*Bull. zool. Surv. India*, 6 (1-3) : 223-230, 1984

# TWO NEW SPECIES OF ORIBATID MITES (ACARI) FROM DARJEELING, INDIA

B. K. Mondal and B. G. Kundu*
*Department of Zoology, Ananda Chandra College, Jalpaiguri, India*

ABSTRACT

The present paper deals with the description of two new species of oribatid mites, viz., *Heterobelba rostrata* and *Basilobelba barbata*, from forest and tea soils in the district of Darjeeling, India.

## Introduction

The genus *Heterobelba* was erected by Berlese (1913) with *Heterobelba galerulata* as the type from Java. The genus was recorded for the first time from India by Chakrabarti and Mondal (1981). Balogh (1958) instituted the genus *Basilobelba* with *Damaeus retiarius* Warburton, 1912 as the type-species. The genus *Basilobelba* was first reported by Bhaduri, Chakrabarti and Raychaudhuri (1974) from India. Mishra, Bhaduri and Raychaudhuri (1980) reported the genus for the first time from Orissa (India). The genus is reported here for the first time from Darjeeling. All measurements are in microns.

## **Heterobelba rostrata** sp. nov.

(Figs. 1-2)

*Female* : Colour yellowish brown ; length of the body : 472-504 ; width of the body : 306-333.

Prodorsum with granulated cerotegument, slightly broader than long ; rostrum broadly rounded ; rostral setae stout, thicker than lamellar or interlamellar setae, densely barbed at the proximal 2/3rd, distal 1/3rd being smooth and gradually tapering, buldge in the middle and convergent apically, 45-49 long, inserted close dorsally on rostrum, their follicles touching each other ; lamellar setae barbed, stout, 76-81 long, with distinct round follicles, twice as long as their mutual distance, inserted a little beyond a faint transversely arched ridge ; interlamellar setae of the same nature as lamellar setae, 76-81 long, as long as their mutual distance, closely associated with the postero-lateral border of bothridium ; exobothridial setae 1 pair, minute, 17-18 long, intimately associated with the anterior rim of the bothridium ; bothridium longer than broad, directed postero-laterad ; sensillus stout, flagelliform, distinctly barbed throughout, 166-198 long, about twice as long as their mutual distance, directed postero-laterad.

Notogaster globose with 3 pairs of minute, smooth, nearly equal setae at the posterior margin, 11-16 long ; distance $p_1 - p_2 > p_2 - p_3$ ; tritonymphal scalp or exuvia with polygonal, reticulated microsculptures, affixed with the notogaster by 2 tubercles anteriorly ; setae on the tritonymphal scalp, long, stout, barbed and of similar nature as lamellar or interlamellar setae.

