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Oribatids from Sarawak I. (Acari: Oribatida).

New and interesting mites from the Geneva Museum LXXVIII

Sándor MAHUNKA
Zoological Department, Hungarian Natural History Museum, Baross utca 13,
H-1088 Budapest, Hungary.

Oribatids from Sarawak I (Acari: Oribatida). New and interesting mites from the Geneva Museum LXXVIII. – Seventeen Oribatid species are listed from Sarawak; ten of them are new to science and 2 also represent new genera: *Bakobodes* gen. n. (Carabodidae) and *Sarawakiella* gen. n. (Galumnidae).

Key-words: Acari - Oribatida - Taxonomy - New species, new genera - Sarawak.

INTRODUCTION

The present paper is the first contribution to knowledge of the Oribatid mites collected by Dr. Bernd Hauser, Head of the Arthropod Department of the Muséum d'Histoire naturelle, Geneva, during his 1987 expedition to Sarawak, organized together with Dr. Charles Lienhard, Research Officer at the same Department, as a part of the program of systematic exploration of the Microarthropoda of the rain forests of South-East Asia and surrounding areas.

The main goals and aims of this research program on Oribatids of South-East Asia were summarized in my recent paper on Brunei (MAHUNKA 1995). These first results on the Oribatids of Sarawak confirm the great importance of Borneo for a sound interpretation of the historical zoogeography of South-East Asia.

The elaboration of this rich material requires prolonged studies and the results will therefore be published in several parts. I discuss here the occurrence of 17 species, most of them belonging to the groups Ptyctima and Carabodida; 10 species are new to science, 2 of which also represent new genera: *Bakobodes* gen. n. (Carabodidae) and *Sarawakiella* gen. n. (Galumnidae).

In the descriptions I generally apply the terminology used in several publications by NORTON (e.g. 1982) and BEHAN-PELLETIER (e.g. 1984) based on Grandjean's work.

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The pilosity of the parts of the body and of the legs is expressed in formulae. The sequence of the anogenital formula is: number of genital, aggenital, anal and adanal setae. Within the setal formula of the palp and the legs, the solenidia of a given segment are marked with the symbol +. The measurements given correspond to extremes observed in the present material; length is measured from the rostral apex to the furthermost opposite point of the body, width refers to maximum body width (in the case of movable pteromorphae to maximum width without pteromorphae).

LIST OF LOCALITIES

Sar-87/60 : MALAYSIA: **Sarawak:** Serian District, Penrissen Road 12 miles de Kuching, "Semongok Wildlife Rehabilitation Centre: Nursery Centre of the Forest Department", prélèvement de sol dans les angles formés par les contreforts de grands arbres, 50 m; 8.XII.1987; leg. B. H. (B)[2]

Sar-87/64 : MALAYSIA: **Sarawak:** route Kuching–Matang, mont Gunung Serapi, prélèvement du sol dans la forêt le long de la route vers la station TV, 670 m; 9.XII.1987; leg. B. H. (B)[2]

Sar-87/66 : MALAYSIA: **Sarawak:** route Kuching–Matang, mont Gunung Serapi, prélèvement du sol dans la forêt le long de la route vers la station TV, 320 m; 9.XII.1987; leg. B. H. (B)[2]

Sar-87/76 : MALAYSIA: **Sarawak:** Bako National Park, Jalan Lintang, prélèvement de sol dans les angles formés par les contreforts de *Austrobuxus nitidus* Miq. [= *Longetia malayana* (Benth.) P. & H.] (Euphorbiaceae), 30 m; 11.XII.1987; leg. B. H. (B)[3]

LIST OF SPECIES

Hypochthoniidae Berlese, 1910

Malacoangelia remigera Berlese, 1913

Locality: Sar-87/64: 3 specimens.

Distribution: circumtropical.

Phthiracaridae Perty, 1841

Hoplophorella cucullata (Ewing, 1909)

Locality: Sar-87/64: 2 specimens.

Distribution: approximately circumtropical.

Kakophthiracarus enigmaticus sp.n.

Locality: Sar-87/60.

Hoplophthiracarus (*Plonaphacarus*) *aculeatus* Mahunka, 1995.

Localities: Sar-87/60: 1 specimen; Sar-87/64: 1 specimen; Sar-87/76: 2 specimens.

Distribution: Brunei (known from the type locality only).

Notophthiracarus lienhardi sp. n.

Locality: Sar-87/60.

Synichotritiidae Walker, 1965

Sabahtritia sarawak sp. n.

Locality: Sar-87/64.

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[2] (B) = extraction par appareil BERLESE à Kuching (Sarawak).

[3] (B) = extraction par appareil BERLESE à Genève.

Temburongiidae Mahunka, 1990
Temburongia patoi Mahunka, 1990
Locality: Sar-87/76: 2 specimens.
Distribution: Brunei (known from the type locality only).

Eremaeozetidae Balogh, 1972
Eremaeozetes maculosus Mahunka, 1995
Locality: Sar-87/64: 2 specimens.
Distribution: Brunei (known from the type locality only).

Carabodidae C. L. Koch, 1837
Bakobodes orangutan gen. n., sp. n.
Localities: Sar-87/64; Sar 87/76.
Berndobodes hauseri sp. n.
Localities: Sar-87/60; Sar-87/76.
Congocepheus orientalis Mahunka, 1987
Locality: Sar-87/76: 2 specimens.
Distribution: Sabah (known from the type locality only).
Gymnobodes semengok sp. n.
Localities: Sar-87/60; Sar-87/76.
Hardybodes penicillatus Mahunka, 1995
Locality: Sar-87/76: 2 specimens.
Distribution: Brunei (known from the type locality only).
Pasocepheus bako sp. n.
Locality: Sar-87/76.
Yoshiobodes humidus sp. n.
Locality: Sar-87/66.

Peloppiidae Balogh, 1943
Austroceratoppia serapi sp. n.
Localities: Sar-87/64; Sar-87/66.

Galumnidae Jacot, 1925
Sarawakiella longipilosa gen. n., sp. n.
Localities: Sar-87/60; Sar-87/64.

DESCRIPTIONS

Kakophthiracarus enigmaticus sp. n. (Figs 1-5)

Material examined: Holotypus: Sar-87/60, 23 paratypes from the same sample. Holotypus and 15 paratypes deposited in the MHNG[4] and 8 paratypes (1416-PO-1991) in the HNHM[5].

Measurements. – Length of aspis: 178-252 µm, length of notogaster: 312-485 µm, height of notogaster: 223-322 µm.

Integument: The whole body surface covered by a thick cerotegument layer, extremely thick in the deeper hollows of the notogaster.

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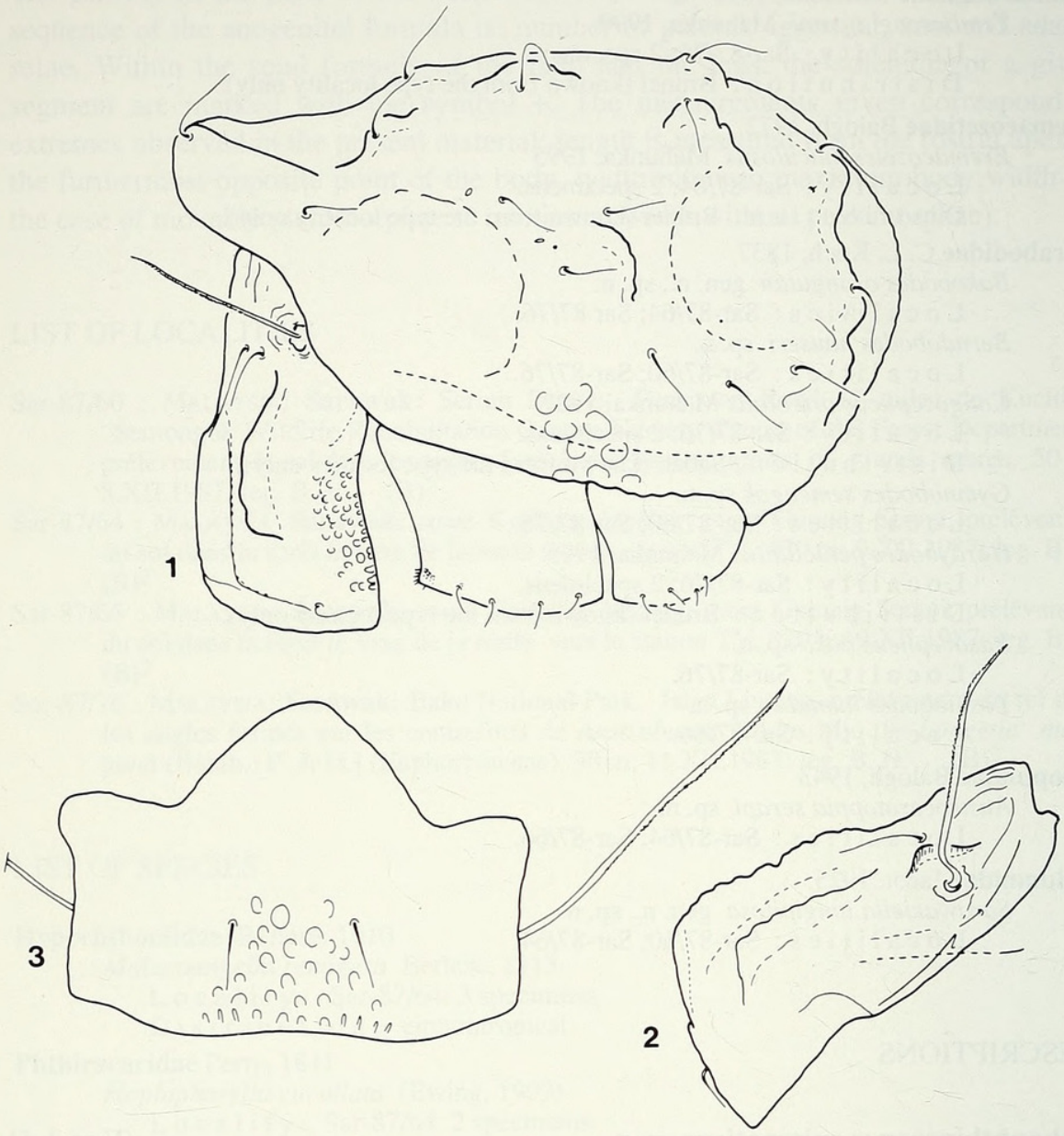
[4] MHNG = deposited in the Muséum d'Histoire naturelle, Genève.

