trees and date-palm leaves which had fallen into the water, but even here they were difficult to find on account

of their habit of accumulating debris on the short hairs which cover the abdomen and caudal appendages so that it needs the closest scrutiny to detect them. Quite occasionally protozoa such as *Vorticella* are found adhering to their bodies. They are pure rectal breathers, and if the larvae be viewed in muddy water, strong currents of particles are seen issuing to and from the rectum.

It is reasonable to assume by analogy that the larvae of *Micromerus* and the associated genus *Rhinocypha* are closely similar in their morphology and if so, the above description will confirm the opinion expressed by Dr. Laidlaw, that the two should be placed together and raised to the rank of a subfamily. It will be seen that no true, and certainly not functional, caudal gills are present, these being replaced by caudal appendages which seem only to serve for purposes of defence. The autotomy associated with these appendages also points to their function as one of defence only, as if the insect be seized by any other, it merely parts company with the appendage and makes its escape. A similar habit probably exists in Rhinocyphine larvae and may account for the absence of the caudal appendages in an incomplete specimen described in a note by Dr. Laidlaw.