* Zoological Survey of India, Calcutta-700 012

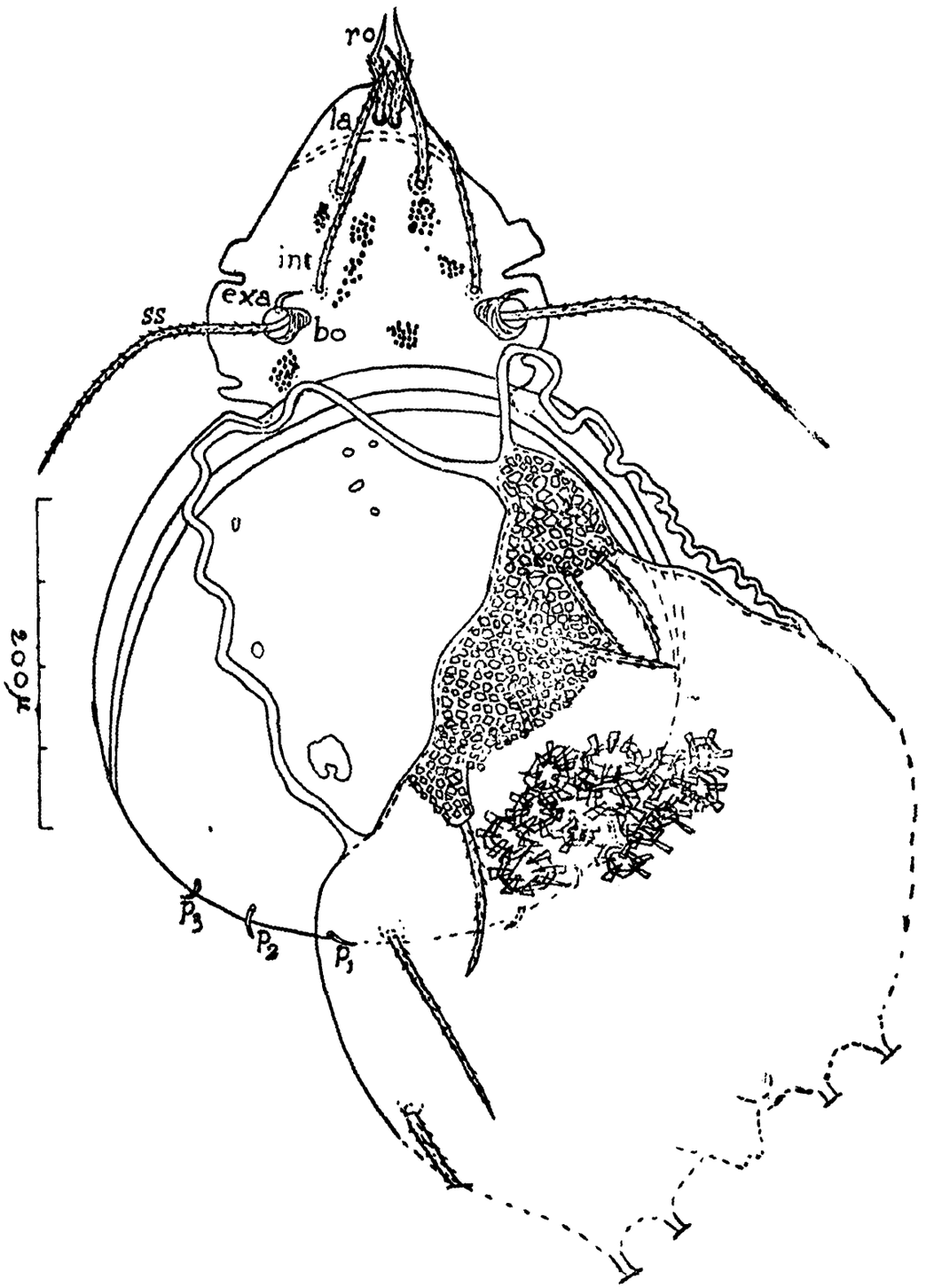


Fig. 1. *Heterobelba rostrata* sp. nov. (Dorsal view), *ro*=rostral seta, *la*=lamellar seta, *int*=interlamellar seta, *exa*=anterior exobothridial seta, *ss*=sensillus, *bo*=bothridium, $p_1$, $p_2$, $p_3$=notogastral setae.

