

TWO NEW SPECIES OF *PSEUDOTOCEPHEUS* (Acari : Otocepheidae) FROM WEST BENGAL, INDIA

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ABSTRACT

Two new species of the genus *Pseudotocepheus* Balogh, viz., *P. hammerae* and *P. gobletus* are described from West Bengal. A brief historical account of the genus is also presented.

INTRODUCTION

The genus *Pseudotocepheus* was erected by Balogh (1961) with *P. pauliani* as the type-species, collected from Madagascar. Another new species, *P. pygmaeus* was later described by Balogh (1962) from the same locality. Hammer (1966) added four new species, *foveolatus*, *punctatus*, *tenuiseta* and *curtiseta* from New Zealand. She opined that the generic diagnosis given by Balogh (1961) while erecting the genus was very short and expressed doubt about the value of the position of the adanal fissure as a generic character, since in *foveolatus* the fissure was not preanal. In the new species described below, the adanal fissure, *iad* is also not preanal. Hence, the authors suggest that the position of *iad* should not be considered as a generic character.

Balogh and Mahunka (1966, 1969) described two more new species, *medius* from South Africa and *geminatus* from Brazil. Recently Mahunka (1975) added two more new species, *P. amonstruosus* and *P. longus* from Ceylon. Thus, ten species have so far been described under the genus.

In a survey for oribatid mites in different districts of West Bengal, two new species were collected from the State and are described hereunder. All measurements are in microns. The types of these species are deposited in the Entomology Laboratory, Darjeeling Government College, Darjeeling.

Pseudotocepheus hammerae Chakrabarti and Kundu
(Figs. 1, 2)

Adult : Body light brown with soft integument.

Prodorsum: Anteriorly smooth, postero^flaterally foveolate; all prodorsal setae distinctly barbed bilaterally; rostrum more or less rounded; rostral setae 66-72 long, situated laterally far behind the rostral tip; lamellar setae 92-100 long, about twice as long as their mutual distance, situated posteriorly inward close to the rostral setae; interlamellar setae 82-85 long, inserted far off from the bothridium anteriorly and extended close to the base of lamellar setae; lamellae narrow, parallel at base but connected anteriorly by arched, faint translamella; bothridium cup-shaped, directed anterolaterad; sensillus 69-72 long, head spindle-shaped, more than thrice as long as the stalk; median prodorsal condyles (co. pm.) one pair, semilunar, lateral prodorsal condyles (co. pl.) cylindrical in outline.

Notogaster: Elongate, partly foveolate, foveolae marginal and occur only on the posterior half of notogaster; median notogastral condyles (co. nm.) represented by minute protuberances, lateral notogastral condyles (co. nl.) tooth-like; notogastral setae ten pairs, distinctly barbed bilaterally; setae ta 82-85 long, situated a little below co. pm.; te 86-89 long, distance between ta and te slightly greater than length of te; ti 72-75 long, inserted at the end of a fine transverse band placed medially on notogaster; ms 72-75 long, located below the level of ti at a distance slightly smaller than its length; r₁, r₂ and r₃ 69-72 long placed postero^flaterally on notogaster; p₁, p₂ and p₃ nearly equal in length, 69-73 long, situated postero-marginally on notogaster, distance between p₁ and p₂ less than half the distance between p₂ and p₃; notogastral fissures two pairs, im and ip, represented as antero-laterally directed oblique slits, im 16-23 long, situated anterior to the insertion of ti, ip 18-25 long, located anterior to the base of r₃.

Ano-genital region: Anal plate more or less rectangular in outline; each plate with two setae 40-46 long, separated by a distance nearly equal to the length of an₂; adanal setae three pairs, 46-65 in length, ad₃ < ad₁ < ad₂; adanal fissure, iad 19-23 long, not preanal but placed obliquely lateral to the anterior border of anal plates; distance between anal and genital plates nearly three-times length of genital plate; genital plate longer than broad, each plate with three fine setae, 13-16 long, inserted in a row at about the middle of each plate, distance between g₁ and g₂ less than half the distance between g₂ and g₃; aggenital setae one pair, 23-29 long, with mutual distance greater than the width of the genital plates.

Epimeral region: Sternal ridge incompletely developed in epimera I and II; epimera III and IV incomplete; epimeral setae simple, fine, epimeral setal formula 3-1-3-3.