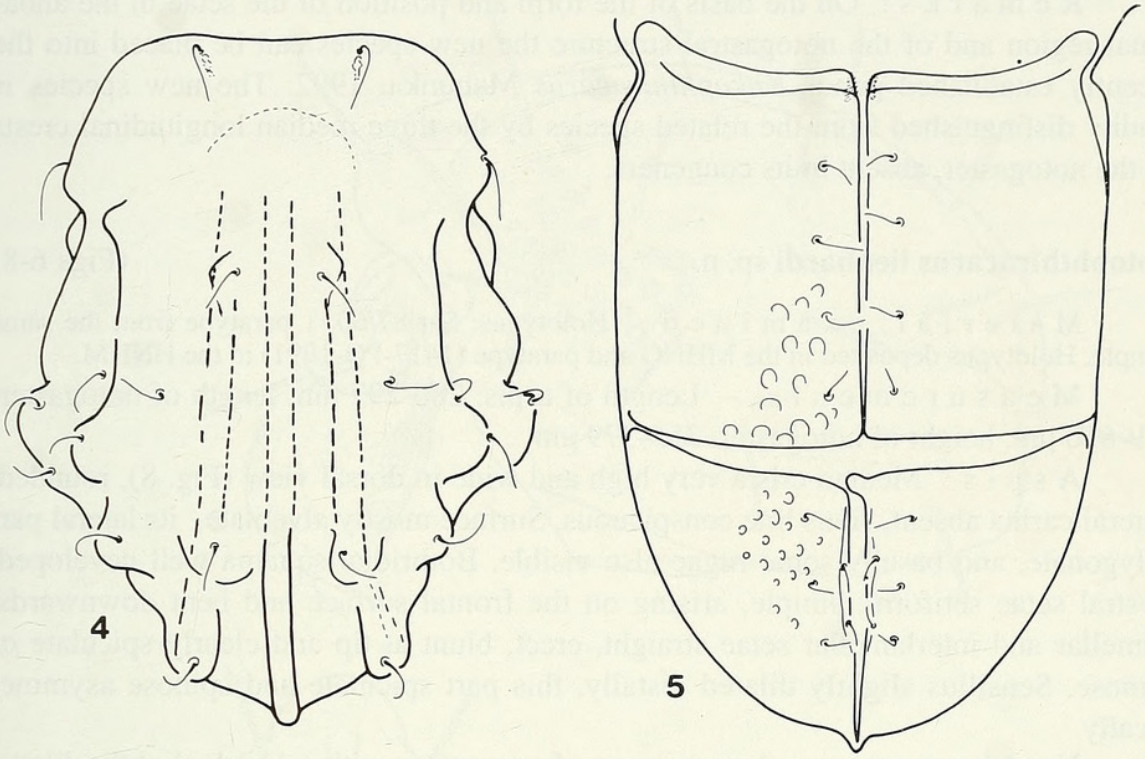
[5] HNHM = deposited in the Hungarian Natural History Museum, Budapest, with identification number of the specimens in the Collection of Arachnida.



FIGS 1-3

Kakophthiracarus enigmaticus sp. n. -1: body in lateral view, 2: aspis in lateral view, 3: aspis in frontal view.

A s p i s : Quadrangular in lateral view (Fig. 2), crown-shaped in frontal view (Fig.3). A very strong median crista present, parallel with it a pair of smaller and shorter cristae observable on each side. Rostral part medially excavated, rostral setae arising frontally. Lateral crista absent, sinus line observable. Bothridial squama modified, not bending over the bothridium (Fig. 2). Aspidial surface mostly alveolate, but smooth in its lateral and basal parts and also some rugae visible basally. Prodorsal setae thin, simple.



FIGS 4-5

Kakophthiracarus enigmaticus sp. n. - 4: notogaster in dorsal view, 5: anogenital region.

Sensillus very long, setiform, distinctly spinose unilaterally.

N o t o g a s t e r : With large and wide anterior hood, behind it a deep hollow (Fig. 1) present. Surface with many tubercles besides two pairs of larger hollows, and three dorsal crests; all conspicuous in dorsal view (Fig. 4). Fifteen pairs of curved, thin and simple notogastral setae; the alveoli of the vestigial *f* setae, a glandular opening and two pairs of lyrifissures *ia, im* also visible.

A n o g e n i t a l r e g i o n : The position of the genital setae is typical for the genus, setae g_9-g_6 arising much nearer to the inner margin of the genital plates than setae g_5-g_1. (Exceptionally 10 pairs of setae were recognisable). Among the anoadanal setae two pairs arising strictly on the inner margin (Fig. 5), but the other three (ad_1- ad_3) appearing also not far from it.

L e g s : Leg chaetotaxy of the "complete type", with the setal formulae:

I: 1-4-4+2-5+1-17+3-1
IV: 2-1-1-2+1-10-1

Seta *d* on femur I hooked. A small spine in front of ω_2 of tarsus I conspicuous. Setae *d* on tibia IV coupled with the solenidium.

R e m a r k s : On the basis of the form and position of the setae in the anoadanal region and of the notogastral structure the new species can be placed into the recently established genus *Kakophthiracarus* Mahunka, 1992. The new species is readily distinguished from the related species by the three median longitudinal crests on the notogaster, absent in its congeners.

Notophthiracarus lienhardi sp. n. (Figs 6-8)

M a t e r i a l e x a m i n e d : Holotypus: Sar-87/60, 1 paratype from the same sample. Holotypus deposited in the MHNG and paratype (1417-PO-1991) in the HNHM.

M e a s u r e m e n t s . – Length of aspis: 280-297 µm, length of notogaster: 619-660 µm, height of notogaster: 355-379 µm.

A s p i s : Median crista very high and wide in dorsal view (Fig. 8), rounded. Lateral carina absent, sinus line conspicuous. Surface mostly alveolate, its lateral part polygonate, and basally some rugae also visible. Bothridial squama well developed. Rostral setae setiform, simple, arising on the frontal surface and bent downwards. Lamellar and interlamellar setae straight, erect, blunt at tip and clearly spiculate or spinose. Sensillus slightly dilated distally, this part spiculate and spinose asymmetrically.

N o t o g a s t e r : Anterior part of notogaster with a hood, slightly dilated laterally and continuing in a broad median band posteriorly (Fig. 6). Surface of this band smooth, all other surfaces ornamented by very deep and well framed alveoli. Seventeen pairs of straight and erect, apically blunt and fairly spiculate or spinose notogastral setae present. I was able to find only two pairs of lyrifissures *ia, im.*

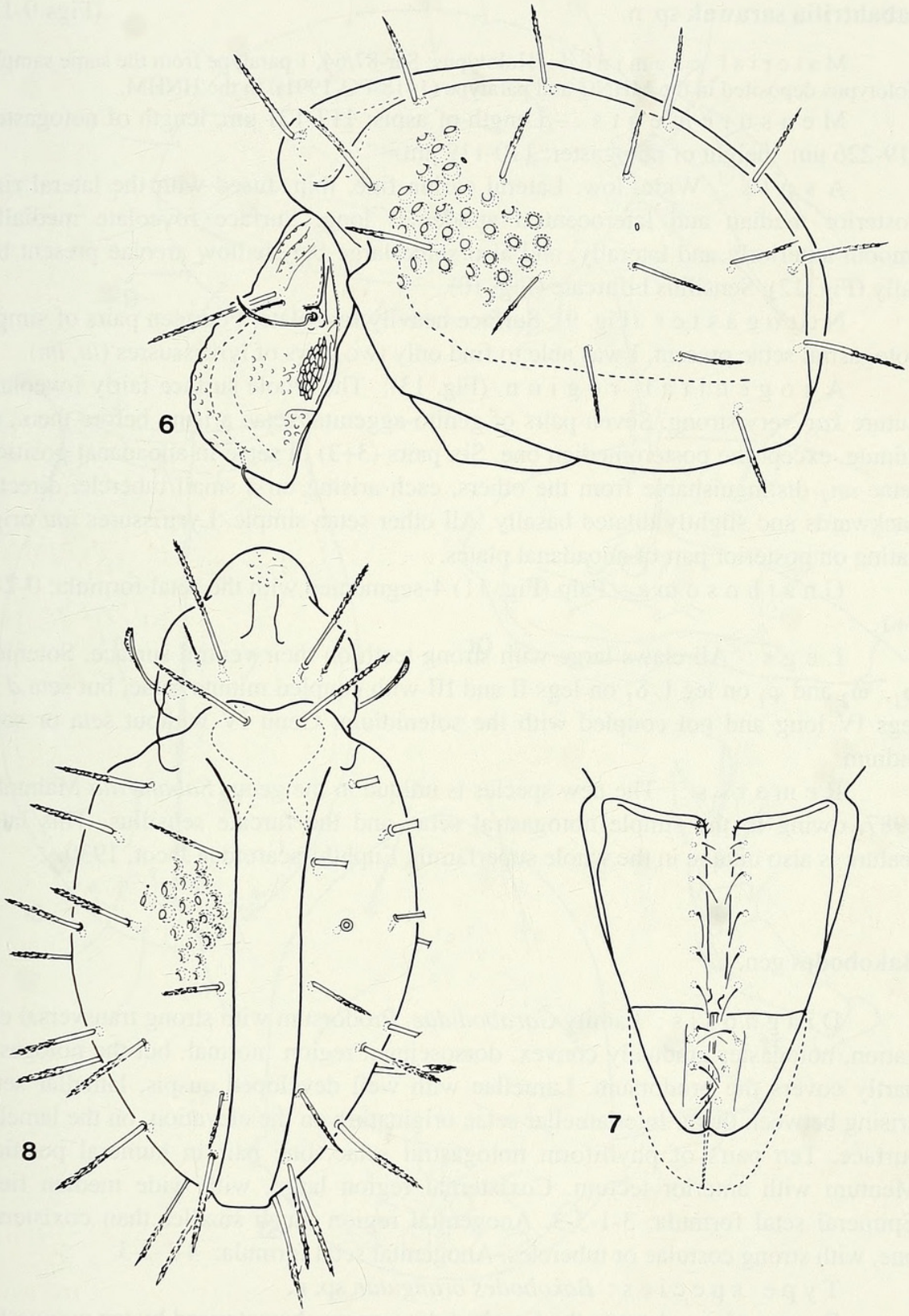
A n o g e n i t a l r e g i o n (Fig. 7): Nine pairs of genital setae arising in one axial row, distance between g_6 and g_5 greater than the distance between g_5 and g_4. All five pairs of anoadanal setae originating near the median margin but an_1 and an_2 clearly separated from the adanal setae. This marginal region framed laterally by a longitudinal crest.