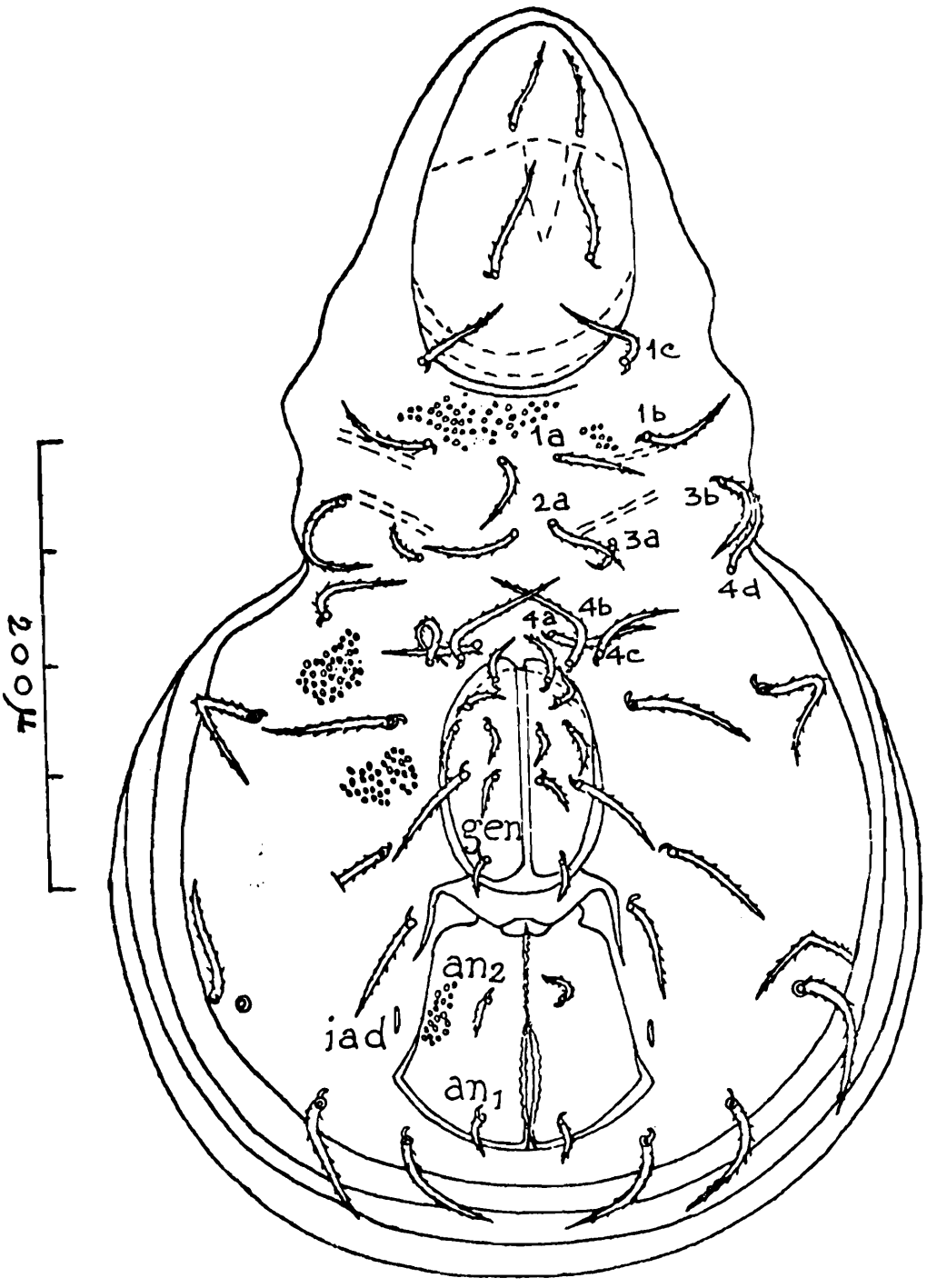


Fig. 2. *Heterobelba rostrata* sp. nov. (Ventral view), $an_1$, $an_2$ = anal setae, *iad* = adanal fissure. *gen* = genital plate, *1a*, *1b*, *1c*, *2a*, *3a*, *3b*, *4a*, *4b*, *4c*, *4d* = epimeral setae.

Ventral plate with cerotegumental granules, with 8 pairs of moderately barbed setae, 40-76 long ; anal plates shield-shaped ; anal setae 2 pairs, minute, finely barbed, nearly equal, 18-22 long ; $an_1$ located at the posterior and inner and $an_2$ at the inner and anterior 1/3rd of the anal plates ; *iad* parallel to the lateral border of anal field, situated medially ; genital plates close to the anal plates, 3 times as long as broad ; genital setae 7 pairs, finely barbed, 18-45 long, 4 pairs paraxial, 3 pairs antiaxial, posterior one of the antiaxial row

longest ; genital plates separated from gnathosoma by a distance which is quite longer than the length of the genital plates.