Legs: Monodactylous, claws strong, evenly curved.

Body: Length, 703-709; width, 333-336.

HOLOTYPE: ♀ INDIA: West Bengal: Ashoke Nagar, 25. i. 1972, ex rotten

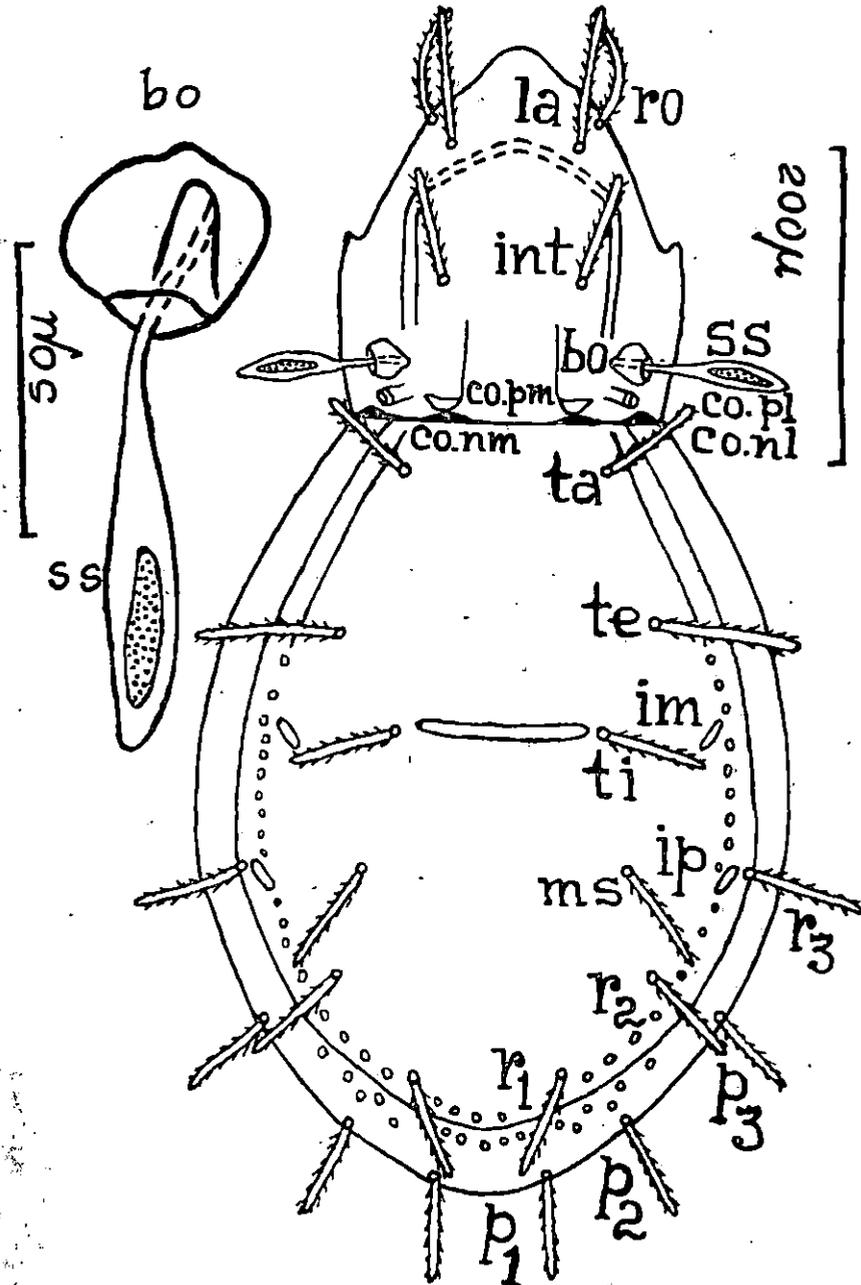


Fig. 1. *Pseudotocepheus hammerae* sp. nov.: Dorsal view (ro-rostral seta; la-lamellar seta; int-interlamellar seta; bo-bothridium; ss-sensillum; co. pm-median prodorsal condyle; co. pl-lateral prodorsal condyle; co. nm-median notogastral condyle; co. nl-lateral notogastral condyle; ta, te, ti, ms, r_1 , r_2 , r_3 , p_1 , p_2 , and p_3 -notogastral setae im and ip - notogastral fissures).

