

COLLEMBOLA OF THE SIJU CAVE, GARO HILLS, ASSAM.

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The Springtails collected during the exploration of the Siju Cave¹ are referable to four species all of which appear to be undescribed. All belong to the family Entomobryidae, two being species of the widespread genus *Lepidocyrtus*, and one belonging to *Paronella* whose members are distributed over the tropics of the Eastern Hemisphere. This latter and one of the *Lepidocyrti* were found only at the cave entrance and have no claim to be regarded as belonging to the cave fauna. The other *Lepidocyrtus*, though occurring as far as 500 feet into the cave, is in no respect modified, being normally pigmented and possessing well-developed eyes. There remains the fourth species—*Cyphoderopsis gracilis*—which belongs to a tribe all of whose members are eyeless and excessively pale, so that they present the aspect usually distinctive of cave-dwellers. This insect was found very sparingly 500 feet and 800 feet from the entrance, and in some numbers in the farthest recesses of the cave—3,500 feet in. The tribe Cyphoderini includes many cave-haunting Springtails, but the majority of its members live under stones, in ants' nests, and in other comparatively shallow concealed situations, so that there is much doubt if the "cavernicolous" appearance of even this species can be regarded as a result of the environment afforded by its subterranean home.

All the specimens described are preserved in the collection of the Indian Museum.

ENTOMOBRYIDAE.

ENTOMOBRYINI.

Lepidocyrtus magnificus, sp. nov.

(Figs. 1-3.)

Mesonotum very prominent, four times as long as metanotum; fourth abdominal segment seven times as long as third. Feelers twice

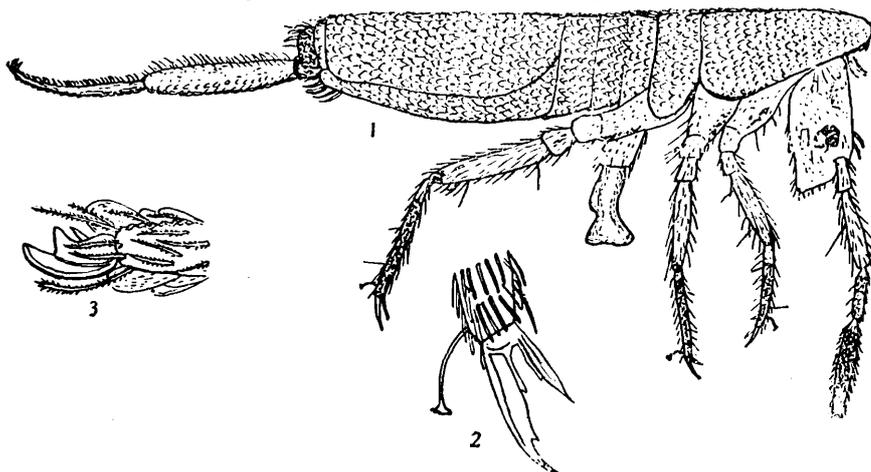


FIG. 1. *Lepidocyrtus magnificus*, side view: $\times 25$. FIG. 2, foot of hind leg: $\times 160$
FIG. 3, tip of dens and mucro of spring: $\times 320$.

¹For a description of the cave and of the remainder of its fauna see *Rec. Ind. Mus.* XXVI, pp. 1-136.

as long as head, proportional length of their segments as 6 : 14 : 10 : 17. Foot-claw elongate, slightly curved, with narrow internal lamella proximal and distal teeth; empodial appendage narrowly lanceolate with delicate lamella (fig. 2). Spring half as long as body, manubrium somewhat longer than dentes; mucro relatively stout with strong teeth, the dorsal spine short (fig. 3).

Length 2.75 mm. Colour pale yellow, with the third and fourth antennal segments, the edges of the mesonotum and metanotum, some spots on the haunches, the tips of the thighs, the shins, and the last abdominal segment dark violet.

Locality.—Siju Cave, Assam, at entrance; one specimen, February 1922.

This attractive species belongs to the group of large Lepidocyrti which includes *L. maximus* Schött (1893) from the Cameroon, *L. robustus* Imms (1912) from Travancore, and *L. imperialis* Carpenter (1916) from the Seychelles. The relatively short third antennal segment and the strong teeth of the mucro appear to be the most evident structural distinctions. The eyes are normally developed and the species is not at all modified as a cave-dweller.

Lepidocyrtus exploratorius, sp. nov.

(Figs. 4-6.)