Epimeral region with cerotegumental granules ; epimera I, II, III and IV fused ; epimeral setae barbed, 25-60 long ; epimeral setal formula 3-1-2-4.

Legs I, II, III monodactylous, leg IV tridactylous, claws slightly curved, middle claw of leg IV twice thicker than the lateral ones.

*Holotype* : Adult ♀, INDIA : W. Bengal ; Darjeeling, Darjeeling forest Div., Tonglu forest range, Palmajua forest bunglow area (from rotten leaves of *Cryptomeria japonica*), 2300 m., 16.viii.1977 (*B. K. Mondal* Coll.) ; paratypes : 3 adult ♀ ♀, same data as for holotype ; paratype : adult ♀, INDIA : W. Bengal : Darjeeling, Darjeeling forest Div., Ghum-Simana forest range, Manibhanjang forest block (from decomposed leaves of *Machilus edulis*), 2200 m., 15.viii.1977 (*B. K. Mondal* Coll.) ; deposited in the laboratory of the Department of Zoology, Presidency College, Calcutta.

This species bears close resemblance with *Heterobelba galerulata* Berlese, 1913, which is figured and redescribed by Hammer, 1979 from Java. It is, however, distinguishable from *galerulata* in the greater length of the body and interlamellar setae, in the nature of rostral setae, lesser number of epimeral setae, besides a few other characters. Hence, it is considered new to science.

**Basilobelba barbata** sp. nov.

(Figs. 3-5)

*Female* : Colour brownish yellow ; length of the body : 421-485 ; width of the body : 253-300.

Prodorsum with finely granulated cerotegument, crown-shaped, longer than broad ; rostrum with blunt tip ; rostral setae smooth, incurved, apically touching each other, 55-59 long, shorter than their mutual distance, inserted laterally on rostrum ; lamellar setae with long, outward barbs at the proximal 1/3rd, distal 2/3rd smooth, 59-66 long, nearly $1\frac{1}{2}$ times as long as their mutual distance, inserted on the apophyses of a prominent, longitudinal lamella-like lateral prodorsal ridge ; interlamellar setae with small unilateral barbs, 38-39 long, nearly half as long as their mutual distance, inserted close to postero-dorsal part of the bothridium ; bothridium cup-shaped, longer than broad, directed laterad, sensillus long, flagelliform, with a smooth proximal half and distal half beset with moderately long, dense bristles, 160-164 long, directed postero-laterad ; anterior exobothridial setae smooth, fine, 30-32 long.

Anterior margin of notogaster rather straight, lateral and posterior margin convex ; notogaster covered with tritonymphal scalp or exuvia consisting of polygonal, reticulated microsculptures ; tritonymphal exuvia affixed with the notogaster by the round tubercle ; the thong or 'laniere' short, v-shaped and arms of the buckle long and broad ; tritonymphal scalp with 7 pairs of bushy setae postero-marginally ; after removing the tritonymphal scalp 6 pairs of smooth and simple setae discernable ; setae *lm*, *lp* dorso-lateral, $h_2$, $h_3$ postero-lateral, $h_1$, $ps_3$ postero-marginal, all nearly equal, 8-11 long.

Each anal plate nearly twice as long as broad, with 2 long, smooth setae, inserted on the outer margin of anal plate medially, 31-35 long ; $an_1 > an_2$ ; *iad* parallel to the antero-lateral border of anal plate ; each genital plate more than twice as long as broad, with 6 simple setae, 20-43 long, of these the 4 posterior ones nearly equal, the