L e g s : All claws with two ventral teeth. Chaetotaxy of legs of the "complete type" with the setal formulae:

I: 1-4-2+2-5+1-16+3-1
IV: 2-1-1-2+1-10-1

Seta *d* of femur I hooked, arising far from anterior margin. Solenidium ω_2 coupled with a small seta on tarsus I, solenidium φ_1 on tibia IV also coupled with seta *d*. All solenidia of legs conspicuously long and curved distally.

Remarks: Despite the setae of the anoadanal plates originating in a typical position, this species is easily assignable to the genus *Notophthiracarus* Ramsay, 1966. It is well characterised by the smooth, longitudinal median field of the notogaster. On this basis it is related to *N. orientalis* (Mahunka, 1985) and *N. planus* (Mahunka, 1985) (see MAHUNKA 1995), but it is easily distinguished from both and from all other *Notophthiracarus* species by the characteristic ornamentation (very deep alveoli) and by the number (17 pairs) of notogastral setae.



FIGS 6-8

Notophthiracarus lienhardi sp. n. - 6: body in lateral view, 7: anogenital region, 8: body in dorsal view.

Sabahtritia sarawak sp. n. (Figs 9-13)

Material examined: Holotypus: Sar-87/64, 1 paratype from the same sample. Holotypus deposited in the MHNG and paratype (1418-PO-1991): in the HNHM.

Measurements. – Length of aspis: 117-121 μm, length of notogaster: 219-226 μm, height of notogaster: 110-119 μm.

Aspis: Wide, low. Lateral carina fine, thin, fused with the lateral rim. Posterior median and laterocentral apodemes long. Surface foveolate medially, smooth anteriorly and laterally, and also some large but shallow areolae present basally (Fig. 12). Sensillus bifurcate (Fig. 10).

Notogaster (Fig. 9): Surface heavily foveolate. Fourteen pairs of simple notogastral setae present. I was able to find only two pairs of lyrifissusres (*ia, im*).

Anogenital region (Fig. 13): The whole surface fairly foveolate. Suture *kag* very strong. Seven pairs of genito-aggenital setae arising before them, all minute, except the posteromedian one. Six pairs (3+3) of setae in anoadanal position, setae an_1 distinguishable from the others, each arising on a small tubercle, directed backwards and slightly dilated basally. All other setae simple. Lyrifissures *iad* originating on posterior part of anoadanal plates.

Gnathosoma: Palp (Fig. 11) 4-segmented with the setal formula: 0-2-1-7+1.

Legs: All claws large with strong teeth on their ventral surface. Solenidia ω_1, ω_2 and φ_1 on leg I, δ_1 on legs II and III with coupled minute setae, but seta *d* on legs IV long and not coupled with the solenidium. Genu IV without seta or solenidium.

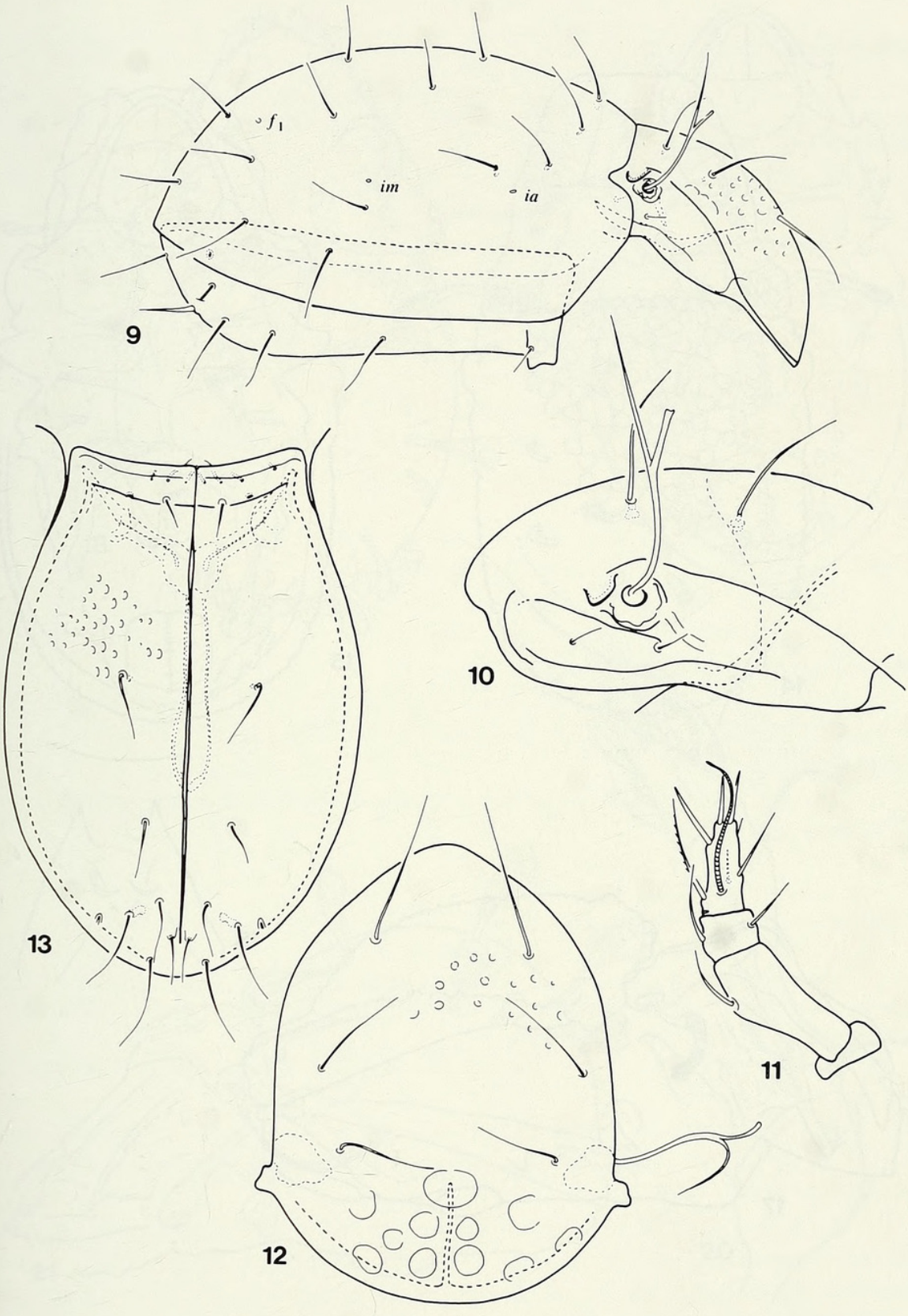
Remarks: The new species is unique in the genus *Sabahtritia* Mahunka, 1987, owing to the simple notogastral setae and the furcate sensillus. This latter feature is also unique in the whole superfamily Euphthiracaroidea Jacot, 1930.

Bakobodes gen. n.

Diagnosis: Family *Carabodidae*. Prodorsum with strong transversal elevation, notogaster gradually convex, dorsosejugal region normal, but the notogaster partly covers the prodorsum. Lamellae with well developed cuspis, lamellar setae arising between them. Interlamellar setae originating on the elevation, on the lamellar surface. Ten pairs of phylliform notogastral setae, one pair in humeral position. Mentum with anterior tectum. Coxisternal region large, with wide median field. Epimeral setal formula: 3-1-3-3. Anogenital region much smaller than coxisternal one, with strong costulae or tubercles. Anogenital setal formula: 4-1-2-3.

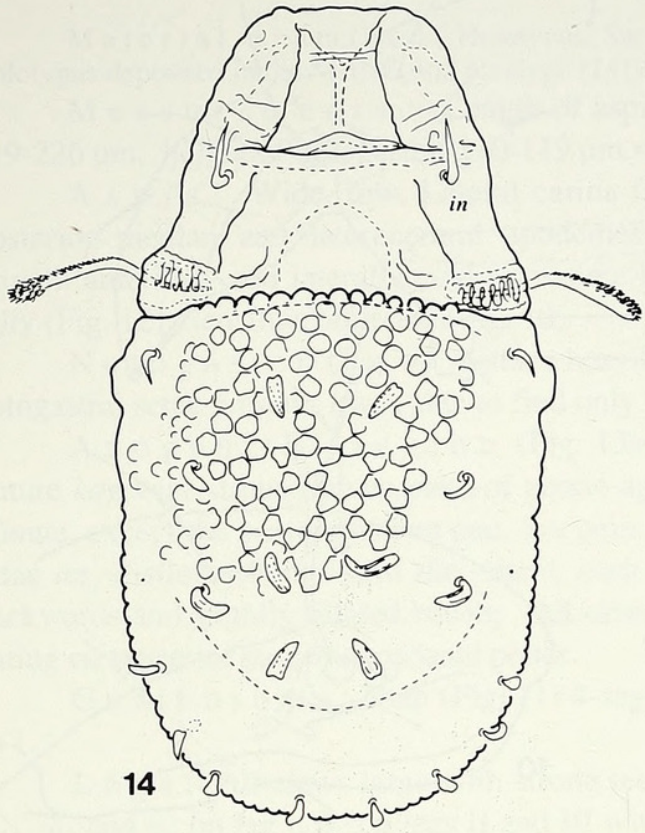
Type species: *Bakobodes orangutan* sp. n.

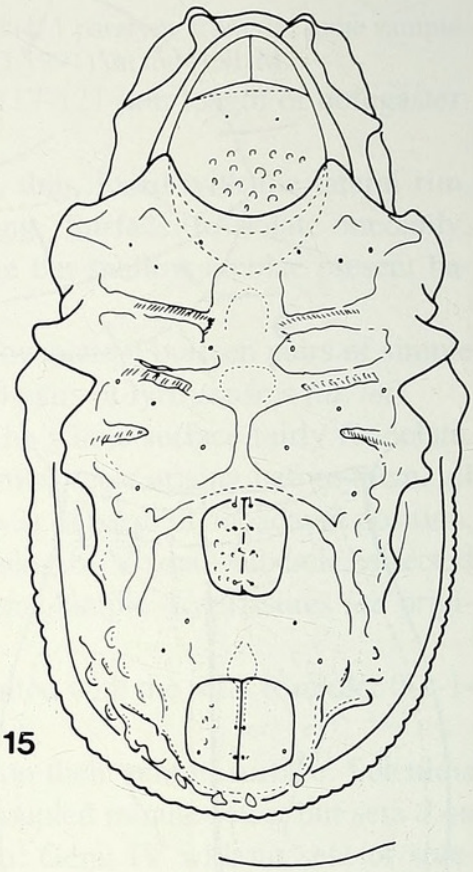
Remarks: Among the Carabodidae genera characterised by ten notogastral setae only *Meriocepheus* Aoki, 1973 has a highly elevated prodorsum. The new taxon is distinguished from it by the absence of the very high notogastral elevation and by the simple but characteristic dorsosejugal region.

