

The Zoological Results of the Hungarian Soil Zoological Expeditions to South America*

II. Acari: Oribatids from the Material of the Second Expedition, II.

By

J. BALOGH and S. MAHUNKA**

The identification of the mites collected and extracted from the samples gathered by our second South American Expedition to Brazil, Bolivia, and Uruguay, and the subsequent publication of the results began in an earlier paper (see footnote on p. . .). As expounded therein, we submit our findings, without the claim of completeness, in the order of materials identified so that the critical elaboration of the fauna and the drawing of conclusions shall be published only after the preliminary work of identification will have terminated.

In the present paper, we propose to submit the description of 1 new family, 15 new genera, and 56 new species, and also some further information on the occurrence of 8 species already known from the region under discussion.

The species discussed here have been collected in the following localities:

Brazil

- No. 357.** Manaus, Amazonas, 13 November, 1966. — Berlese samples taken in the virgin forest, about 20 km from the city. — 1: Upper layer (to a depth of 5 cm) of litter. 2: Lower layer (to a depth of 10 cm) in the same site; decaying leaves interwoven with hyphae.

Bolivia

- No. 380.** Guayaramerin, Beni, 20 November, 1966. — Berlese samples taken from a closed site near the edge of the forest, 10 km from the town, along the road to Riberalta. — 1: Upper layer of litter. 2: Lower, mycelial layer.

* The present article treats the material of the Second Expedition (1966-67). Leader: Prof. Dr. J. BALOGH; other participants: Dr. S. MAHUNKA and Dr. A. ZICSI.

** Prof. Dr. JÁNOS BALOGH, ELTE Állattudományi Tanszék (Zoosystematical Institute of the L. Eötvös University), Budapest, VIII. Puskin u. 3., and Dr. SÁNDOR MAHUNKA, Természettudományi Múzeum Állattára (Zoological Department of the Hungarian Natural History Museum), Budapest, VIII. Baross u. 13.

- No. 390.** Guayaramerin, Beni, 23 November, 1966. — Berlese sample taken from the base of bushes in a copse formed after deforestation near the town. — 1: Litter and decaying roots.
- No. 406.** Guayaramerin, Beni, 26 November, 1966. — Berlese sample taken from the gallery forest along the Mamore. — 1: litter and decaying detritus from very shade base of low tree.
- No. 416.** Guayaramerin, Beni, 29 November, 1966. — Berlese samples taken in forest on sandy soil, about 4 km from the town, along the road to Riberalta. — 1: Upper layer of litter. 2: Lower, mycelial layer, same site.
- No. 421.** Guayaramerin, Beni, 30 November, 1966. — Berlese samples taken on the Estancia Esperanza, about 20 km from the town. — 1: Rotting, black litter of forest on wet soil.
- No. 436.** Guayaramerin, Beni, 5 December, 1966. — Berlese sample taken in forest near airport. — 1: Litter and dense network of roots beneath it.
- No. 459.** Guayaramerin, Beni, 16 December, 1966. — Berlese samples taken in valley of a tributary brook of the Rio Yolosa. — 3: Litter of high shrubs.
- No. 462.** Puerto Linares, Alto Beni, 580 m, 17 December, 1966. — Berlese samples taken in virgin forest. — 1: Upper layer of litter. — 2: Lower layer, same site.
- No. 463.** Puerto Linares, Alto Beni, 600 m, 17. December, 1966. — Berlese samples taken in virgin forest on steep slope. — 2: Lower layer of litter.
- No. 464.** Puerto Linares, Alto Beni, on the road to and 25 km from Alcoche, 600 m, 17 December, 1966. — Berlese samples from moss in virgin forest: 1: Moss with bark from lying trunk; 2: Thick moss of roadside cliff.
- No. 465.** Between Alcoche and Puerto Linares, Alto Beni, 800 m., 17 December, 1966. — Berlese samples taken from vegetation of steep rocky declivity: 5: Very thick moss in shaded site; 6: Decaying lower horizon of moss in same site.
- No. 508.** Coroico, La Paz, 15 km S of town 1800 m, 20 December, 1966. — Berlese sample taken from moss-cushion along road.
- No. 507.** Coroico, La Paz, 15 km S of town, 1800 m, 20 December, 1966. — Berlese samples from litter of steep incline: 1: Very moist litter below shrubs; 2: Lower, rooty horizon at same site.
- No. 510.** Between Coroico and Unduavi, La Paz, 40 km of Coroico, about 2200 m, 20 December, 1966. — Berlese samples taken from vegetation of steep cliff wall: 2: Living and dead moss at same site.
- No. 512.** Unduavi, La Paz, 5 km N of settlement, 3100 m., 20 December, 1966. — Berlese sample taken from *Sphagnum* thriving on steep cliff wall.
- No. 513.** Unduavi, La Paz, 5 km N of settlement, 3100 m., 20 December 1966. — Berlese sample of moss, soil and roots at base of *Vaccinium* plant.