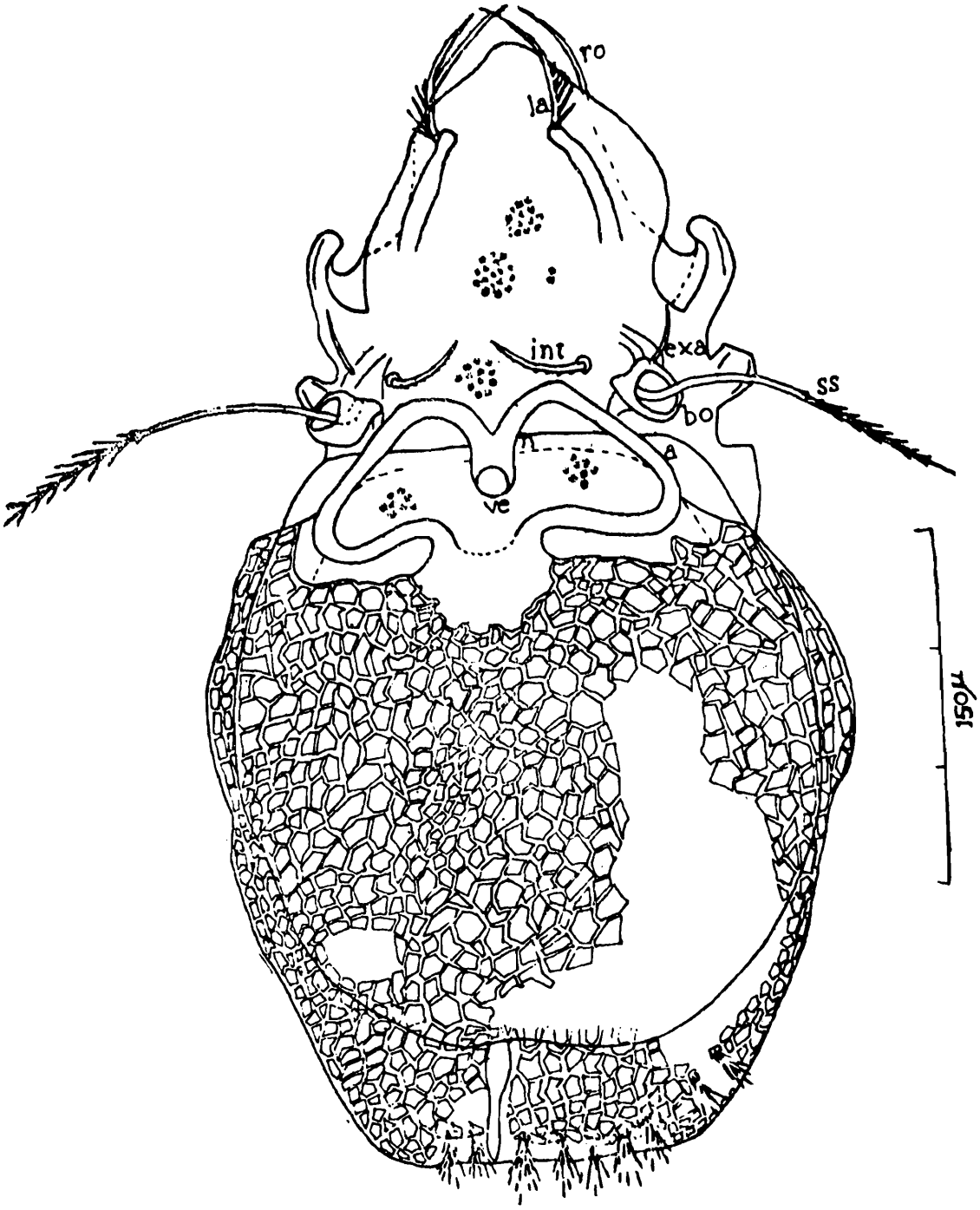


Fig. 3. *Basilobelba barbata* sp. nov. (Dorsal view), *ro* = rostral seta, *la* = lamellar seta, *int* = interlamellar seta, *exa* = anterior exobothridial seta, *ss* = sensillus, *bo* = bothridium, *ve* = notogastral tubercle, *n* = thong of buckle attachment, *a* = arm of buckle attachment.

5th longer than any of these and the anterior most more than $2\frac{1}{2}$ times as long as the posterior 4 setae ; ventral plate with granulated cerotegument and 10 pairs of long, smooth setae ; genital plates separated from the anal plates by a distance shorter than the maximum width of any of it's component plates ; genital plates separated from gnathosoma by a distance which is longer than the length of the genital plates.