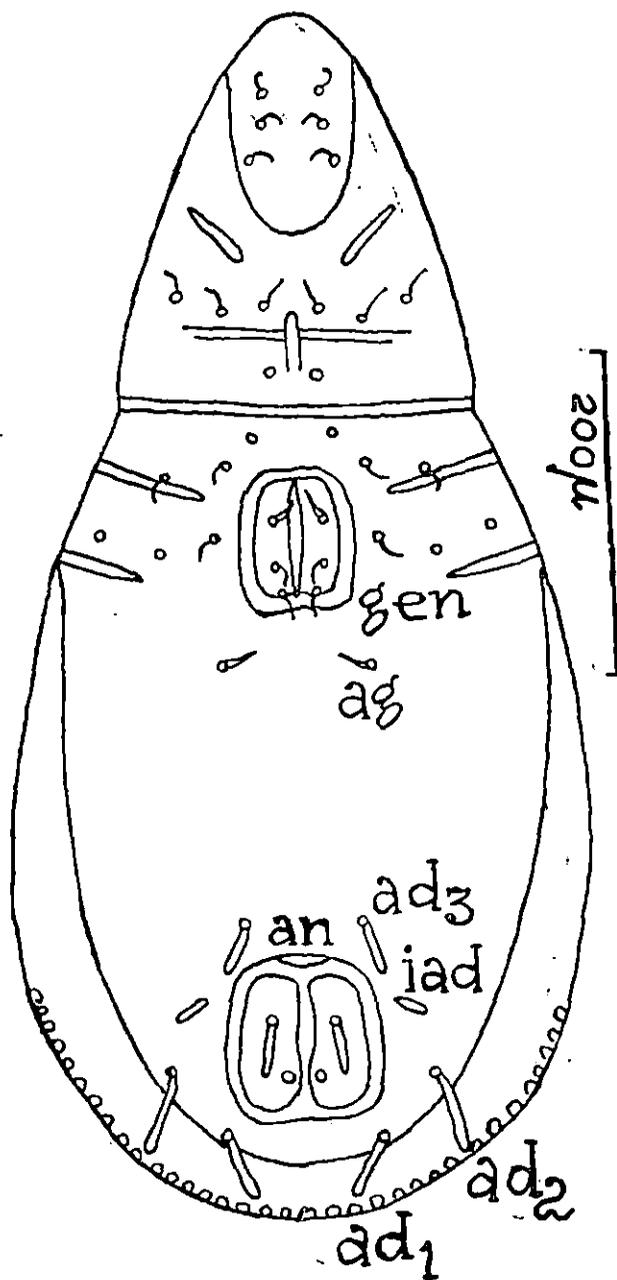


Fig. 2. *Pseudotocepeus hammerae* sp. nov.: Ventral view: (gen - genital plates; ag - aggenital seta; an - anal plates; ad_1 , ad_2 , and ad_3 - adanal setae; iad - adanal fissure).

leaves of *Mangifera indica* and humus near a ditch, D. K. Chakrabarti coll.
PARATYPES: 5 ♀♀, data same as for holotype.

Remarks . This new species can easily be separated from all other known species described by Hammer (1966), except *foveolatus*, in the disposition of iad, which is not preanal. From *foveolatus* the new species can be distinguished by the arrangement, structure and relative length of prodorsal and notogastral setae, by the possession of spindle-shaped sensilla, in having partly foveolated prodorsum and notogaster and a thin, transverse, chitinous band at the middle of notogaster between the setae ti.

Pseudotocepheus gobletus Chakrabarti and Mondal sp. nov.

(Figs. 3,4)

Adult: Body yellowish-brown with soft integument.

Prodorsum: As long as broad; medially punctate, posterolaterally foveolate; rostrum rounded; rostral setae unilaterally barbed outwards; 95-102 long, arise laterally on rostrum; lamellar setae similarly barbed, 102-130 long, situated near the tip of the lamellae; interlamellar setae bilaterally barbed, 190-200 long, thrice as long as their mutual distance; anterior exo¹bothridial setae simple, 19-26 long; lamellae with faint striations, weakly curved anteriorly; bothridium cup-shaped; sensillus lanceolate, proximally sparsely barbed, 140-153 long; co. pm. semilunar, co. pl. triangular; one pair of scaly structures arise from the inner end of co. pm. and extend upto the tenth row; tectopodia II ill-developed, with a small, anterior conical projection.