The type-material of the described taxa is deposited as itemized in the preceding publication.*

Sphaerochthoniidae GRANDJEAN, 1947

Sphaerochthonius phyllophorus n. sp.

(Fig. 4)

298–319 × 186–196 μ . Hairs *ro*, *la* and *in* of a regular T-shape. Stalk of sensillus short, clavate portion slightly spatulate. Prodorsal surface with irregular reticulation.

* BALOGH, J. & MAHUNKA, S.: *The scientific results of the Hungarian soil zoological expeditions to South America. 10. Acari: Oribatids, collected by the second expedition.* Acta Zool. Hung., 15, 1969, p. 1–21.

Notogaster: Cerotegument arranged in 5- and 6-angular, regular reticulation. Anterior hairs irregularly T-shaped, one side-branch shorter than other one, posterior hairs phylliform.

Ventral: Adanal hairs large, their T-shape recognizable. Exterior section of anal plate emitting 4 thick, phylliform anal hairs.

Material examined: 1 ex. (Holotype: 0-557-68): No. 371; 5 ex. (Paratypes: 0-558-68): from the same locality.

Remarks: No species bearing phylliform hairs are as yet known among its congeners.

L o h m a n n i d a e BERLESE, 1916

Mixacarus neotropicus BALOGH, 1962

Material examined: No. 357 (4).

P l a s m o b a t i d a e GRANDJEAN, 1961

Solenozetes flagellatus n. sp.

(Fig. 1)

499-543 × 294-328 μ . Rostral apex with a button-shaped, projecting excrescence. Hairs *la* arising on elevated portion of margin, hairs *in* represented merely by their alveoli. Sensillus long, apically slightly spatulate but there still emitting a long, easily breakable, filiform flagellum.

Notogaster: Surface ornamented with foveolae of various size. Lateral apophysis of irregular shape. Hairs minute, hardly recognizable owing to heavy sculpture.

Material examined: 1 ex. (Holotype: 0-559-68): No. 357; 6 ex. (Paratypes: 0-560-68): from the same locality.

Remarks: The configuration of the rostrum and the notogastral tube as well as the flagellate sensillus satisfactorily distinguish the new species from *Solenozetes cribratus* GRANDJEAN, 1929.

D a m a e i d a e BERLESE, 1896

Metabelba flagellata n. sp.

(Fig. 2)

500-539 × 352-392 μ . Sensillus long, apically flagellate. Hairs *ro* simple, hairs *la*, *in* and *exa* also flagelliform. Four condyli, spaced at equal distances between themselves, behind bothrydia.

Notogaster: An elevation, corresponding to prodorsal condyles, on anterior margin of notogaster. Eight pairs among notogastral hairs transformed into robust spines, arranged in 2 longitudinal rows. Hairs *p* shaped otherwise, p_1 extremely long, flagellate, p_2 and p_3 short.

Ventral: Apodemata, situated anteriorly to genital aperture, consituting

a thick, closed arch bearing 4 condyli. Six pairs of genital, 1 pair of aggenital, 2 pairs of anal, and 3 pairs of flagelliform adanal, hairs present.

Material examined: 1 ex. (Holotype: 0-561-68): No. 464—2. 1 ex. (Paratypes: 0-562-68): from the same locality.

Remarks: The setal combination of the notogaster differs from that of all hitherto known congeners.

Microzetidae GRANDJEAN, 1936

Austrozetes n. gen.

Sensillus reclinate or exclinate, slightly fusiform. Interlamellar hair small, arising near interior margin of lamella. Lamellar hair simple. Lamellae long, gradually tapering apicad and terminating in narrow apex wholly covering rostrum. Notogastral surface smooth, hairs small.

Type-species: *Austrozetes brazilianus* n. sp.

Remarks: Allied to *Nellacarus* GRANDJEAN, 1936, but its sensillus is filiform, reclinate, the notogastral surface with depressions. The differences of the lamellae also justify the generic separation.