Epimeral region with granulated cerotegu-ments ; all apodemata indistinct, all epimeral

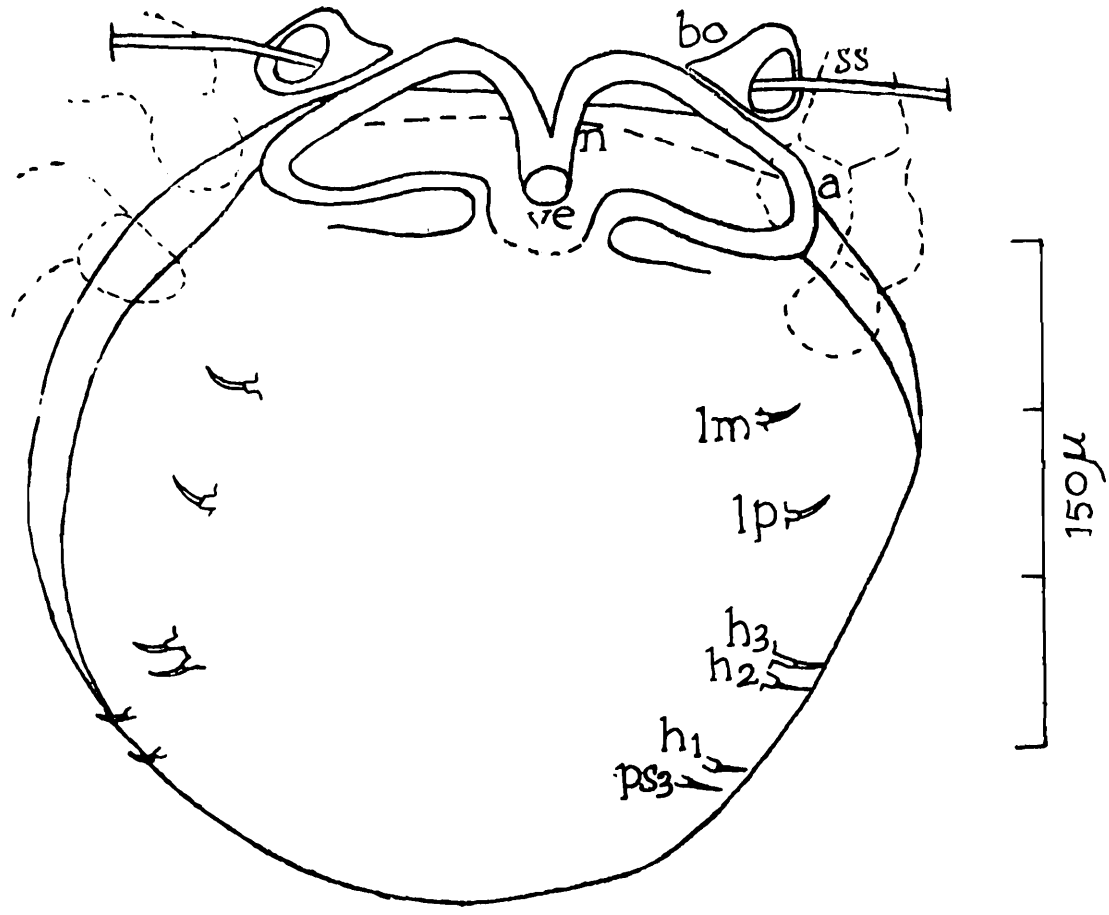


Fig. 4. *Basilobelba barbata* sp. nov. (Dorsal view of notogaster after the removal of tritonymphal scalp), *ss*=sensillus, *bo*=bothridium, *ve*=notogastral tubercle, *n*=thong of buckle attachment, *a*=arm of buckle attachment, *lm*, *lp*, $h_1$, $h_2$, $h_3$, $ps_3$=notogastral setae.

setae simple except *2a* which is unilaterally faintly barbed 22-31 long; epimeral setal formula 3-2-3-3.

