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Some New Records and New Species of Collembola from India

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Abstract

A NEW genus and three new species of Collembola are described. *Xenylla obscura* Imms is redescribed and figured. *Brachystomella surendrai* Goto and *Lepidocyrtus scaber* Ritter are recorded and the synonymy of the latter species discussed.

INTRODUCTION

THE material forming the basis of this paper was collected in India by Dr T. Clay, Department of Entomology, British Museum (Natural History), and in this, the last of my series of papers dealing with this collection, I would again record my appreciation for the opportunity to work on it. The other published papers dealing with this collection are included in the literature cited being numbers 7, 8, 9, 10, 11, 13 and 15 of that list.

All type and paratype specimens mounted on microscope slides or preserved in alcohol are deposited in the British Museum (Natural History), London, and when available one paratype is held in the author's collection.

Family HYPOGASTRURIDAE Börner, 1913

XENYLLA Tullberg, 1869

Xenylla obscura Imms, 1912

Xenylla obscura Imms, Salmon, 1956.

Figs. 1–15.

I have examined a number of specimens from Dr Clay's collection and have been forced to the conclusion that sexual dimorphism exists in this species. Morphological variations occur which appear to be associated in groups that suggest sexual dimorphism though it has not been possible to determine the sexes of all the individual insects.

It should be noted that the mucro : dens relationship varies between 1 : 2 in the female to 1 : 3 in the male. The anal spine is almost straight, and shorter than its papilla in the male but more curved and longer than its papilla in the female. There are also differences in the antennal sensory structures of male and female shown in Figs. 5, 7, 13 and 15. The maxilla and mandible are shown in Figs. 2–3 and are from a male specimen.