Austrozetes brazilianus n. sp.

(Fig. 5)

431-456 × 303-334 μ . Hair *la* robust, spiniform, hair *ro* thin, setiform. Exterior margin of lamellae straight, their surface with an introrsely decurrent rugulosity.

Notogaster: Hairs thin, short. Pteromorpha small, their anterior margin terminating in a small, pointed apex.

Ventral: On genital plate, anterior 3 pairs of hairs arising behind each other. Anal and adanal hairs minute. Setae *ad*₁ and *ad*₂ in a postanal position.

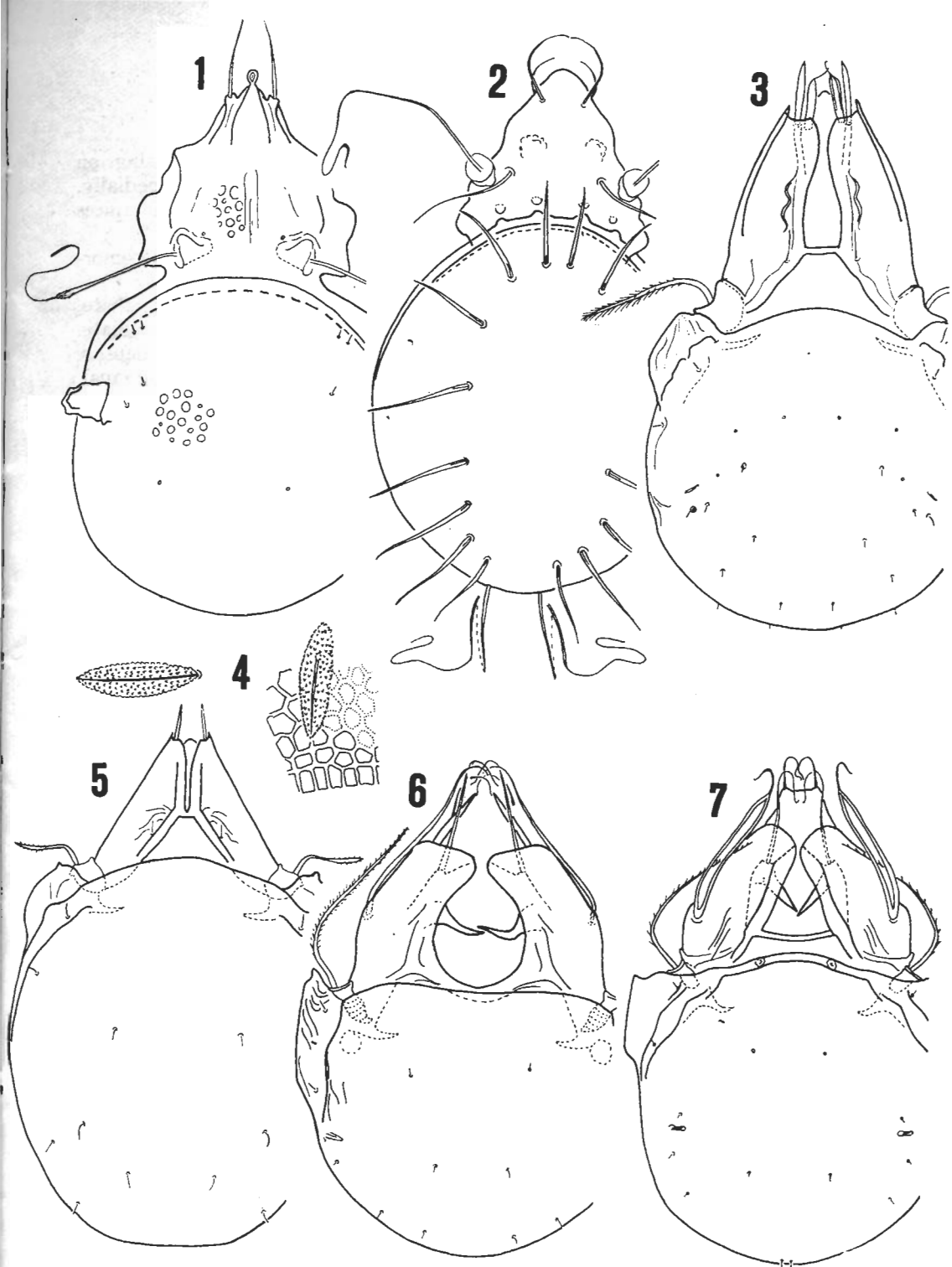
Material examined: 1 ex. (Holotype: 0-565-68): No. 371. — 1 ex. (Paratype: 0-566-68): from the same locality.

