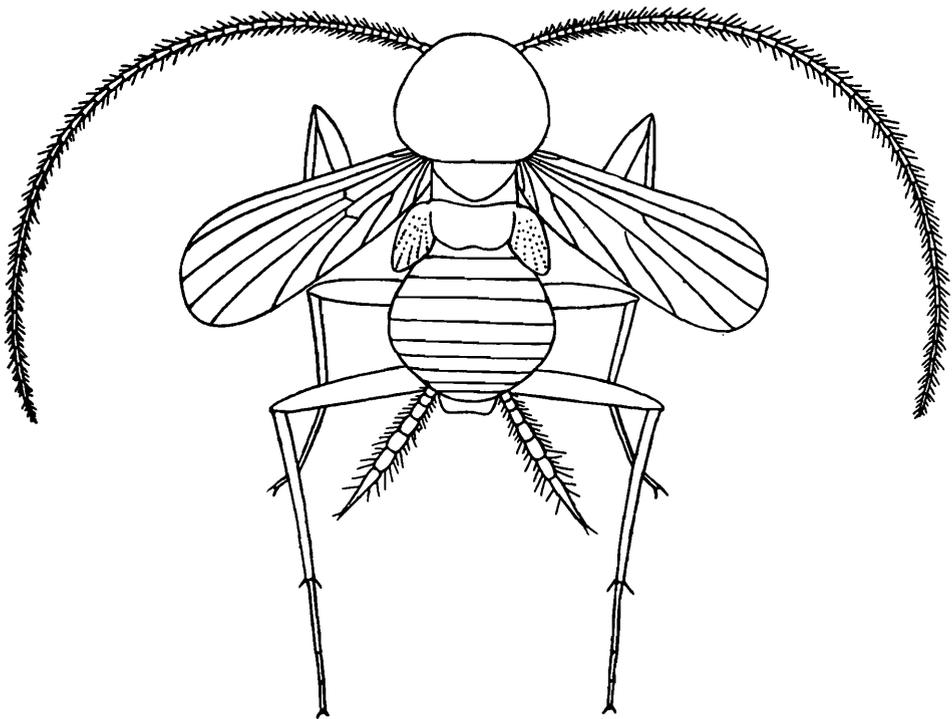


IV THE FEMALE OF THE COCKROACH *ALLUAUDELLA*

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The genera *Alluaudella* and *Cardax* contain minute cockroaches of such unusual form that Shelford remarked when describing the latter: "It is difficult to discover the affinities of a genus so aberrant as this. .it cannot be regarded as closely related to any known genus."¹ Only two species of *Alluaudella* and one of *Cardax* are known, and these from male specimens only. The discovery



Alluaudella himalayensis ♀ × 15.

of a female is therefore of considerable interest. It was found by Mr. L. C. Hartless in his bungalow at Pashok, *ca.* 3,500 ft., in the Darjiling District of the Eastern Himalayas. Its tegmina are small and its wings vestigial, so that it is obviously incapable of flight; but the tegmina presumably function as a protection to the body, for they are sufficiently developed to show that the venation

¹ *Ann. Mag. Nat. Hist.* (8) I, p. 162 (1908).

is practically identical with that of the male of *Alluaudella himalayensis*, which was described¹ from a single specimen collected at Kurseong, 4,700 ft., in the same district by Dr. Annandale in June 1910.

The total length is 2.5 mm., but the abdomen has evidently shrunk greatly in drying, as it does not now extend much beyond the ends of the hind coxae.

The general colour is dull yellowish, distinctly paler than that of the browner male. The head is scarcely exposed by the pronotum and appears larger than in the male on account of the much smaller and rather narrow eyes. There are no ocelli. The large basal joint of each antenna is succeeded, as in the male, by two joints each about twice as long as broad, these are succeeded by a number of joints which are broader than long. Distally the joints become gradually longer and thinner, those of at least two thirds of the antenna being fully twice as long as broad.²

The pronotum is somewhat more rounded than in the male and is not pubescent, though there are a few spiny hairs on the margin.

The tegmina are short, probably too short to cover the abdomen in fresh specimens. Their venation is identical with that of the male. A comparison of the two tegmina shows that the venation varies slightly as in the male. The wings are very much reduced, but show indications of similar venation. The styles are much stouter than in the male.

¹ *Rec. Ind. Mus.* V, pp. 309-311, pl. xx (1910).

² The antennae of the male resemble those of the female. They are about as long as the wings, not shorter as shown in the figure (*Rec. Ind. Mus.* V, 1910, pl. xx, fig. 5 A). Their second joint is as long as the third, not shorter as shown (*loc. cit.* fig. 5 B). The antennae of *Cardax* as shown on the same plate are also too short.