Mesonotum two and a quarter times as long as metanotum (fig. 4); fourth abdominal segment four times as long as third. Feelers half as long again as head, proportional length of their segments as 5 : 7 : 7 : 11. Foot-claw elongate and slender with feeble proximal and distal teeth; empodial appendage narrowly lanceolate (fig. 5). Spring nearly half as long as body, manubrium slightly longer than dentes; mucro relatively slender with prominent teeth, the dorsal spine elongate and acute (fig. 6).

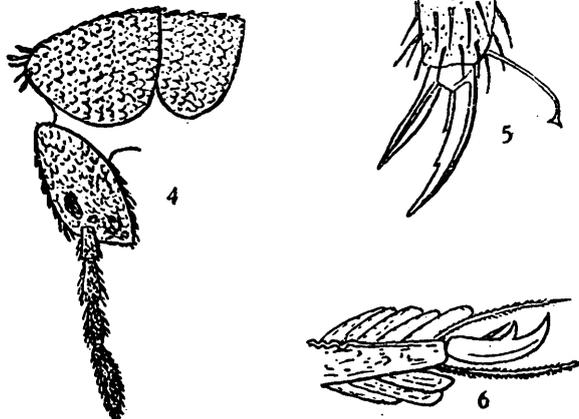


FIG. 4. *Lepidocyrtus exploratorius*, side view of head and thorax: $\times 50$. FIG. 5, foot of hind leg: $\times 240$. FIG. 6, tip of dens and mucro: $\times 320$.

Length 1.7 mm. Colour uniformly pale yellow except the feelers which are deep violet, and some feeble violet streaks on the thighs.

Locality.—Siju Cave, Assam, 100-300 feet from entrance, twelve specimens; 400-500 feet from entrance, three specimens.

The eyes of all these insects appear to be normal and the distribution of the species in the cave suggests that it is a casual immigrant from the outer world. It is closely related to *L. obscuricornis* Carpenter (1916) from the Seychelles, differing in the relatively longer mesonotum and shorter fourth abdominal segment, while the foot-claw and the mucro are closely similar.

*PARONELLINI.**Paronella brunnea*, sp. nov.

(Figs. 7-9.)

Feelers one and two thirds times as long as body, the first and second segments stouter than the third and fourth, relative lengths as 10 : 8 : 4 : 11. Fourth abdominal segment eight times as long as third. Legs with indication of joint between shin and foot ; foot-claw with small paired basal lateral and internal teeth, and an internal distal tooth ; empodial

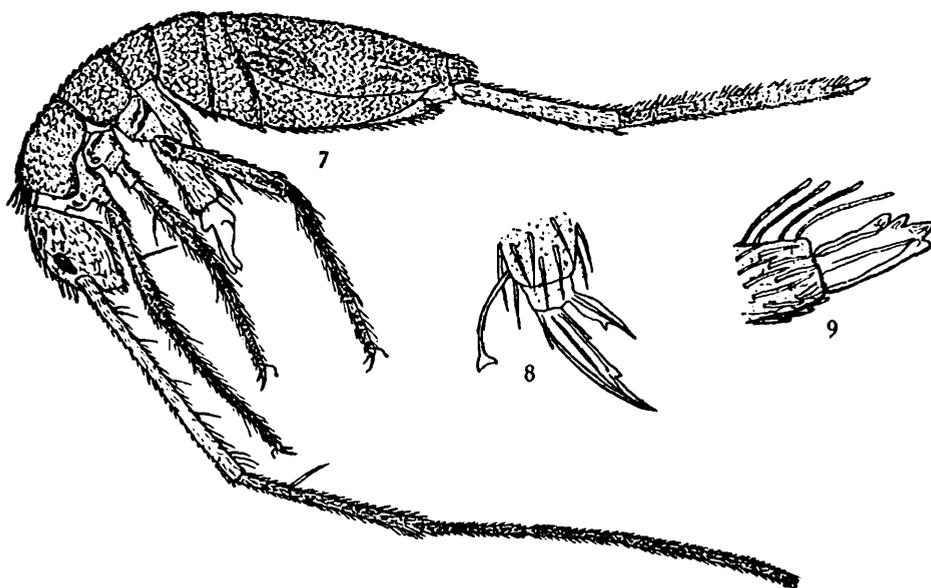


FIG. 7. *Paronella brunnea*, side view : $\times 25$. FIG. 8, foot of hind leg : $\times 130$. FIG. 9, tip of dens and mucro : $\times 80$.

appendage slender, lanceolate, with distinct internal tooth (fig. 8). Spring four-fifths as long as body, dens half as long again as manubrium, without scale-like appendage at base of mucro ; mucro (fig. 9) with two terminal and two dorsal teeth, the ventro-terminal tooth having a rounded lateral lobe.