Brazilozetes n. gen.

Sensillus filiform, proclinate. Interlamellar hair arising near exterior margin of lamella, long, projecting considerably beyond lamella. Lamellae short, obliquely truncate, inner and outer apices rounded. Hair *la* long, originating below lamella, apically flagellate, not branching. Two oppositely placed interlamellar apophyses. Notogastral hairs minute.

Type-species: *Brazilozetes flagellatus* n. sp.

Remarks: The new taxon belongs to the relationship of the genus *Microzetes* BERLESE, 1913. However, it is distinguished from this latter by the short and obliquely truncate lamellae and the simple lamellar hairs. The two species, relegated to the new genus and described hereunder, can be separated, among others, by the difference extant in the hairs *in* (shaped like a pod of beans in *B. phaseolus*).



Figs. 1-7. 1: *Solenozetes flagellatus* n. sp. — 2: *Metabelba flagellata* n. sp. — 3: *Stylozetes physoseta* n. sp. — 4: *Sphaerochthonius phyllophorus* n. sp. — 5: *Austrozetes brazilianus* n. sp. — 6: *Brazilozetes flagellatus* n. sp. — 7: *Brazilozetes phaseolus* n. sp.

Brazilozetes flagellatus n. sp.

(Fig. 6)

254–275 × 211–235 μ . Sensillus ciliate throughout. Hairs *ro* arising on long apices of chitinous transversal line. Lamellae convexly arcuate medially. Interlamellar apophysis uncinata. Hairs *la*, *ro*, and *in* elongate, their apices flagellately recurving.

Notogaster: All notogastral hairs minute, hardly recognizable. Pteromorphae with sharp apex, behind it excised.

Ventral: Among epimeral hairs, setae *1a*, *2a*, and *3a* extremely ciliate, resembling a pine-tree. All others either long or minute, but all weakly ciliate. First pair of 6 pairs of genital hairs considerably larger and more densely ciliate than all other ones. Among adanal hairs, setae *ad*₂ and *ad*₃ in paraanal, setae *ad*₁ in postanal, position.

Material examined: 1 ex. (Holotype: 0-567-68): No. 371. — 4 ex. (Paratypes: I-568-68): from the same locality.

Brazilozetes phaseolus n. sp.

(Fig. 7)

181–206 × 137–147 μ . Lamellae finely rounded. Hair *ro* originating on a short cuspis. Hair *in* shaped like a bean-pod, apically with a short flagellum. Sensillus long, sparsely ciliate. Interlamellar apophysis straight.

Notogaster: Hairs minute, their alveoli, however, striking and conspicuous. Pteromorpha without any sharp apex, bearing merely a slightly concave excision.

Ventral: Epimeral region displaying some longitudinal and arcuate lines. Anterior pair of hairs arising on genital plate, similarly to hair *3a*, incrassate and heavily ciliate. Among adanal hairs, setae *ad*₁ and *ad*₂ in a postanal position.