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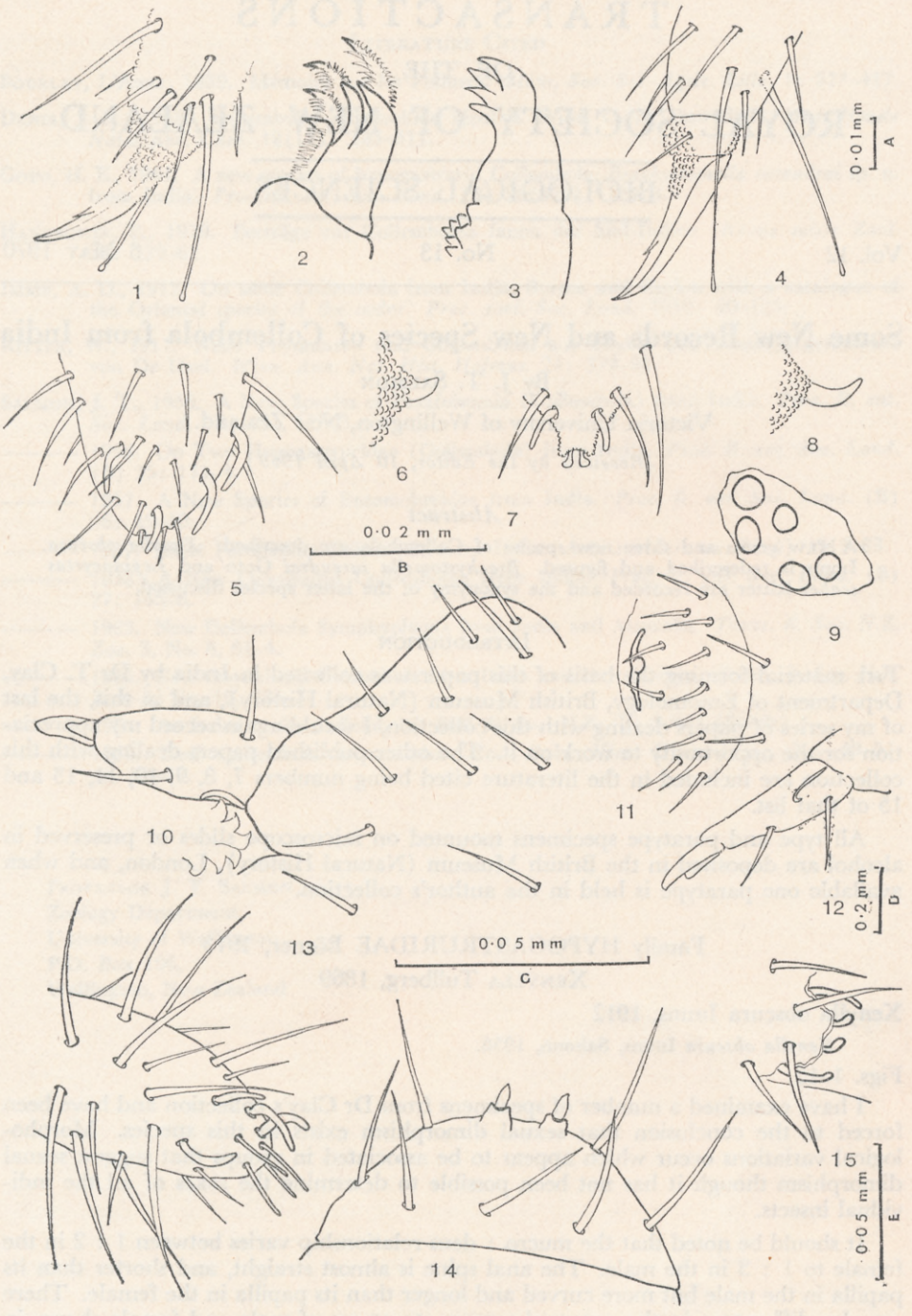