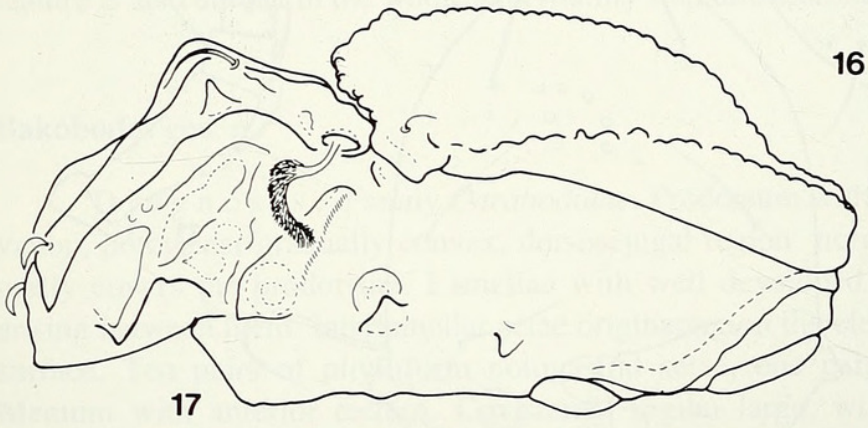


FIGS 9-13

Sabahtritia sarawak sp. n. - 9: body in lateral view, 10: basal part of aspis in lateral view, 11: palp, 12: aspis in dorsal view, 13: anogenital region.

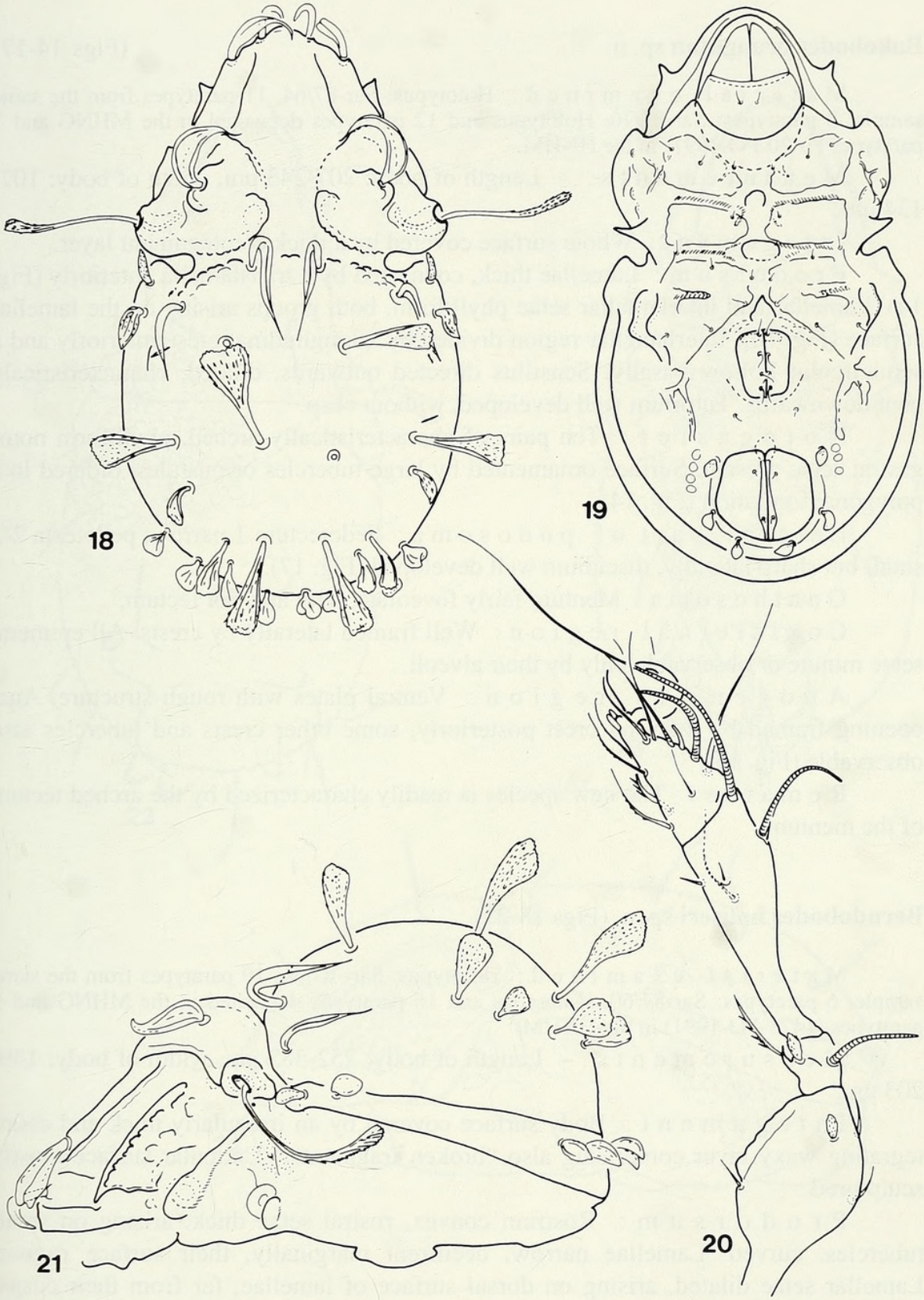






FIGS 14-17

Bakobodes orangutan gen. n., sp. n. - 14: body in dorsal view, 15: body in ventral view, 16: rostral region in frontal view, 17: body in lateral view.



FIGS 18-21

Berndobodes hauseri sp. n. - 18: body in dorsal view, 19: body in ventral view, 20: leg I, 21: body in lateral view.

Bakobodes orangutan sp. n. (Figs 14-17)

Material examined: Holotypus: Sar-87/64, 11 paratypes from the same sample; 8 paratypes: Sar-87/76. Holotypus and 12 paratypes deposited in the MHNG and 7 paratypes (1420-PO-1991) in the HNHM.

Measurements. – Length of body: 207-243 µm, width of body: 107-134 µm.

Integument: Whole surface covered by a thick cerotegument layer.

Prodorsum: Lamellae thick, connected by a translamella anteriorly (Fig. 14). Lamellar and interlamellar setae phylliform, both groups arising on the lamellar surface (Fig. 16). Interlamellar region divided by a longitudinal crest anteriorly and a semicircular hollow basally. Sensillus directed outwards, dilated, characteristicaly bent downwards. Tutorium well developed, without cusp.

Notogaster: Ten pairs of characteristically arched, phylliform notogastral setae present. Surface ornamented by large tubercles or pustules, ordered in a polygonal formation (Fig. 14).

Lateral part of podosoma: Pedotectum 1 narrow, pedotecta 2-3 small but sharp laterally, discidium well developed (Fig. 17).

Gnathosoma: Mentum fairly foveolate, with anterior tectum.

Coxisternal region: Well framed laterally by crests. All epimeral setae minute or observable only by their alveoli.

Anogenital region: Ventral plates with rough structure. Anal opening framed by a strong crest posteriorly, some other crests and tubercles also observable (Fig. 15).

Remarks: The new species is readily characterized by the arched tectum of the mentum.

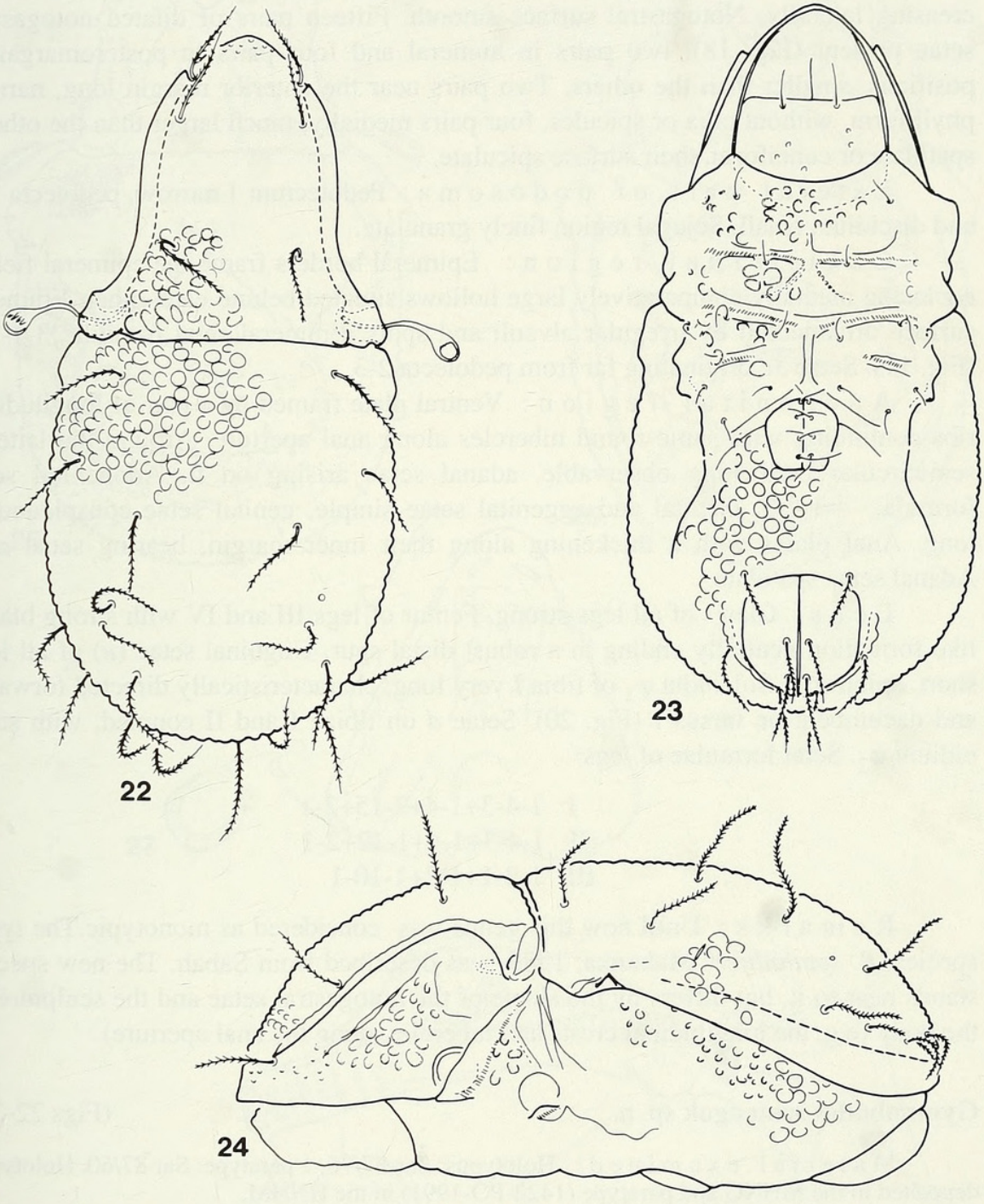
Berndobodes hauseri sp. n. (Figs 18-21)

Material examined: Holotypus: Sar- 87/76, 19 paratypes from the same sample; 6 paratypes: Sar-87/60. Holotypus and 16 paratypes deposited in the MHNG and 9 paratypes (1421-PO-1991) in the HNHM.