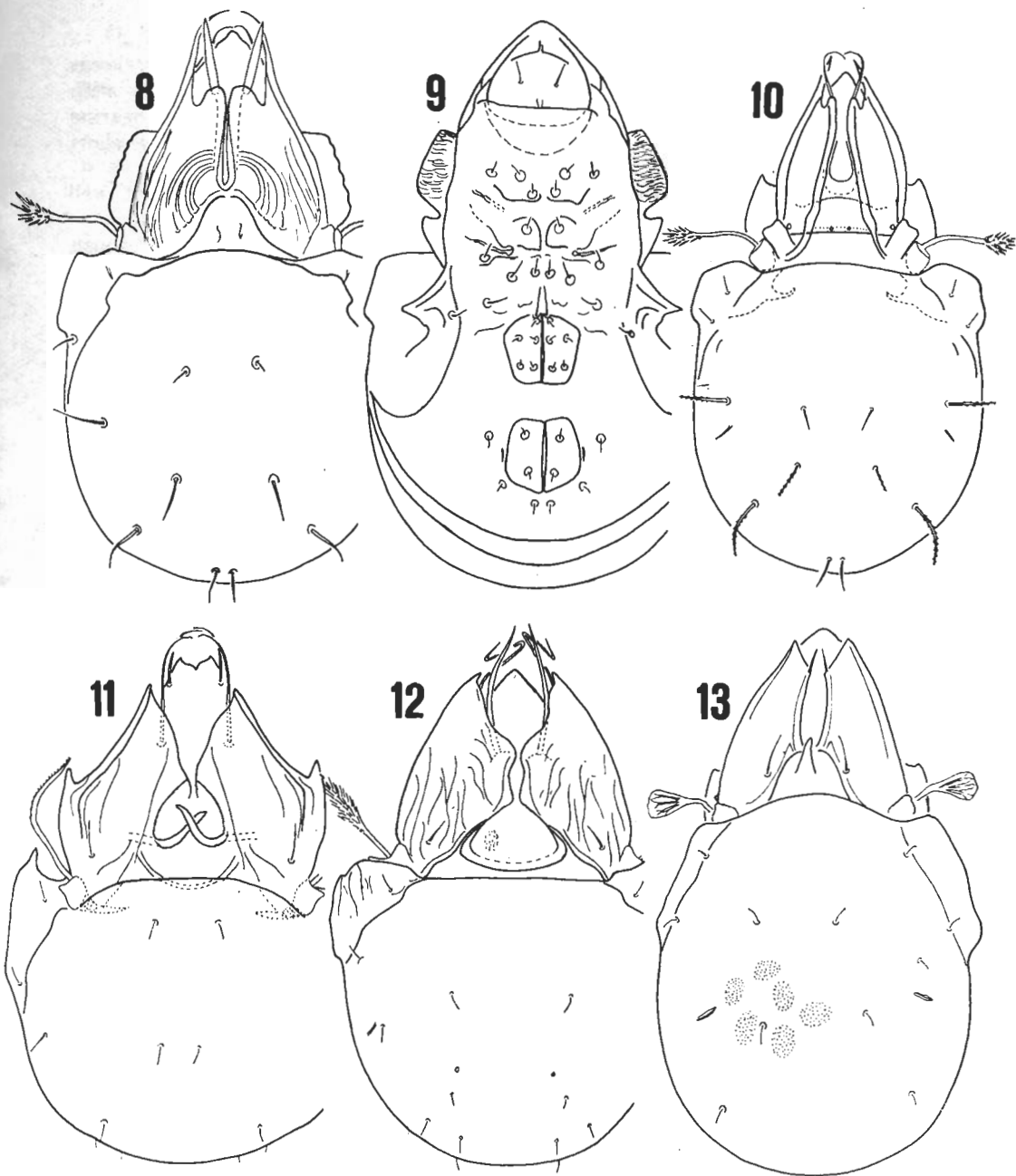
Material examined: 1 ex. (Holotype: 0-569-68): No. 371. — 1 ex. (Paratype: 0-570-68); from the same locality.

Cosmozetes n. gen.

Sensillus fusiform, reclinate and directed laterad, with long and spiniform cilia. Lamellae wide, their cuspis deeply excised. Short and thin hair *in* originating near their inner margin. Insertional point of notogastral hairs enormous, surrounded by an annuliform excrescence.

Type-species: *Cosmozetes striatissimus* n. sp.

Remarks: The posture of the sensillus rather resembles that found in the genus *Mysterozetes* HAMMER, 1961, but the shape of the sensillus and the evolvment of the hairs *in* distinguish the new taxon satisfactorily from all related genera. The two new species, described hereunder and belonging to the new genus, are easily separable mainly on the basis of the different lamellar sculptures.



Figs. 8-13. 8-9: *Cosmozetes striatissimus* n. sp. — 10: *Cosmozetes rohri* n. sp. — 11: *Schalleria cruciata* n. sp. — 12: *Szentivanyiella latilamellata* n. sp. — 13: *Licnozetes multiareolatus* n. sp.

Cosmozetes striatissimus n. sp.

(Fig. 8—9)

220–230 × 142–157 μ . Sensillus clavate, reclinate and exclinate, clavus with long lateral branches. Lamella of the *Nellacarus*-type, cuspidally with a deep incision, its outer point long and incurved, inner point obtuse, bearing hair *la*. Lamellar surface with convergent and arcuate lines. Hair *in* short but well discernible.

Notogaster: Notogastral hairs of divers length, hair p_1 weakly but well discernibly incrassate and fusiform.