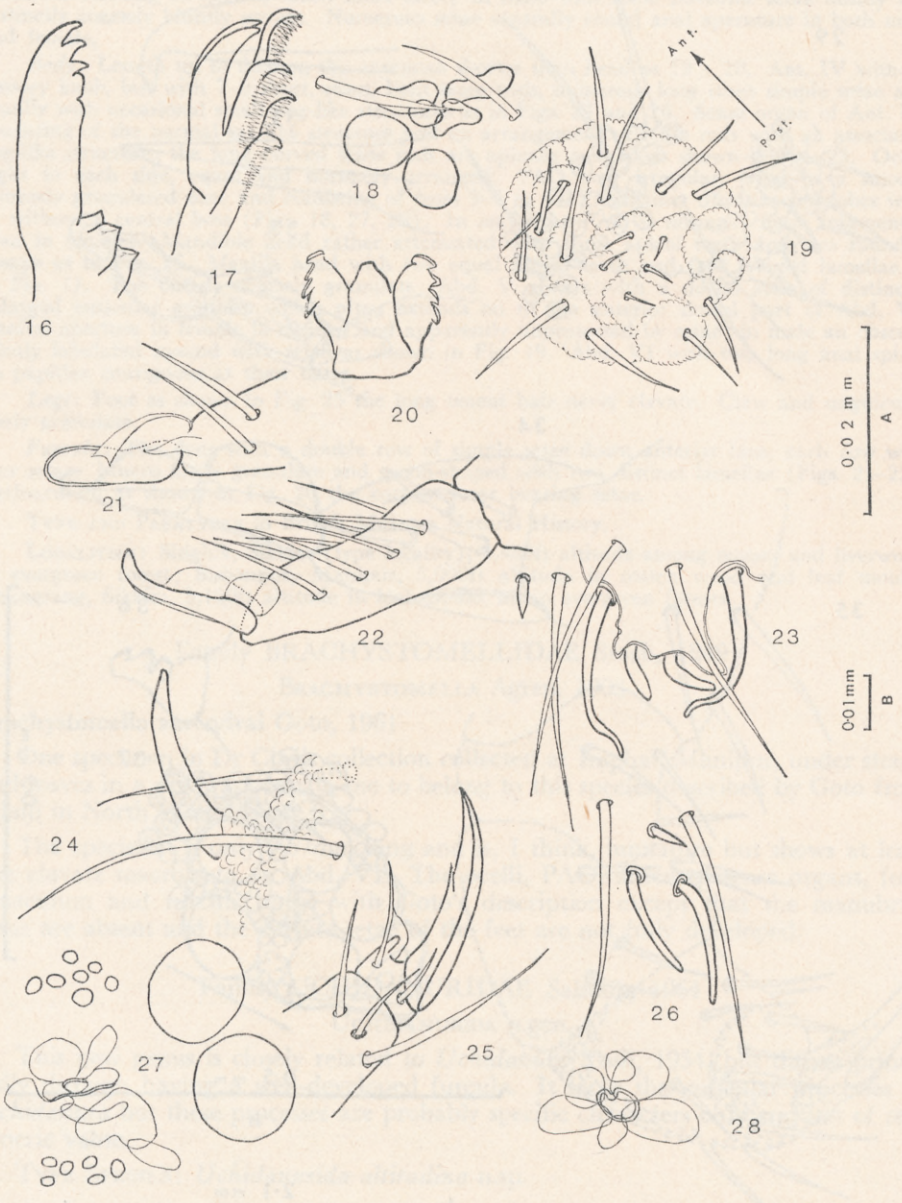
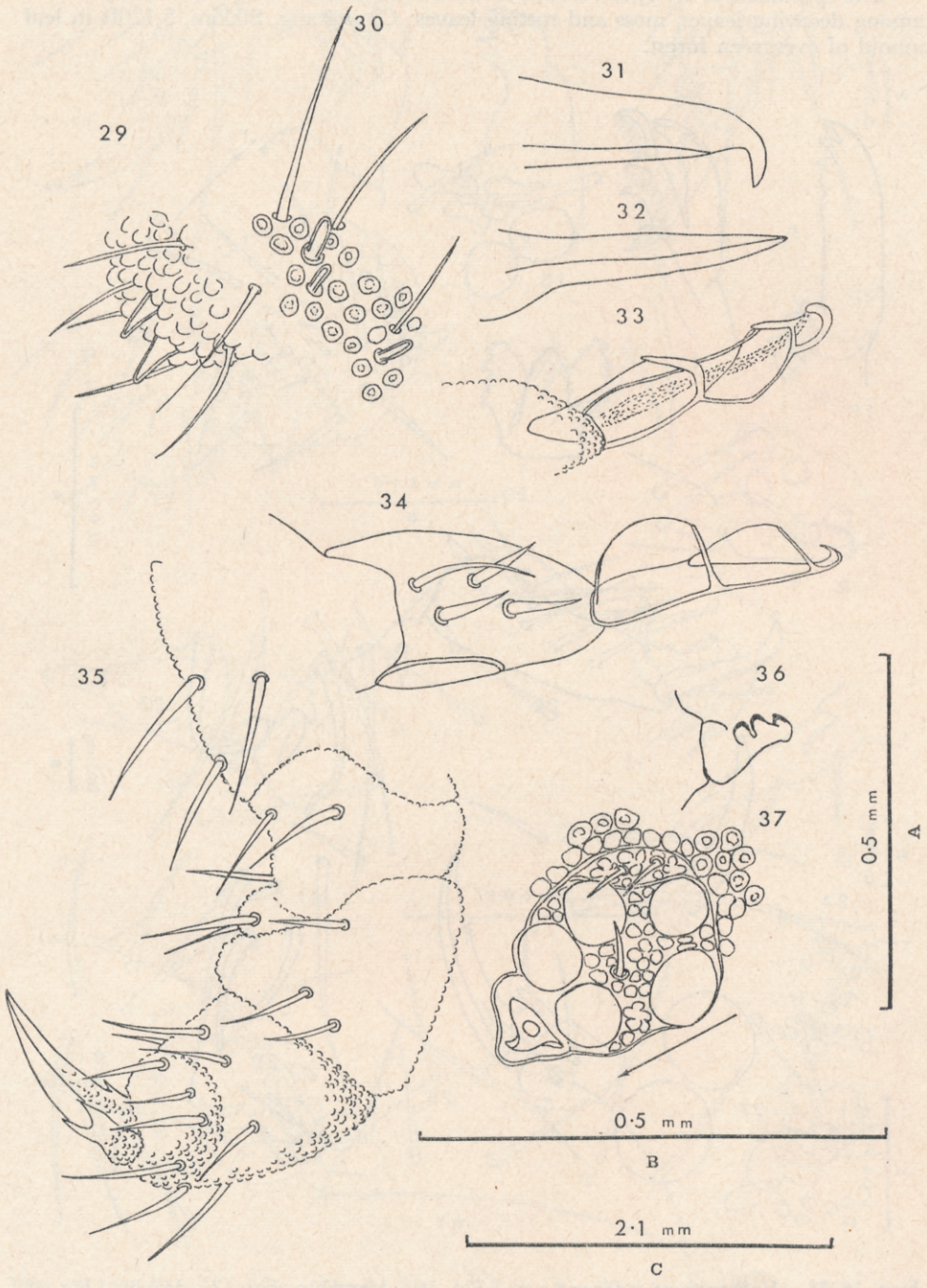