Measurements. – Length of body: 252-382 µm, width of body: 139-203 µm.

Integument: Body surface covered by an irregularly thick and disintegrating waxy layer comprising also "broken fragments". Cuticular surface mostly sculptured.

Prodorsum: Rostrum convex, rostral setae thick, arising on small tubercles, curved. Lamellae narrow, decurrent marginally, their surface rugose. Lamellar setae dilated, arising on dorsal surface of lamellae, far from their cusps. Interlamellar surface smooth. Basal part of prodorsum strongly concave on both sides; phylliform interlamellar setae very large, arising on additional tubercles of prodorsum (Fig. 18). Bothridium strongly protruding laterally, sensillus long, arched upwards, narrow, only dilate distally. Tutorium strong, with a sharp apex (Fig. 21).



FIGS 22-24

Gymnobodes semengok sp. n. - 22: body in dorsal view, 23: body in ventral view, 24: body in lateral view.

N o t o g a s t e r : Well developed humeral projections present. Dorsosejugal suture straight, anterior margin of notogaster with large pustules, their number increasing laterally. Notogastral surface smooth. Fifteen pairs of dilated notogastral setae present (Fig. 18), two pairs in humeral and four pairs in posteromargainal positions, smaller than the others. Two pairs near the anterior margin long, narrow phylliform. without cilia or spicules, four pairs medially, much larger than the others, spatulate or cuneiform, their surface spiculate.

L a t e r a l p a r t o f p o d o s o m a : Pedotectum 1 narrow, pedotecta 2-3 and discidium small. Sejugal region finely granulate.

C o x i s t e r n a l r e g i o n : Epimeral borders frame the epimeral fields, enclosing medially comparatively large hollows situated behind each other. Epimeral surface ornamented by irregular alveoli and spots. Epimeral setal formula: 3-1-3-3 (Fig. 19). Setae *3c* originating far from pedotecta 2-3.

A n o g e n i t a l r e g i o n : Ventral plate framed by a pair of longitudinal ribs continuing with some round tubercles along anal aperture. Around the latter a semicircular thickening observable, adanal setae arising on it. Anogenital setal formula: 4-1-2-3. Genital and aggenital setae simple, genital setae conspicuously long. Anal plates with a thickening along their inner margin, bearing setae an_1. Adanal setae spatulate.

L e g s : Claws of all legs strong. Femur of legs III and IV with strong blade-like formation ventrally ending in a robust distal spur. Unguinal setae (*u*) of all legs short, spiniform. Solenidia φ_1 of tibia I very long, characteristically directed forwards and decumbent on tarsus I (Fig. 20). Setae *d* on tibiae I and II coupled, with solenidium φ_2. Setal formulae of legs:

I: 1-4-3+1-4+2-15+2-1
II: 1-4-3+1-4+1-12+2-1
III: 1-2-1+1-2+1-10-1

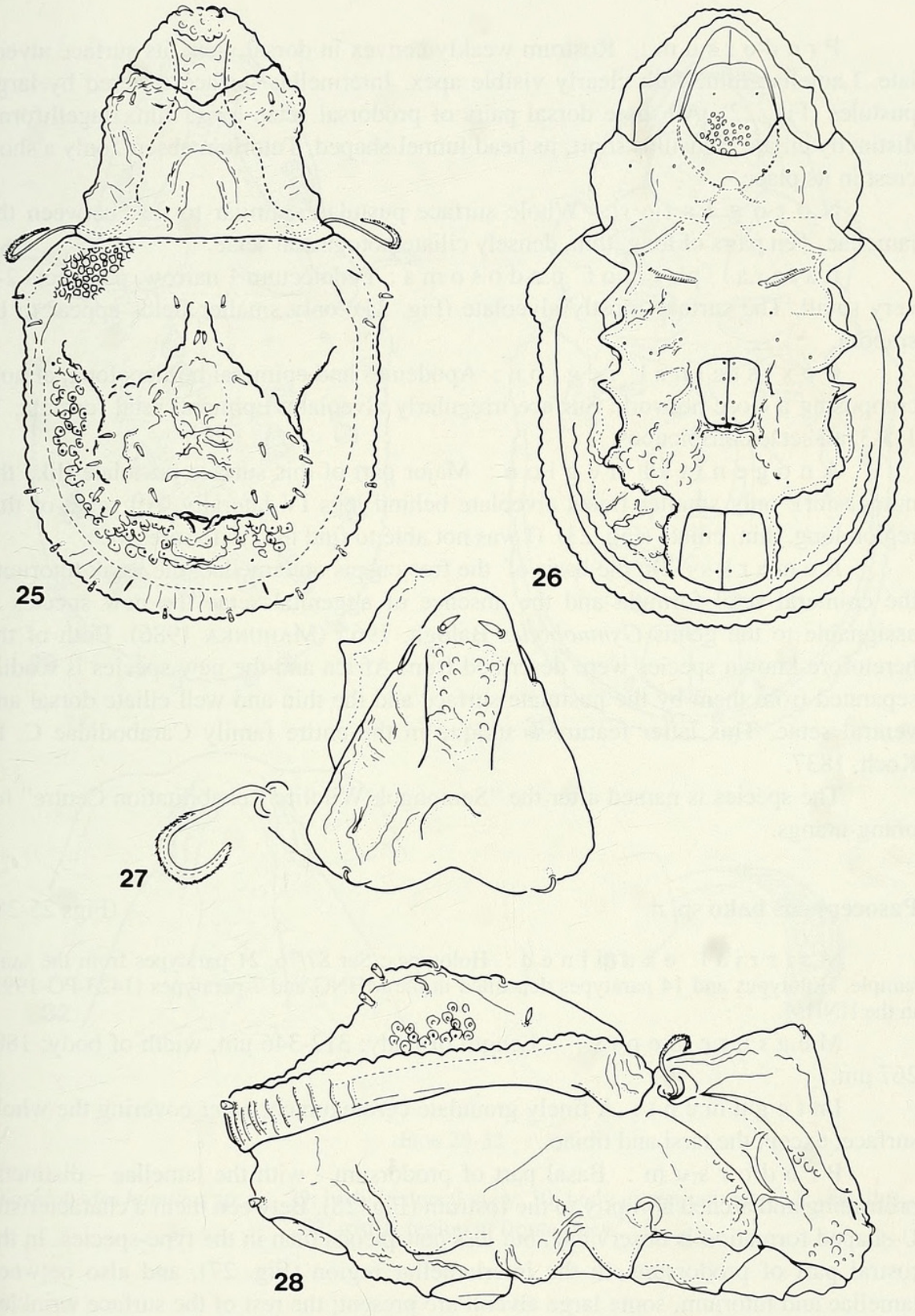
R e m a r k s : Until now this genus was considered as monotypic.The type-species, *B. spathulifer*[6] Mahunka, 1986, was described from Sabah. The new species stands near to it, but differs by the shape of the notogastral setae and the sculpture of the body (e.g. the longitudinal crests and tubercles along the anal aperture).

Gymnobodes semengok sp. n. (Figs 22-24)

M a t e r i a l e x a m i n e d : Holotypus: Sar-87/76, 1 paratype: Sar 87/60. Holotypus deposited in the MHNG and paratype (1422-PO-1991) in the HNHM.

M e a s u r e m e n t s . – Length of body: 263 µm, width of body: 129 µm.

[6] On the occasion of the first diagnosis of the genus (MAHUNKA 1986) I erroneously named the type species *spathulifer* and not *spiculifer* as initially planned. Based on the same type material the species was later described in detail under the name *spiculifer* Mahunka, 1988, which has to be considered as a junior objective synonym of *spathulifer* Mahunka, 1986.



FIGS 25-28

Pasocepheus bako sp. n. - 25: body in dorsal view, 26: body in ventral view, 27: prodorsum in frontal view, 28: body in lateral view.

P r o d o r s u m : Rostrum weakly convex in dorsal view, its surface alveolate. Lamellae thin, with clearly visible apex. Intermellar surface covered by large pustules (Fig. 22). All three dorsal pairs of prodorsal setae long, thin, flagelliform, distinctly ciliate. Sensillus short, its head funnel-shaped. Tutorium absent, only a short crest in its place.

N o t o g a s t e r : Whole surface pustulate, similar to that between the lamellae. Ten pairs of long, thin, densely ciliate notogastral setae.

L a t e r a l p a r t o f p o d o s o m a : Pedotectum 1 narrow, pedotecta 2-3 very small. The surface mostly alveolate (Fig. 24), only smaller fields appear to be smooth.

C o x i s t e r n a l r e g i o n : Apodemes and epimeral borders long, almost composing a close network. Surface irregularly alveolate. Epimeral setal formula: 1-1-3-3, all setae conspicuous.

A n o g e n i t a l r e g i o n : Major part of this surface pustulate (like the notogaster), only smaller fields alveolate behind legs IV laterally. All setae of this region long, thin, ciliate (Fig. 23). (I was not able to find the lyrifissures *iad*).