Ventral: All hairs, but especially epimeral ones, surrounded by a robust, annuliform, chitinous excrescence. Anterior pair of genital hairs extremely long. Aggenital hairs reduced.

Material examined: 1 ex. (Holotype: 0-571-68): No. 507-1. — 6. ex. (Paratypes: 0-572-68): from the same locality.

Cosmozetes rohri n. sp.

(Fig. 10)

248–162 μ . Sensillus exclinate, clavate, with long aciculi. Lamellae smooth, their outer apex straight, not recurving over inner apex. Hair *la* apically inclinate. Hair *in* represented by alveoli only, hair *ro* penicillate.

Notogaster: Surface smooth, hairs of divers length.

Ventral: Six pairs of characteristically located genital hairs; setae ad_1 in postanal, setae ad_2 and ad_3 in paraanal, position.

Material examined: 1 ex. (Holotype: 0-573-68): No. 371.

We dedicate the new species, in gratitude and esteem, to R. ROHR, Campinas, rendering considerable help to, and accompanying us on, the expedition.

Licnozetes multiareolatus n. sp.

(Fig. 13)

192 × 135 μ . Sensillus proclinate and directel laterad, apically widening, spatulate, its surface aciculate and with two ridges. Lamellar cuspis obliquely truncate, hair *la* originating on inner side. Also hairs *in* short, thin, arising on lamella. An unpaired interlamellar apophysis present.

Notogaster: Surface with innumerable, comparatively large, punctate hollows. Hairs minute.

Ventral: Apodemata well developed. Most epimeral hairs represented merely by alveoli. Genital plate with some longitudinal ridges.

Material examined: 1 ex. (Holotype: 0-577-68): No. 357-2.

Remarks: The second species of our recently established genus. From the type-species, it differs mainly by the notogastral sculpture (points aggregated in characteristic areolae).

On the basis of the examination of the additional specimen now available, and the Holotype, the original description is to be rectified as follows: lamellar hair ramifying into a number of long, flagelliform, lateral branches, thus similar to a cat-o'-nine-tails; 2 minute apophyses also present in interlamellar region (directly anterior to dorsosejugal suture); also hair *ro* longer, flagelliform. — The Holotype and the specimen from Manaus agree in all details.

Material examined: No. 357 (1).

Schalleria cruciata n. sp.

(Fig. 11)

274×225 μ . Sensillus proclinate, short, rather densely ciliate. Lamellar cuspis obliquely truncate, outer margin with a large tooth. Hair *la* long, simple. Interlamellar apophyses curving into one another.

Notogaster: Hairs short. Anterior margin of pteromorpha deeply excised.

Ventral: Epimeral hairs short. Apodemata weakly developed, short, except for *apo*₄ constituting a strong bridge anteriorly to genital aperture.

Examined material: 1 ex. (Holotype: 0-574-68): No. 512.

Remarks: The new species differs from all known congeners primarily by the characteristic conformation of the interlamellar area.

Stylozetes n. gen.

Sensillus bacilliform, reclinate. Interlamellar hairs short, located near inner margin of lamella. Lamellae long and wide, their outer apices pointed, inner ones rounded. Lamellar hairs originating below slightly concavely excised lamellar cuspis. Notogastral surface smooth, hairs minute.

Type-species: *Stylozetes physoseta* n. sp.

Remarks: The new genus stands near *Nellacarus* GRANDJEAN, 1936, and the above-described *Austrozetes* n. gen. It differs from these mainly by the shape of the sensillus.

Stylozetes physoseta n. sp.

(Fig. 3)

294-323×201-221 μ . Hair *ro* leguminiform, terminally with a short flagellum, its surface with aciculi. Hair *la* very robust. Lamellae with a sharp outer cuspis, not meeting with one another. Hair *in* short and thin.

Notogaster: Surface with minute hairs and well discernible alveoli. Pteromorpha rugulose.

Ventral: On genital plate, anterior 3 pairs of hairs arising behind each other in a longitudinal row. Among adanal hairs, setae *ad*₂ and *ad*₃ in a paraanal position.

Material examined: 1 ex. (Holotype: 0-563-68): No. 371. — 22 ex. (Paratypes: 0-564-68): from the same locality.

Szentivanyiella n. gen.

Sensillus proclinate, fusiform, ciliate. Interlamellar hairs short, arising on surface of lamella. Lamellae wide, their outer apex short, inner cuspis obliquely truncate. Lamellar hair originating below lamella, simple. Interlamellar area low. Notogastral surface smooth, hairs short.