Figs. 1–15.—*Xenylla obscura* Imms.—Fig. 1.—Foot ♂. Fig. 2.—Maxilla ♂. Fig. 3.—Mandible ♂. Fig. 4.—Foot ♀ drawn from co-type in British Musuem (Natural History). Fig. 5.—Apex of Ant. IV ♀. Fig. 6.—Anal spine ♂. Fig. 7.—Sense organ Ant. III ♀. Fig. 8.—Anal spine ♀ drawn from co-type in British Museum (Natural History). Fig. 9.—Ocelli. Fig. 10.—Dorsal view of one side of furcula showing setae and connection with tenaculum ♂. Fig. 11.—Male genital plate. Fig. 12.—Dens and mucro ♀. Fig. 13.—Apex of Ant. IV ♂. Fig. 14.—Abd. VI showing anal spines ♂. Fig. 15.—Sense organ Ant. III ♂. Figs. 1 and 4, Scale A; Figs. 2, 3, 13 and 15, Scale B; Figs. 5, 10, 11 and 14, Scale C; Figs. 6, 7, 8 and 12, Scale D; Fig. 9, Scale E.

The specimens of *Xenylla obscura* studied came from: Gangtok, Sikkim, 6,000ft among decaying leaves, moss and rotting leaves; Chungtang, Sikkim, 5,120ft in leaf mould of evergreen forest.



FIGS. 16–28.—*Hypogastrura indovaria* n.sp.—Fig. 16.—Mandible. Fig. 17.—Maxilla. Fig. 18.—Anterior ocelli and PAO showing two associated setae. Fig. 19.—Male genital plate (arrow indicates anteroposterior direction). Fig. 20.—Tenaculum. Fig. 21.—Mucro. Fig. 22.—Mucro and dens. Fig. 23.—Sense organ Ant. III. Fig. 24.—Anal spine. Fig. 25.—Foot. Fig. 26.—Two sense rods, sensory peg and setae from Ant. IV. Fig. 27.—PAO, cuticular granules and anterior ocelli. Fig. 28.—Another PAO. Figs. 16, 17, 18, 19, 23, 25, 26, 27 and 28, Scale A; Figs. 20, 21, 22 and 24, Scale B.



Figs. 29–37.—*Uchidanurida altitudina* n.g. et n.sp.—Fig. 29.—Anal spines. Fig. 30.—Sense organ Ant. III. Fig. 31.—Mandible. Fig. 32.—Maxilla. Fig. 33.—Mucro from above. Fig. 34.—Dens and mucro in side view. Fig. 35.—Hind leg and foot showing tibial setae and lateral teeth on claw. Fig. 36.—Tenaculum side view. Fig. 37.—Ocelli and PAO. Figs. 30, 31, 32 and 36, Scale A; Figs. 33, 34, 35 and 37, Scale B; Fig. 29, Scale C.

HYPOGASTRURA Bourlet, 1839

Hypogastrura indovaria n.sp. Figs. 16–28

Colour: Brownish black granular, ocelli on black fields.

Clothing: Sparse to heavy, of short and long curved simple setae; generally sparse to moderate clothing in female, much more heavy in male with some posterior setae faintly but distinctly coarsely bluntly serrate. Numerous setae ventrally round anal aperature in both male and female.