R e m a r k s : On the basis of the free cuspis on lamellae, the weak tutorium, the epimeral setal formula and the absence of aggenital setae the new species is assignable to the genus *Gymnobodes* Balogh, 1965 (MAHUNKA 1986). Both of the heretofore known species were described from Africa and the new species is readily separated from them by the pustulate surface and the thin and well ciliate dorsal and ventral setae. This latter feature is unique in the entire family Carabodidae C. L. Koch, 1837.

The species is named after the "Semongok Wildlife Rehabilitation Centre" for orang-utangs.

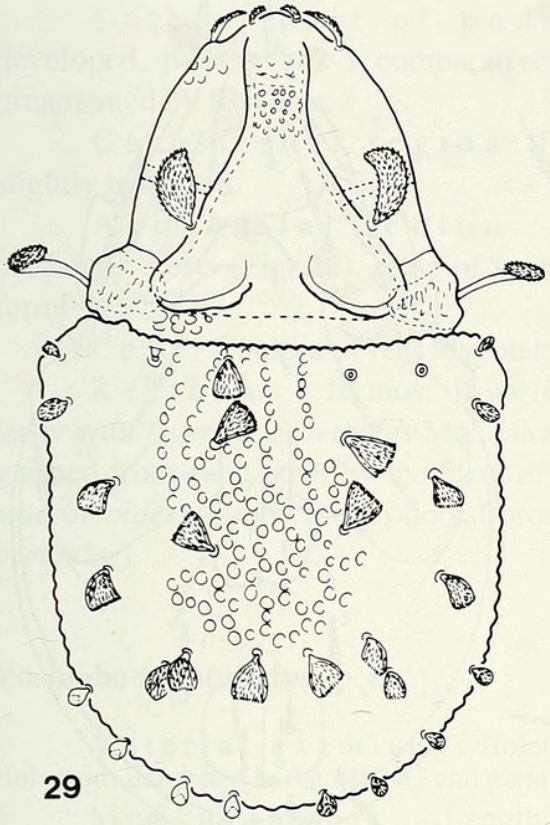
Pasocepheus bako sp. n. (Figs 25-28)

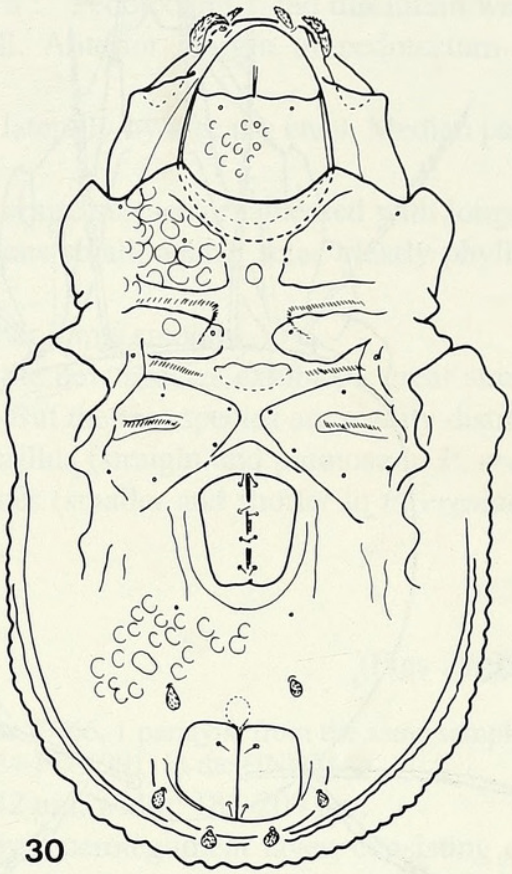
M a t e r i a l e x a m i n e d : Holotypus: Sar 87/76, 21 paratypes from the same sample. Holotypus and 14 paratypes deposited in the MHNG and 7 paratypes (1423-PO-1991) in the HNHM.

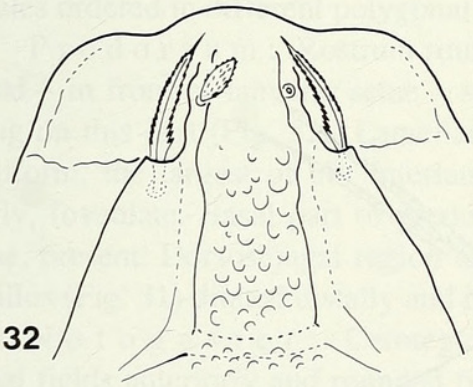
M e a s u r e m e n t s . – Length of body: 312-346 μm, width of body: 188-267 μm.

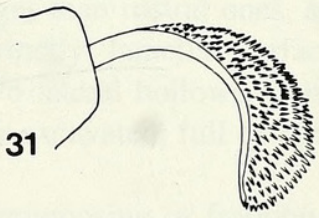
I n t e g u m e n t : A finely granulate cerotegument layer covering the whole surface, except the tarsi and tibiae.

P r o d o r s u m : Basal part of prodorsum - with the lamellae - distinctly protruding and arched abruptly to the rostrum (Fig. 28). Between them a characteristic U-shaped formation is observable, but less conspicous than in the type-species. In the rostral part of prodorsum, in the interlamellar region (Fig. 27), and also between lamellae and tutorium, some large alveoli are present; the rest of the surface wrinkled or smooth, like the basal surface medially. All prodorsal setae small, the rostral setae dilated, phylliform, lamellar setae thin, pilose. Interlamellar setae also phylliform, bent inwards. Sensillus long, strongly bent backwards (Fig. 27), nearly falciform. Tutorium well developed, but without cusp.





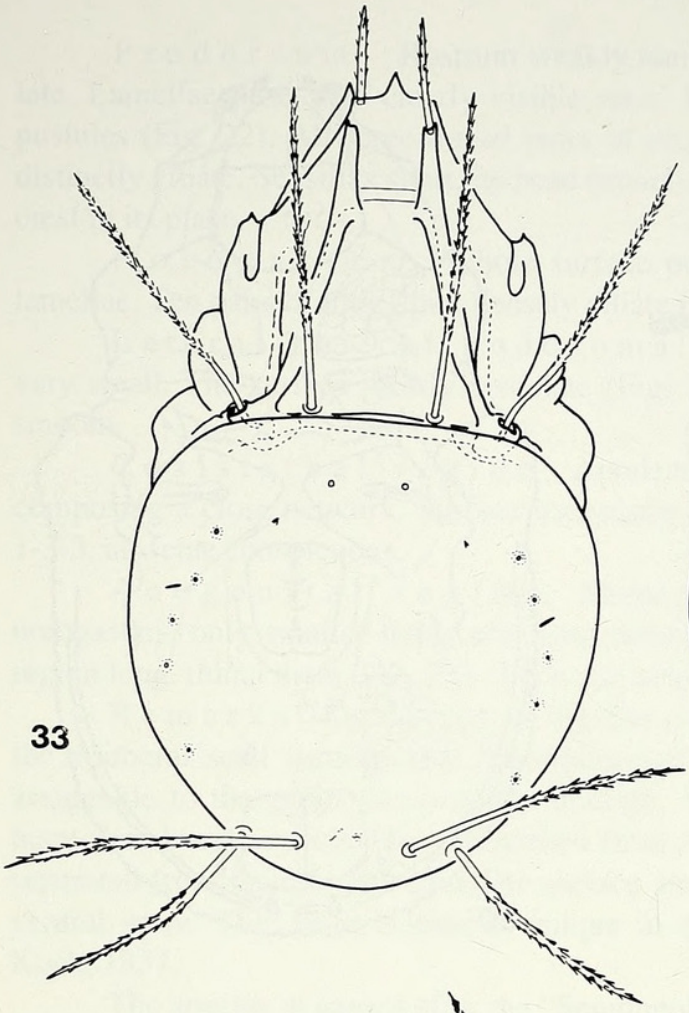


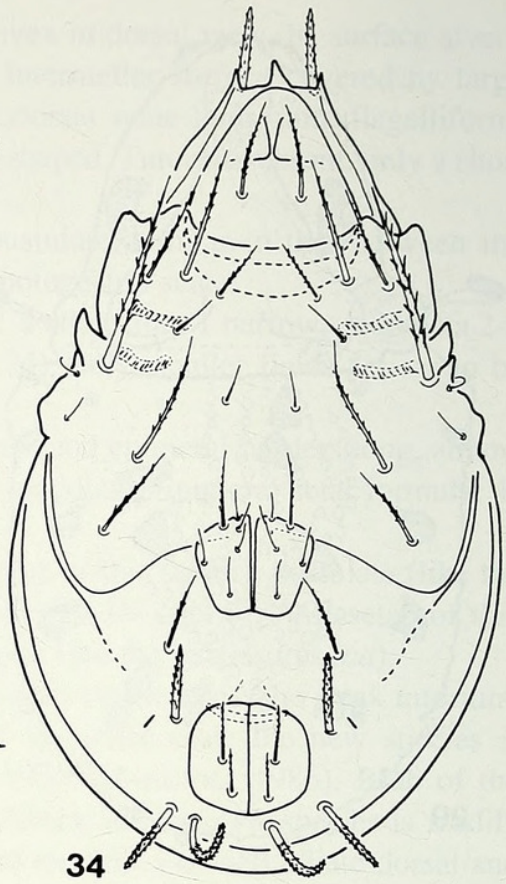


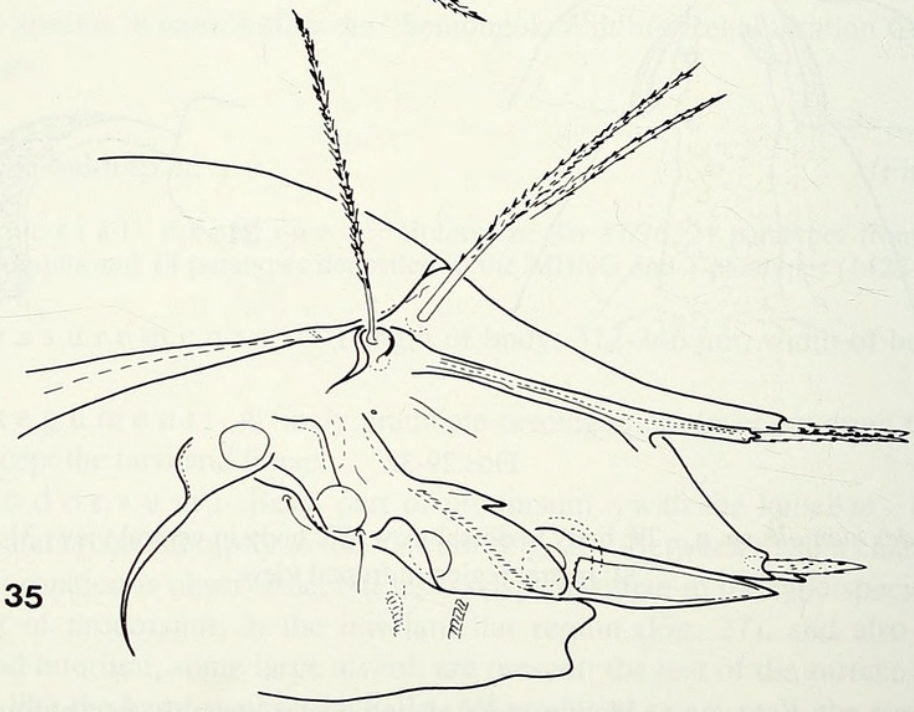
FIGS 29-32

Yoshiobodes humidus sp. n. - 29: body in dorsal view, 30: body in ventral view, 31: sensillus, 32: rostral region in frontal view.