Notogaster: Much longer than broad; finely punctate medially, marginally foveolate, with fine undulating irregular crack-like lines and some cross connections; notogastral setae ten pairs, elongate, 171-285 long, bilaterally sparsely barbed and arise from goblet-shaped setal bases: setae ta and te located anterolaterally, ti and ms medially, r₁ and r₂ posteromedially and p₁, p₂, p₃ and r₃ posterolaterally: seta ta < te, r₂ the longest seta measures 273-285; distance between ta and te < te and ti < ti and ms; mutual distance between ta < ti < te < ms; co. nm. semilunar, each having a row of four minute scales descending downward; co. nl. broadly conical, fitting in between co. pm. and co. pl.; three pairs of notogastral fissures, im, ip and ih discernible.

Anogenital region: Anal plates twice as long as broad, each with two setae 83-90 long; adanal setae three pairs, 110-125 long, a₂d₃ shorter than ad₁ and ad₂; iad oblique, situated close to the lateral border of anal field; each genital plate longer than broad, each with three setae 22-30 long; aggenital setae one pair, 57-78 long, situated much closer to genital than to the anal plates, with mutual distance about three times the width of the genital plates.

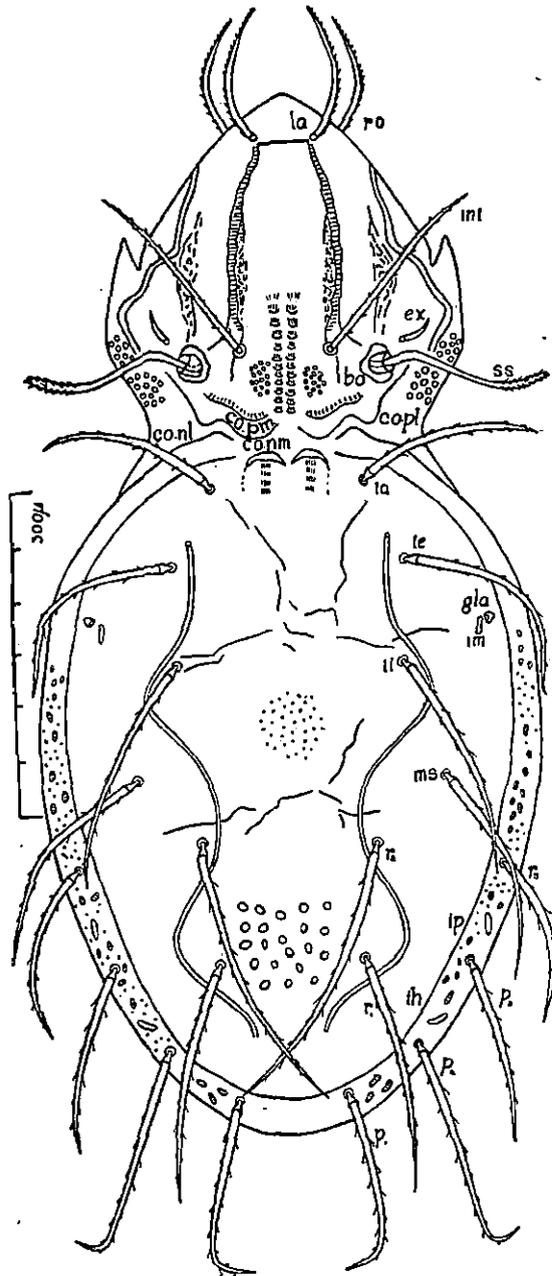


Fig. 3. *Pseudotocepeus gobletus* sp. nov. : Dorsal view (ex-exobothridial seta ; interogastral fissure; gla-orifice of latero-abdominal gland, refer fig. 1 for explanation of abbreviations)