Body: Length up to 0.8mm, the antennae shorter than head as 19 : 20. Ant. IV without sensory knob, but with 7–9 short, stout, bent sense rods, numerous long stout simple setae and usually with occasional small peg-like structures as in Figs. 23 and 26. Sense organ of Ant. III consisting of the normal sac-like structure and an arrangement of sense rods with an associated peg-like structure; the long curved sense rods are apically twisted as shown in Fig. 23. Ocelli eight to each side, equal and normally arranged. PAO very irregular, lying in a smooth minutely granulated zone and consisting of from 3–4 to 4–12 indistinct disconnected lobes with or without a central boss (Figs. 18, 27, 28). In males the PAO is normally more fragmented than in females. Mandible head rather attenuated with three apical teeth and two rounded bumps as in Fig. 16. Maxilla head with two equal apical teeth and four fringed lamellae as in Fig. 17. The cuticle coarsely granulate; Abd. V always with a dorsal zone of distinctly enlarged cuticular granules which often extends on to the anterior dorsal part of Abd. VI. Genital aperture in female ill defined and apparently unprotected by setae; in male an obscure faintly lobulated mound with setae as shown in Fig. 19. Abd. VI with two long anal spines on papillae contiguous at their bases.

Legs: Foot as shown in Fig. 25 the long tenent hair never clavate. Claw and unguiculus finely granulate.

Furcula: The dens with a double row of simple setae down anterior face, each row with four setae. Mucro finely granulate and spoon-shaped with two distinct lamellae (Figs. 21–22). Retinaculum as shown in Fig. 20 the corpus never bearing setae.

TYPE AND PARATYPES in British Museum Natural History.

LOCALITIES: Singhik, Sikkim (type locality), 4,480ft altitude among mosses and liverworts in evergreen forest; Bishenpur, Manipur, 5,000ft altitude in rotten wood and leaf mould; Chungtang, Sikkim, 5,120ft altitude in leaf mould, all in evergreen forests.

Family BRACHYSTOMELLIDAE Stach, 1949

BRACHYSTOMELLA Agren, 1903

Brachystomella surendrai Goto, 1961

One specimen in Dr Clay's collection collected at Imphal, Manipur, under stones and leaves in a ditch appears to me to belong to this species described by Goto from Pilani in North West India.

The specimen is only 0.57mm long and is, I think, immature but shows at least one clavate macro seta on Abd. VI. The ocelli, PAO, antennal sense organs, feet, tenaculum and furcula agree with Goto's description except that the manubrial setae are absent and the clavate setae of the feet are not fully developed.

Family UCHIDANURIDAE Salmon, 1964

UCHIDANURIDA n.gen.

This new genus is closely related to *Uchidanura* Yosii, 1954, but differs principally through having a well-developed furcula. It lacks the cuticular processes of *Uchidanura* but these processes are probably specific characters only and not of real generic value.

TYPE SPECIES: *Uchidanurida altitudina* n.sp.