Legs are stout, with dense cerotegumental granules, with 2 types of setae, simple and bushy; tarsi monodactylous; claws sickle-shaped.

*Holotype*: Adult ♀, INDIA: W. Bengal: Darjeeling, Kurseong forest Div., Sukna forest range, Sukna forest block (from rotten leaves of *Shorea robusta*), 170 m., 24. x. 1978 (*B. K. Mondal* Coll.); paratypes: 4 adult ♀ ♀, same data as holotype; paratypes: 3 adult ♀ ♀, INDIA: W. Bengal: Darjeeling, Mohurgong Tea Estate (from loose soil under a tea plant, *Thea sinensis*), 117 m., 4. x. 1978 (*B. K. Mondal* Coll.); paratypes: 2 adut ♀ ♀, INDIA; W. Bengal: Darjeeling, Kurseong forest Div., Sevoke forest range, Berrik forest block (from soil under a *Albizzia* sp.), 250 m., 16. x. 1977 (*B. K. Mondal* Coll.); deposited in the laboratory of the Department of Zoology, Presidency College, Calcutta.

This species is closely related to *Basilobelba pacifica* Hammer, 1971 in the nature of rostral tip, rostral setae, general shape of the notogaster, structure of notogastral setae and in the shape of the buckle with long and broad arm, v-shaped thong and round tubercle and the nature and arrange-