ON PSEUDOTOCEPHEUS

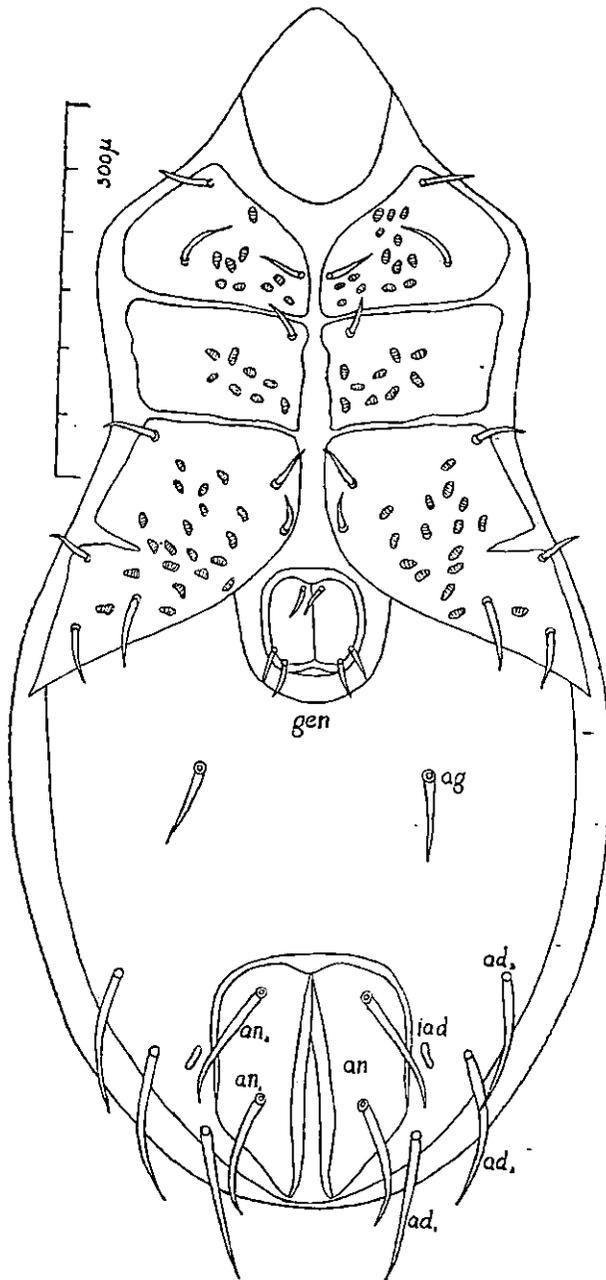


Fig. 4. *Pseudotocepheus gobletus* sp. nov. Ventral view. (an₁ and an₂, -anal setae, refer fig. 2 explanation of abbreviations).

Epimeral region : Epimera I and II complete, epimera III and IV fused, but laterally demarcated by incomplete suture; epimeral setae simple, epimeral setal formula 3-1-3-3.

Legs : Monodactylous, claws strong and curved.

Body : Length, 1000-1018 : width, 475-482.

HOLOTYPE : ♀, INDIA : West Bengal : Darjeeling, 27. viii. 1976, ex loose soil with decomposed leaves of *Cryptomeria japonica*, B. G. Kundu coll.

PARATYPES : 3 ♀♀, data same as for holotype; 5 ♀♀ Simana, Darjeeling, 4. ix. 1976, ex humus with rotten leaves of *Gleichenia* sp., B.G. Kundu coll.

Remarks : The new species is unique amongst the genus in having a goblet-shaped setal base, inverted semilunar median notogastral condyles and possessing fine undulating irregular crack-like lines with some cross connections.

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Taxonomic investigations on the oribatid fauna (Acari) of forest and tea soils in Darjeeling, West Bengal, India

D.K. Chakrabarti and B.K. Mondal

**Taxonomic investigations on the oribatid fauna
(Acari) of forest and tea soils in Darjeeling,
West Bengal, India**

A survey was undertaken since 1977 to explore the oribatid fauna of the forest and tea soils in the district of Darjeeling. Examination of a part of the collected materials reveals the occurrence of one new species and nine known species besides two other taxons determined up to generic level. The total number of genera reported in this paper stands at eleven and they are distributed under eleven families. The new species

described here is *Eupelops longisetosus*. The genera first reported from India are *Ceratoppla*, *Heterobelba* and *Metabelba* and the species *Nanhermannia thalensis*, *Suctobelba subcornigera* and *Nothrus biciliatus* are new records from this sub-continent. The occurrence of the genera *Eupelops*, *Hoplophorella*, *Tectocephus* and *Scheloriates* has been reported for the first time in India by Chakrabarti, Bhaduri and Raychaudhuri¹, Bhaduri and Raychaudhuri², Prasad³, and Baker⁴ respectively. Determination of two species under the genera *Metabelba* and *Heterobelba* has not been possible at the moment due to non-availability of literature and material for comparison concerning them. Notations used by Hammer⁵ have been followed in the description and illustration of the new species.