N o t o g a s t e r : Median part of notogaster strongly protruding, but gradually declining to dorsosejugal suture. The sculpture of this region very similar to that of *Pasocepheus eremaeozetoides* Mahunka, 1995. Position and shape of setae (15 pairs) also very similar to those in that species (Fig. 25).







Figs 33-35

Austroceratoppia serapi sp. n. - 33: body in dorsal view, 34: body in ventral view, 35: podosoma in lateral view.

Lateral part of podosoma: Pedotectum 1 and discidium well developed, pedotecta 2-3 comparatively small. Anterior margin of pedotectum 1 ornamented by foveolae.

Coxisternal region: Framed laterally by a heavy crest. Median part slightly hollowed.

Anogenital region: Nearly entire surface ornamented with longer or shorter crests (Fig. 26). setae of ventral regions small, adanal setae clearly phylliform.

Legs: Femora of legs alveolate, all other joints smooth.

Remarks: In most of its features the new species exhibits a great similarity with *P. eremaeozetoides* Mahunka, 1995. But the two species are readily distinguished from each other by the form of the sensillus (straight and plumose in *P. eremaeozetoides*) and by the prodorsal protuberances (smaller and shorter in *P. eremaeozetoides*).

Yoshiobodes humidus sp. n. (Figs 29-32)

Material examined: Holotypus: Sar-87/66, 1 paratype from the same sample. Holotypus deposited in the MHNG and paratype (1424-PO-1991) in the HNHM.

Measurements. – Length: 306-342 µm, width: 183-209 µm.

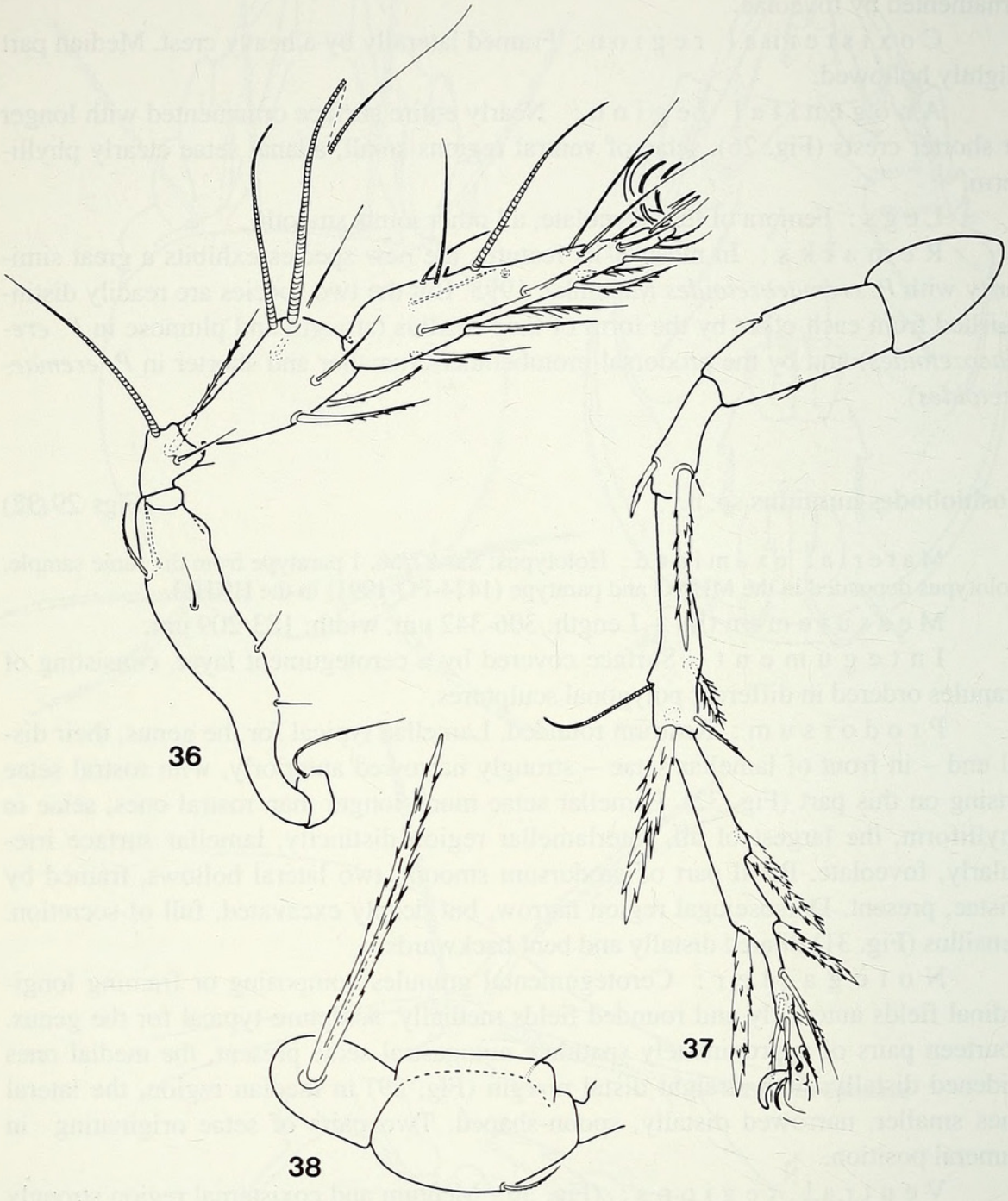
Integument: Surface covered by a cerotegument layer, consisting of granules ordered in different polygonal sculptures.

Prodorsum: Rostrum rounded. Lamellae typical for the genus, their distal end – in front of lamellar setae – strongly narrowed anteriorly, with rostral setae arising on this part (Fig. 32). Lamellar setae much longer than rostral ones, setae *in* phylliform, the largest of all. Interlamellar region distinctly, lamellar surface irregularly, foveolate. Basal part of prodorsum smooth, two lateral hollows, framed by cristae, present. Dorsosejugal region narrow, but deeply excavated, full of secretion. Sensillus (Fig. 31) dilated distally and bent backwards.

Notogaster: Cerotegumental granules composing or framing longitudinal fields anteriorly and rounded fields medially; sculpture typical for the genus. Fourteen pairs of approximately spatulate notogastral setae present, the medial ones widened distally, with straight distal margin (Fig. 29) in median region, the lateral ones smaller, narrowed distally, spoon-shaped. Two pairs of setae originating in humeral position.

Ventral regions: (Fig. 30): Mentum and coxisternal region strongly foveolate and alveolate. Sternal region wide, two rounded hollows observable medially. All epimeral setae minute, epimeral setal formula: 3-1-3-3. Anogenital region pustulate, and also some longitudinal rugae visible along genital plates and laterally; anogenital setal formula: 4-1-2-3. Aggenital setae minute, adanal setae spatulate (Fig. 30).

Remarks: The new species stands nearest to *Yoshiobodes aokii* Mahunka, 1987, but it is well distinguished from the latter by the shape of the notogastral setae (distally narrowed, phylliform in *Y. aokii*) and by the structure of the prodorsum.



FIGS 36-38

Austroceratoppia serapi sp. n. - 36: leg I, 37: leg IV, 38: trochanter and femur leg III.

Austroceratoppia serapi sp. n. (Figs 33-38)

Material examined: Holotypus: Sar-87/66, 6 paratypes from the same sample; 5 paratypes: Sar-87/64. Holotypus and 7 paratypes deposited in the MHNG and 4 paratypes (1419-PO-1991) in the HNHM.

Measurements: – Length of body: 426-481 µm, width of body: 267-292 µm.

Prodorsum: Rostrum wide, with very sharp, small apices medially and laterally (Fig. 33). Rostral setae thick, spiniform, arising on anterior margin, near lateral corner. Lamellae long, with long free cusps, but not reaching to rostral margin (Fig. 35). Their cusps with small, but well observable lateral apex. Lamellar setae thick, as the rostral setae, and arising from the cusps. A transversal band present between the lamellae resembling a translamella, but not connected with the lamellae. Interlamellar setae long, slightly thicker than setiform sensillus. Exobothridial setae reduced, represented only by their alveoli. Tutorium short, weakly developed, without cusps.

Notogaster: Notogastral setae chatacteristically reduced, only two pairs of robust, thick setae present. Five pairs of setae represented by their alveoli, each of which is a porose area, a pair of (median) alveoli without porose area (Fig. 33) observable.

Lateral part of podosoma: Very strong and long genal teeth directed forwards, reaching over rostral margin. Pedotectum 1 with a sharp dorsal spur, pedotecta 2-3 small.

Coxisternal region: Apodemes and epimeral borders weakly developed, short, not forming a transversal band. All epimeral setae characteristically directed forwards, some of them (e. g. *1b*, *3b*) robust, setae *3c* and *4c* short and thin. All fairly ciliate.

Anogenital region: A thin, strongly arched transversal line decurrent from genital aperture to acetabulum of legs IV, a secondary line partly parallel with the former one also present (Fig. 34). Circumpedal carina absent. All setae of this region directed forwards, mostly setiform, but adanal setae spiniform or bacilliform, blunt at tip and much thicker than the rest. Lyrifissures *iad* in apoanal position.

Legs: All legs tridactylous. Setae (*p*) on tarsus I thick, straight, on tarsus II-IV very thin, arising near claws, and similar to them. Trochanter of leg III with very strong seta (Fig. 38). Setal formulae of legs:

I: 1-5-3+1-4+2-20+2-3 (Fig. 36)
IV: 1-2-3-3+1-12-3 (Fig. 37)

Remarks: The new species is readily distinguished from all related species by the equal length of the adanal setae.