Type-species: *Szentivanyiella latilamellata* n. sp.

Remarks: The new genus stands nearest to *Calozetes* BAL. et MAH., 1969, but in this latter the interlamellar area is situated further anteriorad, since the chitinous connexion of the lamellae is at half the distance of the lamellar length. Also, the lamellar hairs originate near the outer cuspis.

We dedicate the new genus, in friendship and gratitude, to Dr. H. J. SZENTIVÁNYI, Port Moresby, New Guinea, of innumerable helpful gestures during our soil zoological expeditions.

Szentivanyiella latilamellata n. sp.

(Fig. 12)

254–265 × 191–201 μ . Lamellae wide, inner side of their cuspis deeply excised; surface with some longitudinal rugosity. Hairs *ro* extremely long, curved; hairs *la* also elongate.

Notogaster: Surface smooth, hairs minute.

Ventral: Epimeral hairs minute, with an annuliform structure around their points of origin. Genital aperture large, much bigger than anal opening. Except for first hair of genital aperture, hairs of anogenital region minute.

Material examined: 1 ex. (Holotype: 0–575–68): No. 465–5. — 1 ex. (Paratype: 0–576–68): from the same locality.

Undulozetes n. gen.

Sensillus reclinate. Interlamellar hair minute, arising on lamella. Lamellae large, convergent, medially meeting. Notogaster with cerotegument.

Type-species: *Undulozetes granulatus* n. sp.

Remarks: Among the genera of the family Microzetidae, the new taxon stands nearest to the genus *Nellacarus* GRANDJEAN, 1936, but sharply differs also by the shape of the sensillus.

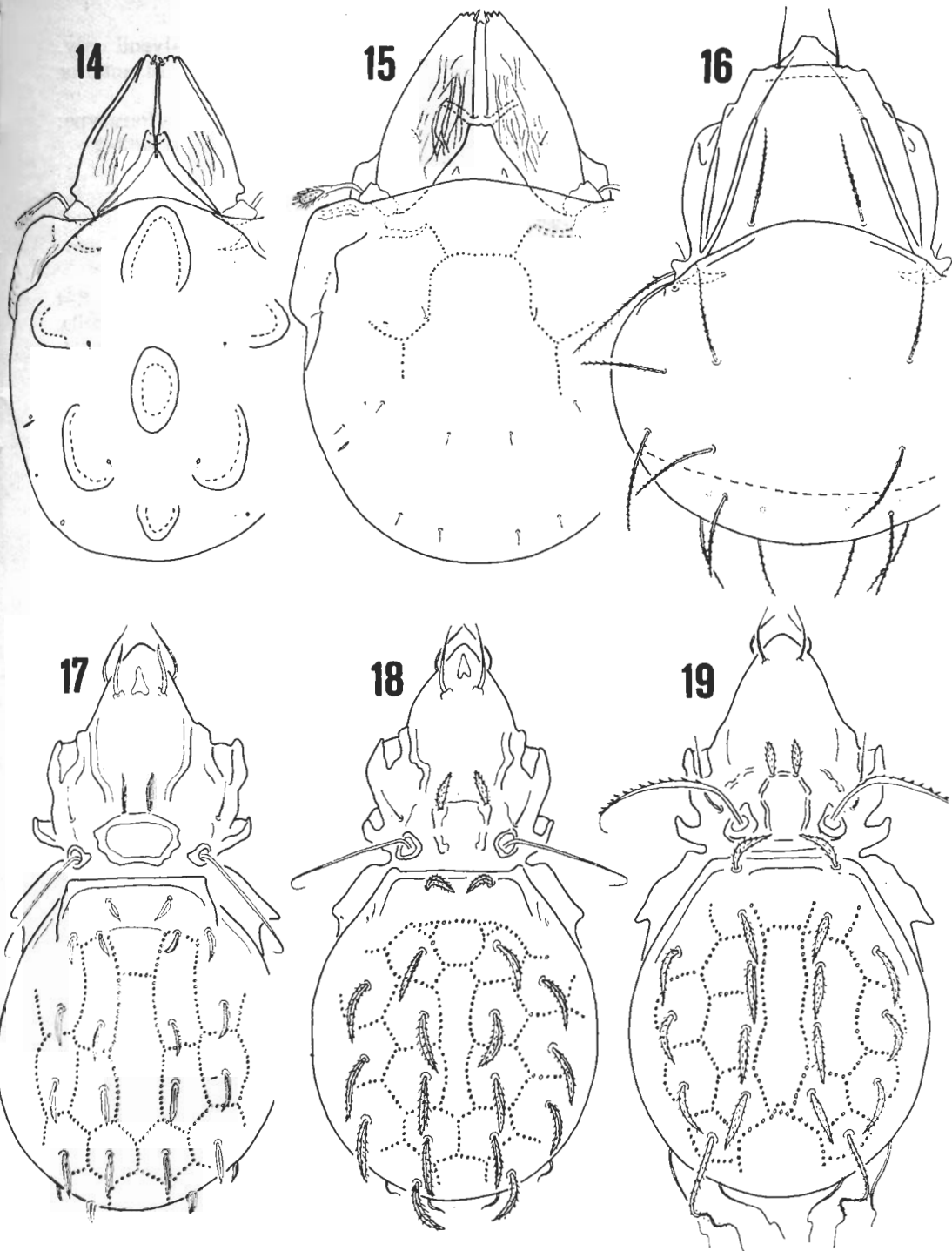
Undulozetes granulatus n. sp.