The types of the new species and the relevant specimens were collected by the second author and are deposited in the Entomology laboratory at Darjeeling Government College, Darjeeling.

1. *Eupelops longisetosus* sp. nov. (Fig. 1)

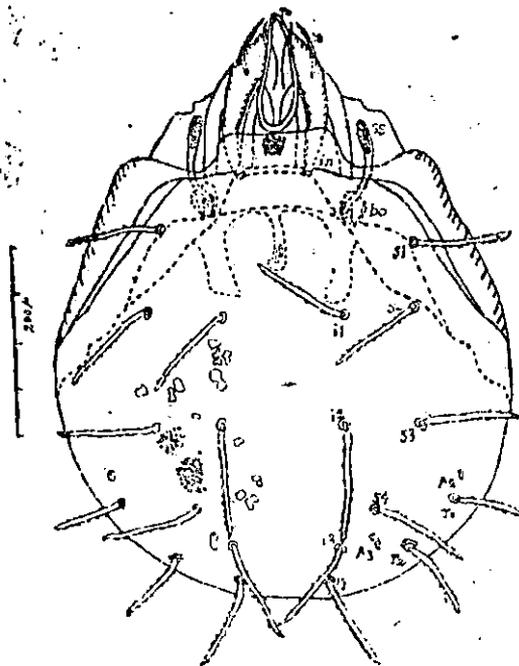


Fig. 1. *Eupelops longisetosus* sp. nov., ro—rostral setae, la—lamellar setae, in—interlamellar setae, bo—bothridium, ss—sensillus; i1, i2, i3, s1, s2, s3, s4, r1, r2 & r3—notogastral setae; A1 & A2—areolae porosae.

Female: Colour deep brown; length of the body: 585-713 μ ; width: 486-576 μ .

Prodorsum broader than long, punctate; rostrum slightly protruded; rostral setae simple, 13.5-31.5 μ long; lamellar setae faintly barbed bilaterally, 45-76.5 μ long; interlamellar setae phylliform, 135-175.5 μ long, originate just from the dorsosejugal suture; exobothridial setae absent; lamellae distinct with a U-shaped interspace between lamellar cusps; bothridium situated posterior to interlamellar setae, longer than broad, directed anteriorad; sensillus with a slender stalk arising from a goblet-shaped structure within the bothridium and a club-shaped head beset with minute dense bristles.

Notogaster broader posteriorly, coarsely punctate; pteromorphae triangular, broader anteriorly and curved downwards with faint transverse striations; notogastral setae ten pairs, elongate, 72-132.25 μ long, bilaterally finely barbed with irregular apices and rounded-follicles, distributed as in figure 1; setae i1, i2 and i3 centrodorsal, s1, s2, s3 and s4 lateral and r1, r2, and r3 postero-marginal; i2 and s3 situated with a distance of nearly half the length of i2; lenticulus small; areolae porosae 2 pairs (A1 & A2) placed laterally on the posterior half of notogaster.

Anal plate longer than broad, with two pairs of simple setae, 9-11.25 μ long, placed on its either extremities; adanal setae 3 pairs, 9-22.5 μ long; adanal fissure, iad, placed parallel to the lateral border of anal field anteriorly; genital plate longer than broad with six pairs of simple setae, 11.25-45 μ long; aggenital setae one pair, simple, 22.5-27 μ long, placed adjacent to the genital plate, their mutual distances being smaller than the maximum width of the genital plates; all epimera incomplete; epimeral setae simple, 11.25-20.25 μ long.

Legs tridactylous, claws slightly curved, middle one twice thicker than the lateral ones.