Uchidanurida altitudina n.sp. Figs. 29–37

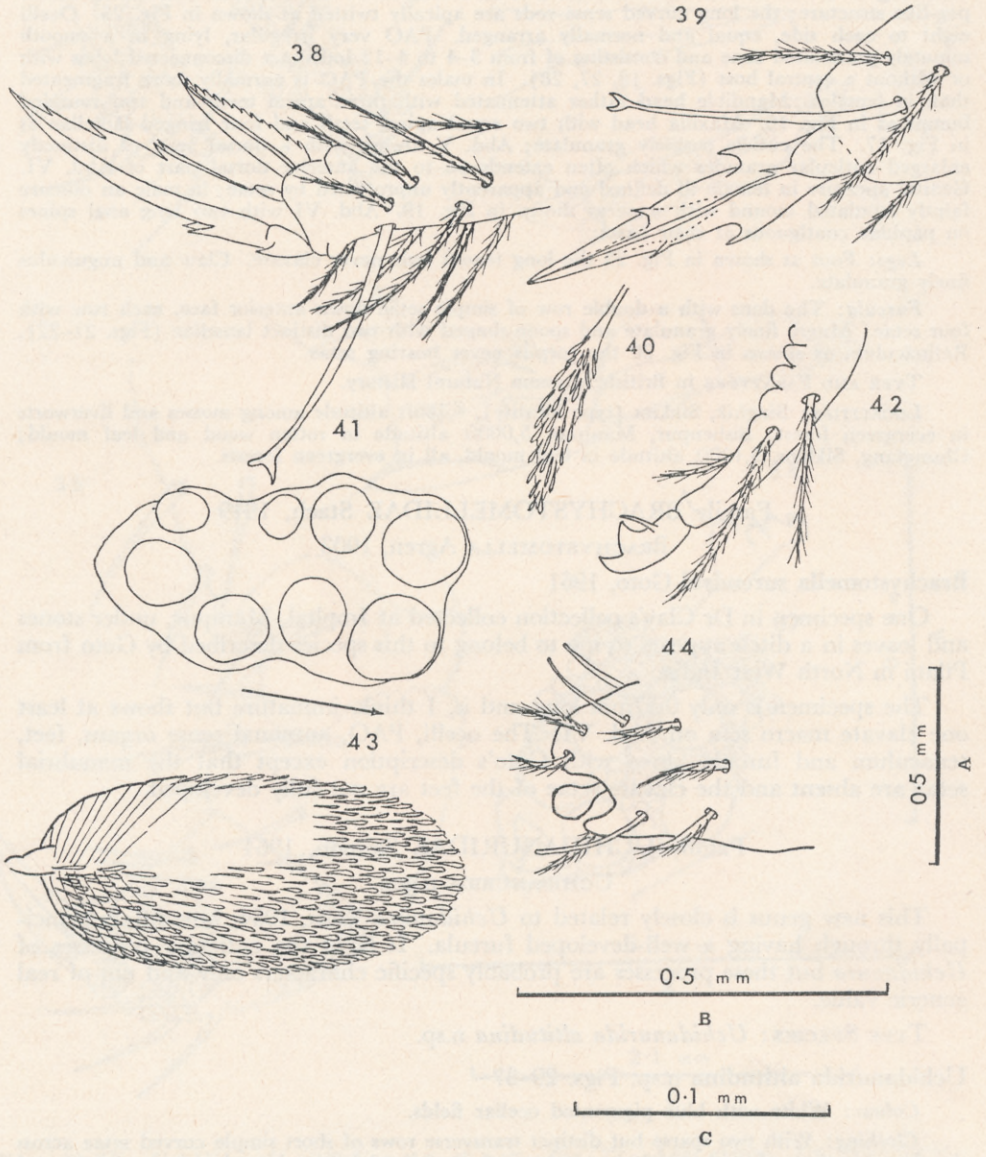
Colour: White with blue pigmented ocellar fields.

Clothing: With two sparse but distinct transverse rows of short simple curved setae across the dorsal surface of each trunk segment; some occasional longer lateral setae on paratergal areas and around posterior margin of Abd. VI.

Body: Length up to 0.56mm. Antennae very short, barely as long as half the head. Ant. IV with several long plain setae, longer than Ant. IV itself and almost as long as the entire

antenna. Ant. III with very small sensory organ of three sense rods and three setae as in Fig. 30. Abd. IV slightly longer than Abd. III as 37 : 27. Abd. VI with two small anal spines as in Fig. 29. Cuticle very coarsely granulated with irregular shaped granules which are largest on the head, Abd. VI and on the paratergal areas. Ocelli five to each side. PAO with small central boss and three indistinct lobes which sometimes appear to be slightly twisted (Fig. 37). Tenaculum with three barbs to each ramus. Mandible and maxilla as in Figs. 31 and 32.

Legs: Unguiculus and tenent hairs absent; claw with a basal internal tooth and two lateral external teeth about one quarter down. Inner surface of legs with distinct chaetotaxy as shown in Fig. 35. Hind claw related to mucro as 14 : 12 in length.