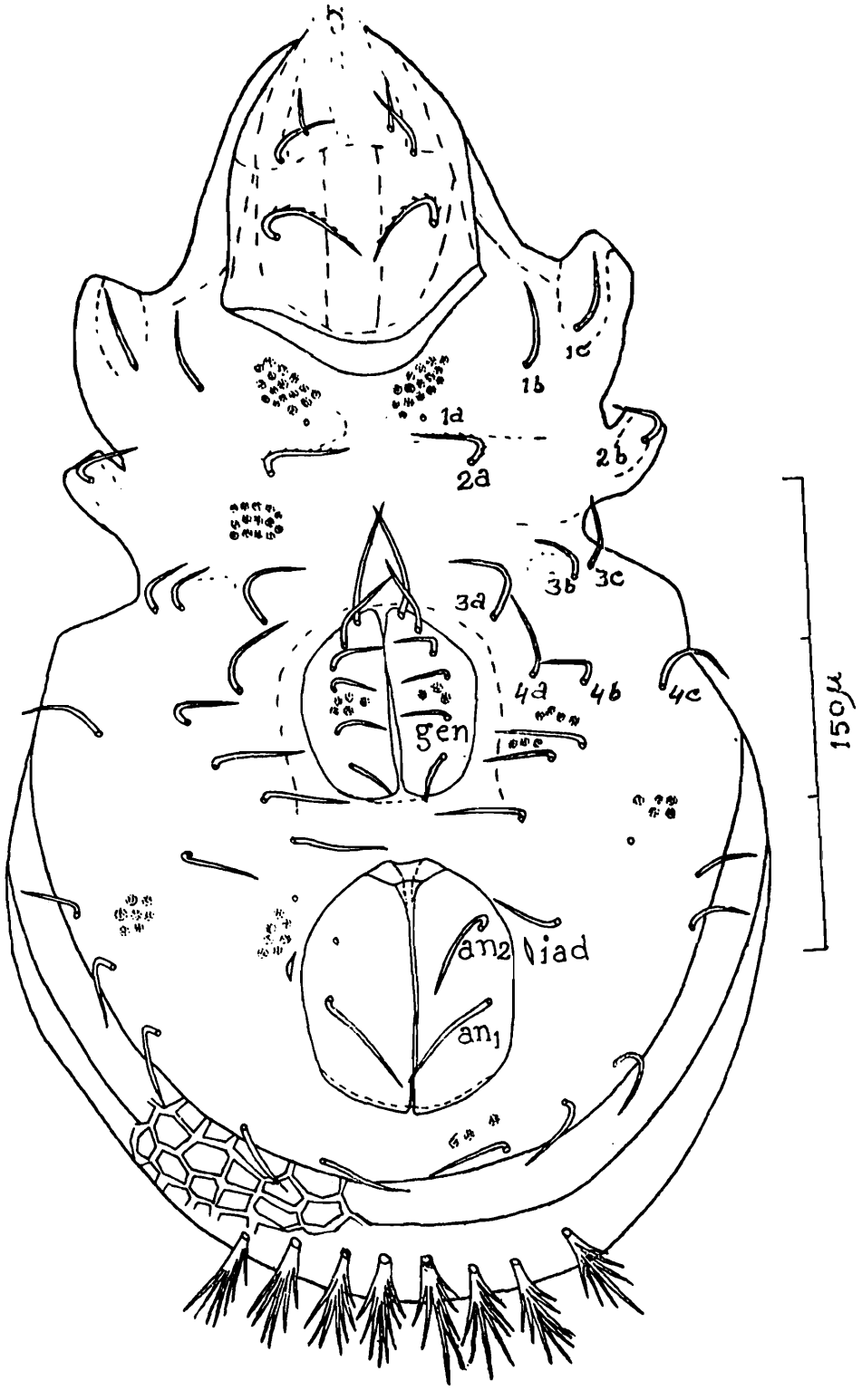


Fig. 5. *Basilobelba barbata* sp. nov. (Ventral view), $an_1$, $an_2$ = anal setae, *iad* = adanal fissure, *gen* = genital plate, *1a*, *1b*, *1c*, *2a*, *2b*, *3a*, *3b*, *3c*, *4a*, *4b*, *4c* = epimeral seta.

ment of the genital setae. But, it can be easily distinguished from *pacifica* by the absence of transverse ridge anteriorly on prodorsum, the transverse bridge between the pseudostigmata, in having the lamellar setae with long barbs at proximal $\frac{1}{3}$rd, a

prominent longitudinal lamella-like lateral prodorsal ridge, distal half of sensillus beset with moderately long bristles, less number of setae on the ventral plate and length and position of anal setae.

ACKNOWLEDGEMENTS

We owe a deep debt of gratitude to Prof. S. K. Dasgupta, Head of the Department of Zoology, Presidency College, Calcutta for providing laboratory facilities and to Dr. D.K. Chakrabarti, Asstt. Prof. of Zoology, Presidency College, Calcutta for offering valuable suggestions. We are also thankful to Dr. B. K. Tikader, Director, Zoological Survey of India, Calcutta for providing necessary facilities to work.

REFERENCES

BALOGH, J. 1958. Oribatides nouvelles de 1' Afrique tropicale. *Revue Zool. Bot. afr.*, **58** : 1-34.

BERLESE, A. 1913. Acari nuovi. Manipoli-VII-VIII. *Redia*, **9** : 77-111.

BHADURI, A. K., CHAKRABARTI,, D. K. AND RAYCHAUDHURI, D. N. 1974. A new species of the genus *Basilobelba* (Acari, Oribatei) from Calcutta, India. *Acta. Arachnol.*, **25** (2) : 86-89.

CHAKRABARTI, D. K. AND MONDAL, B. K. 1981. Taxonomic investigations on the oribatid fauna (Acari) of forest and tea soils in Darjeeling, West Bengal, India. *Sci. Cult.*, **47** (5) : 181-184.

HAMMER, M. 1971. On some Oribatids from Viti Levu, The Fiji Islands. *Biol. Skr.*, **16** (6) : 1-60.

HAMMER, M. 1979. Investigations on the oribatid fauna of Java. *Biol. Skr.*, **22** (9) : 1-79.

MISHRA, S., BHADURI, A. K. AND RAYCHAUDHURI, D. N. 1980. New records of soil oribatid mites (Acari, Oribatei) from Orissa, India. *Sci. Cult.*, **46** (6) 225-227.

WARBURTON, C. 1912. The Acarina of the Seychelles. *Trans. Linn. Soc. Lond.* Ser. 2, Zool., **15** : 349-360.