The present species has a close similarity with three closely related *Eupelops* species,

viz., *Eupelops acromios* (Hermann, 1804), *E. phytophilus* (Berlese, 1916) and *E. subexutus* (Berlese, 1916). Sellnick^e separated *subexutus* from *phytophilus* and *acromios* by the structure of the interspace between lamellar cusps (V-shaped in the former and U-shaped in the latter two species). The new species undoubtedly belongs to the second group having U-shaped interspace between the lamellar cusps. Aoki^r opines that the said interspace has a tendency to become wider posteriorly in *acromios* while it shows more or less the uniform width in *phytophilus*. Taking all these into consideration the new species described here has its closest relationship with *E. acromios* (Hermann). But it differs from *acromios* in the structure of the bothridium, lenticulus, areae porosae and notogastral setae for which it is considered new to science.

Holotype : adult female, Palmazua forest bungalow area, Palmazua Forest Division, (Alt. 2300 metres approx.) Darjeeling, 16. VIII. 1977, from rotten leaves of *Cryptomeria japonica*; paratypes : 2 adult females, Senchal lake area, Senchal Forest Range, (Alt. 2500 metres approx.) Darjeeling, 21. IX. 1978, from decompost leaves of *Quercus* sp.; 1 adult female, Happy Valley Tea Estate, (Alt. 1990 metres approx.) Darjeeling, 18. IX. 1978, from rotten leaves of *Thea sinensis*; 2 adult females, Sukia pukri, Ghoom Simana Forest Range, (Alt. 2000 metres approx.) Darjeeling, 21. IX. 1978, from decomposed leaves of *Cryptomeria japonica*.

2. *Hoplophorella africana* Wallwork, 1960, 2 adult females, Senchal lake area, Senchal Forest Range, (Alt. 2500 metres approx.) Darjeeling, 8. IX. 1977, from rotten leaves and humus.

3. *Nothrus biciliatus* C. L. Koch, 1844, 22 adult females, Sukia pukri, Ghoom Simana Forest Range, (Alt. 2000 metres approx.) Darjeeling, 4. IX. 1977, from humus.

4. *Allonothrus russeolus* Wallwork, 1960, 2 adult females, Bloom field Tea Estate, (Alt. 1950 metres approx.) Darjeel-

ing, 2. IX. 1977, from soil under a tea plant (*Thea sinensis*).

5. *Nanhermannia thaisensis* Aoki, 1965, 3 adult females, Palmazua forest bungalow area, Palmazua Forest Division, (Alt. 2300 metres approx.) Darjeeling, 16. VIII. 1977, from rotten leaves of *Cryptomeria japonica*.

6. *Metabelba* sp., 3 adult females, Sukia pukri, Ghoom Simana Forest Range, (Alt. 2000 metres approx.) Darjeeling, 4. IX. 1977, from humus.

7. *Heterobelba* sp., 4 adult females, Palmazua forest bungalow area, Palmazua Forest Division, (Alt. 2300 metres approx.) Darjeeling, 16. VIII. 1977, from rotten leaves of *Cryptomeria japonica*.

8. *Ceratophia bipilis* (Hermann, 1804), 2 adult females, Palmazua forest bungalow area, Palmazua Forest Division, (Alt. 2300 metres approx.) Darjeeling, 16. VIII. 1977, from rotten leaves of *Cryptomeria japonica*.

9. *Tectocephus velatus* (Michael, 1888), 3 adult females, Birch hill, Darjeeling Forest Range, (Alt. 2123 metres approx.) Darjeeling, 15. IX. 1977, from litter of *Cestrum* sp., *Eupatorium* sp.

10. *Suctobelba subcornigera* Forsslund, 1941, 16 adult females, Sukia pukri, Ghoom Simana Forest Range, (Alt. 2000 metres approx.) Darjeeling, 4. IX. 1977, from humus.

11. *Scheloribates rectus* Hammer, 1958, 2 adult females, Birch hill, Darjeeling Forest Range, (Alt. 2123 metres approx.) Darjeeling, 15. IX. 1977, from litter of *Cestrum* sp.

12. *Scheloribates huancayensis* Hammer, 1961, 3 adult females, Birch hill, Darjeeling Forest Range, (Alt. 2123 metres approx.) Darjeeling, 15. IX. 1977, from litter of *Eupatorium* sp.

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