The new species is named after the mountain Serapi.

Sarawakiella gen. n.

Diagnosis: Family *Galumnidae*. Cuticula finely punctate, without heavy sculpture. Rostrum sharply pointed. Lamellar and sublamellar lines well developed,

slightly diverging from each other. Lamellar setae arising on median surface, between lines *L*. Rostral setae arising laterally between lines *L* and *S*. Dorsosejegal suture absent. Ten pairs of long flagellate notogastral setae and four pairs of not typical areae porosae present. They are characteristic for the new genus. Epimeral setal formula: 1-0-1-2. Adanal setae reduced or minute. Lyrifissures *iad* in adanal position. Area porosa postanalis present. Chelicera of normal type. Legs tridactylous. Famulus originating far from solenidia, setae *ft'* short and almost coupled with solenidium ω_1. Solenidium ω_2 arising laterally and slightly posteriorly from ω_1.

Type species: *Sarawakiella longipilosa* sp. n.

Remarks: On the basis of the shape and position of the octotactic organs the new taxon is related to *Pilizetes* Sellnick, 1937. However, the type-species of the latter genus is characterised by a rounded rostrum, a strong notogastral sculpture, and rigid notogastral and adanal setae.

Sarawakiella longipilosa sp. n. (Figs 39-44)

Material examined: Holotypus: Sar-87/60, 7 paratypes from the same sample; 2 paratypes: Sar-87/64. Holotypus and 6 paratypes deposited in the MHNG and 3 paratypes (1425-PO-1991) in the HNHM.

Measurements. – Length: 252-302 μm, width of body: 208-238 μm.

Prodorsum: Rostrum with sharply pointed apex (Fig. 41). Lamellar and rostral setae simple, setiform, long. Rostral setae arising between the lines *L* and *S* (Fig. 42). Interlamellar setae very long, flagellate, their basal part darker than the rest. Sensillus long directed backwards, its head comparatively small, smooth, asymmetric, with a long spine on its distal end. Areae porosae dorsosejugales, small, elliptic.

Notogaster: Ten pairs of long, flagellate setae (like the interlamellar ones), 4 pairs of small, hardly recognizable areae porosae, more resembling sacculi, each with a long tubular formation in the cuticule, but the unframed pori well conspicuous on the surface (Fig. 39). All lyrifissures very narrow, inconspicuous, *ih* and *ips* standing near each other transversally, *im* located near areae porosae A_1.

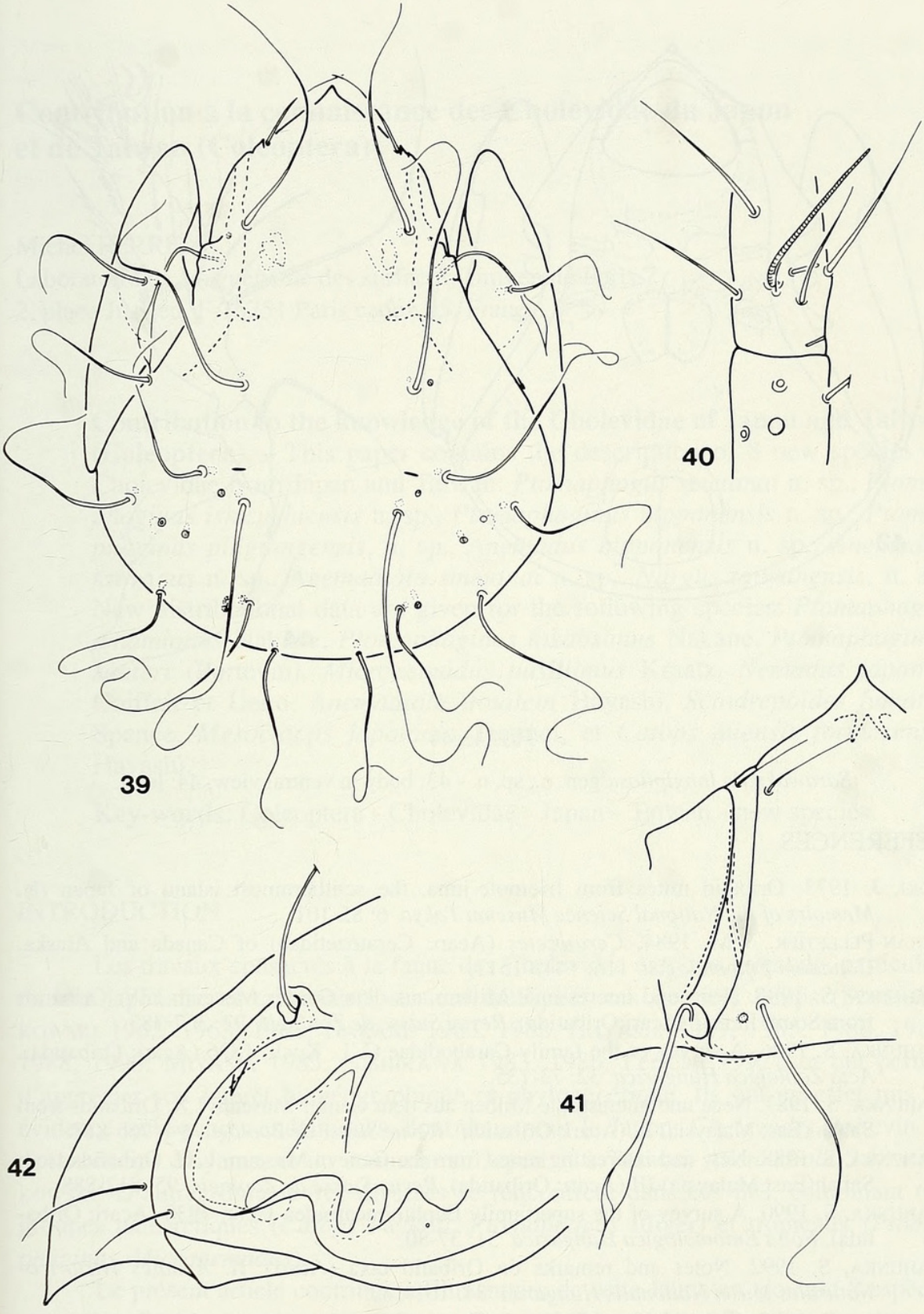
Ventral region (Fig. 43): Epimeral setal formula: 1-0-1-2, setae *4c* arising on discidium. Anoadanal region with anterior three pairs of genital setae visible, all others minute or observable only by their alveoli.

Legs: All legs tridactylous. Setal formulae of legs:

I: 0-4-3+1-4+2-20+2-3 (Fig. 44)
II: 0-4-3+1-4+1-15+2-3
III: 1-2-1+1-3+1-15-3
IV: 1-2-2-3+1-12-3

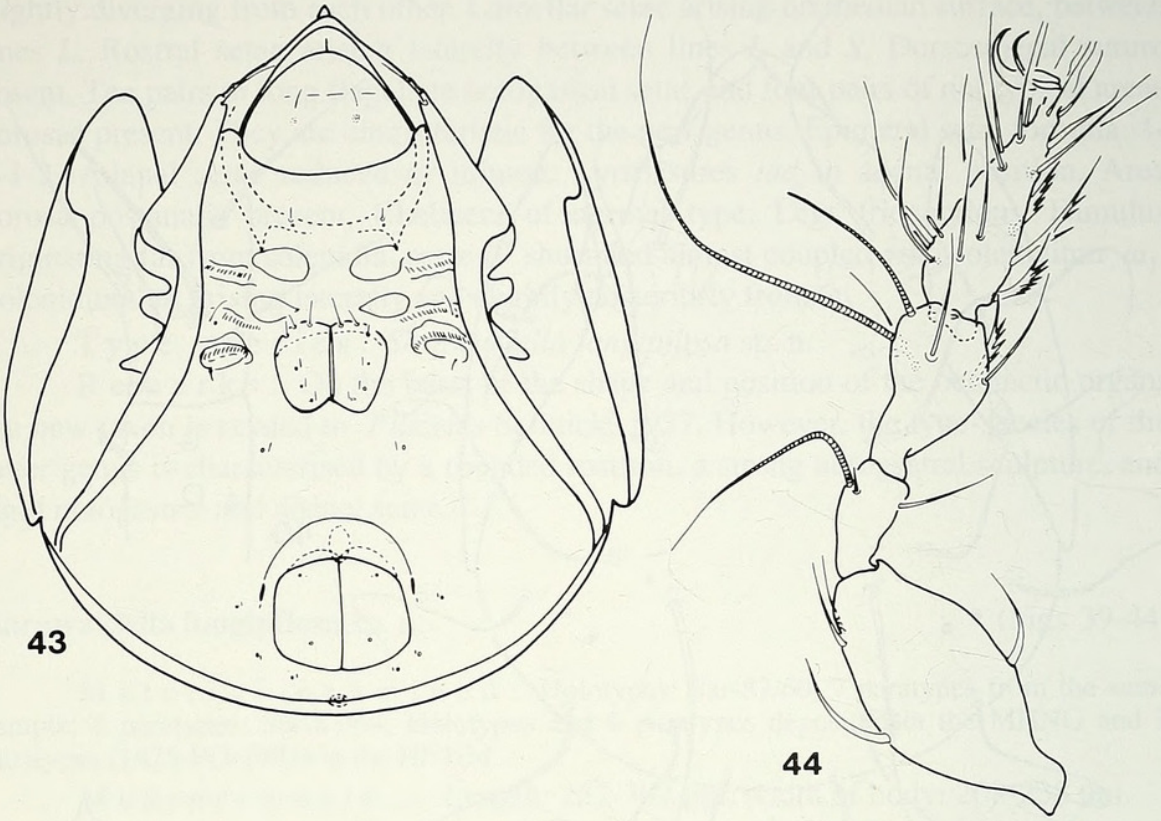
The position of the solenidial group of tarsus I shown in Fig. 40.

Remarks: On the basis of the very characteristic dorsal chaetotaxy the new species is far removed from all known species of the family Galumnidae.



FIGS 39-42

Sarawakiella longipilosa gen. n., sp. n. - 39: body in dorsal view, 40: basal part of tarsus I, 41: lateral part of prodorsum, 42: podosoma in lateral view.



FIGS 43-44

Sarawakiella longipilosa gen. n., sp. n. - 43: body in ventral view, 44: leg I.

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