Length 2.5 mm. Colour ochreous brown with dark transverse bands on the hind margins of the terga, and alternating dark and pale longitudinal streaks on the fourth abdominal segment ; manubrium pale ; dentes, tips of thighs and whole of shins, also second antennal segments, dusky ; third and fourth antennal segments almost black.

Locality.—Siju Cave, Assam, at entrance ; five specimens, February 1922.

This handsome springtail is readily distinguished from other species of *Paronella* by the elongate feelers in combination with the toothed empodial appendage and the absence of a scale-like appendage at the base of the mucro. Its nearest described ally seems to be *P. insignis* Imms (1912) from Travancore, which agrees with it in the last named character. The specimens from Siju Cave were all found at the entrance and the insect is in no respect modified for life underground.

CYPHODERINI.

Cyphoderopsis gracilis, sp. nov.

(Figs.10-12.)

Feelers twice as long as head, proportionate length of their segments as 3 : 6 : 6 : 10. Feet without clubbed hairs ; foot-claw long, slender and strongly curved, untoothed ; empodial appendage elongate and narrowly lanceolate, untoothed (fig. 11). Fourth abdominal segment six times as

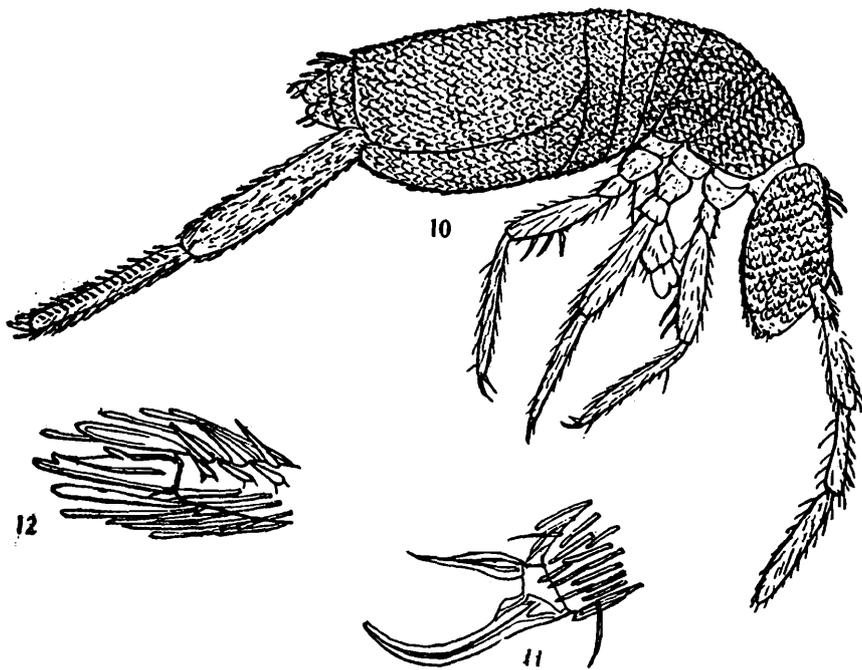


FIG. 10. *Cyphoderopsis gracilis*, side view : $\times 240$. FIG. 11, foot of hind leg : $\times 240$.
FIG. 12, tip of dens and mucro : $\times 240$.

long as third. Spring nearly three-quarters as long as body, dens three-quarters as long as manubrium ; mucro relatively short with blunt terminal and two acute dorsal teeth (fig. 12).

Length 1.5 mm. Colour white with feeble yellowish or brownish mottlings.

Locality.—Siju Cave, Assam, 400-500 ft. from entrance, 1 specimen ; 800 feet from entrance, 4 specimens ; 3,500-3,600 ft. from entrance, 10 specimens.

This is the single characteristic cavernicolous insect of the collection. The members of the tribe (Cyphoderini) to which it belongs are all blind and pale in colour : most of them live in ants' nests, under stones, and in similar situations. The observed distribution of the species in Siju Cave suggests strongly that it is an inhabitant of the deeper galleries only. The genus *Cyphoderopsis* (Carpenter, 1917) was founded for a springtail (*C. kempi*) from Rotung, Assam, collected under stones by the Abor Expedition. *C. gracilis* is easily distinguished from *C. kempi* by its long feelers, its very long, curved toothless foot-claw, and its much shorter mucro ; there appears to be no scale-like appendage at the base of the mucro but the dentes are thickly scaled. The simple foot-claw and empodial appendage and the short mucro, no longer

relatively than that of the Paronellini, are annectant characters more strongly marked in *C. gracilis* than in *C. kempi*, and may afford evidence of the primitive standing of this deep-dwelling inmate of the Siju Cave.

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