Figs. 38–44.—*Lepidosira unguserrata* n.sp.—Fig. 38.—Hind foot. Fig. 39.—Hind foot from posterior face. Fig. 40.—Scale from dens. Fig. 41.—Ocelli. Fig. 42.—Mucro and apex of dens. Fig. 43.—Body scale. Fig. 44.—Apex of Ant. IV. Figs. 38, 39 and 42, Scale A; Figs. 40, 43 and 44, Scale B; Fig. 41, Scale C.

Furcula: Manubrium : dens : mucro as 17 : 15 : 12. Dens with three stout simple spines and one curved simple seta (Fig. 34). Mucro long with recurved apex and two slender plate-like recurved teeth each joined to the mucronal base by delicate lamellae (Figs. 33–34).

LOCALITY: Lachen, Sikkim (type locality), in moss under pine wood 8,610ft altitude; in moss and pine needles 8,950ft altitude; in moss, pine needles and earth 10,000ft altitude.

Family ENTOMOBRYIDAE Tomosvary, 1882

LEPIDOSIRA Schott, 1925

Lepidosira unguserrata n.sp. Figs. 38–44

Colour: Cream to brownish ochreous, with deep blue ocellar fields joined in front by either a deep blue band across front of head or with a small deep blue pigment patch between ocellar fields.

Clothing: Of typical heavily striated scales and short ciliated setae, the latter longer on the legs, furcula and antennae and around posterior of abdomen. Long ciliated setae are absent from apex of mesotergum on my specimens but as these are not in perfect condition it is likely that this character would be present on better preserved material.

Body: Length up to 2.2mm. Antennae about three times as long as head, the four segments related as 45 : 90 : 75 : 125. Ant. IV with apical retractile sensory knob in pit, numerous short, slender, curved sensory rods and clothing of short stout strongly ciliated setae (Fig. 44). Ocelli eight to each side as shown in Fig. 41. Abd. IV four times as long as Abd. III.

Legs: Claw with single basal outer tooth and a pair of outer lateral teeth about one-fifth down, a pair of inner teeth and two single distal inner teeth as shown in Fig. 38. Unguiculus half as long as claw, lanceolate with outer lamella finely serrated. A single strong clavate tenent hair subequal to claw in length.

Furcula: Manubrium mucrodens related as 1 : 13; the dens scaled and bearing many long ciliated setae. Mucro bidentate with long slightly curved basal spine; uncorregated part of dens slightly longer than mucro.

LOCALITIES: Sikkim, Chungtang (type locality), 5,120ft altitude amongst leaves and moss on edge of wood.

REMARKS: In my paper dealing with the Collembola from Ruanda-Urundi, 1956, I dealt with the structure of the scales of several genera of the Entomobryini, but did not include the genus *Lepidosira*. Typical scales from the body and furcula as they occur in this genus and drawn from the type specimen of *Lepidosira unguserrata* are shown in Figs. 40 and 43.

LEPIDOCYRTUS Bourlet, 1839

Lepidocyrtus scaber Ritter 1910

1929. *Lepidocyrtus orientalis* Handschin.
1948. *Lepidocyrtus suborientalis* Denis.
1948. *Lepidocyrtus perterbans* Denis.

Specimens of *Lepidocyrtus* referable to *L. orientalis* Handschin were present in the collections made by Dr Clay and in identifying these I was struck by their similarity to *L. scaber* Ritter, *L. suborientalis* Denis and *L. perterbans* Denis. After studying Dr Clay's material and the relevant literature concerning all these species I have come to the conclusion that the three species described are synonymous and must henceforth be known as *L. scaber* Ritter. Denis lays great stress on the presence or absence of the dental lobe when he discusses this in relation to his own species and that of Handschin. I have previously suggested that this is a sexual character among the Paronellinae where it is quite common and I see no reason why it should not be similarly so among the Entomobryinae. Except for slight pigmentation which may or may not be present along the ventral edges of the terga the species are all yellowish or whitish in colour and agree very closely in other morphological details.

LOCALITY: Imphal, Manipur State, India, in rotting *Eichornia* 14.1.52.

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