(Fig. 14)

215–222 × 1421–50 μ . Sensillus reclinate, fusiform, aciculate. Lamellae entirely covering rostrum, their cuspis with 2–3 minute incisions. Hairs *1a* minute, spiniform.

Notogaster: Covered by cerotegument, the heavy excrescences arranged like flower-petals; posterior extremity of body also with an unpaired projection. Rugose apex of pteromorpha sharp.

Ventral: Apodemata well developed. Hair *1b* arising anteriorly to *1b*. All



Figs. 14-19. 14: *Undulozetes granulatus* n. sp. — 15: *Undulozetes* (?) *margaritatus* n. sp. — 16: *Ceratorchestes globosus* n. sp. — 17: *Eremobelba brevispathulata* n. sp. — 18: *Eremobelba ornata* n. sp. — 19: *Eremobelba pulchella* n. sp.

hairs of anogenital region minute, represented almost by their alveoli only. Also some longitudinal rugosity present, extending even in front of anterior margin of genital aperture.

Material examined: 1 ex. (Holotype: 0-578-68): No. 464-2. 4 ex. (Paratype: 0-579-68): from the same locality: 1 ex. (Paratype: 0-580-68): No. 463-2.

Undulozetes (?) *margaritatus* n. sp.

(Fig. 15)

230-245 × 155-170 μ . Lamellae covering prodorsum, their cusps with 3-4 smaller excisions. Lamellar surface rugulose. Hair *in* short, arising on lamella. Sensillus reclinate, fusiform, aciculate.

Notogaster: Ornamented by cerotegument arranged into a pattern resembling beads. Hairs minute.

Ventral: Epimeral hairs short. Six genital hairs present, four of them arranged in a longitudinal row. Setae *ad*₁ and *ad*₂ in paraanal position.

Material examined: 1 ex. (Holotype: 0-581-68): No. 508. 10 ex. (Paratypes: 0-582-68): from the same locality.

Remarks: The relegation of the new species to this genus is rather problematic; a consideration of the presence of several corresponding features led to its provisional allocation here.

Metrioppiidae BALOGH, 1943

Ceratorchestes globosus n. sp.

(Fig. 16)

500-627 × 416-490 μ . Rostral apex straightly truncate, backed by a transversal lath bearing rostral hairs. Lamellar cuspides short. Tutorial apex sharply pointed. Sensillus filiform, with long cilia. Hairs *exa* originating immediately anteriorly to bothrydium.

Notogaster: Nine pairs of long notogastral hairs, setae *ta* represented merely by alveoli.

Ventral: Epimeral setal formula: 3-1-2-5. Hairs *1b*, *1c* and *3b* thicker and longer than all other ones. Six pairs of genital hairs (arranged in a longitudinal row), 1 pair of aggenital, 2 pairs of anal, and 3 pairs of adanal, hairs present. All weakly ciliate.

Material examined: 1 ex. (Holotype: 0-583-68): No. 465-6. 5 ex. (Paratypes: 0-584-68): 507-1.

Remarks: This second species of the genus, recently established by us, differs from the type-species by the conformation of the rostrum, the lamellae, etc.

Eremobelba brevispathulata n. sp.

(Fig. 17)

387-421 × 210-225 μ . Sensillus reclinate, apically recurving, heavily ciliate. Hairs *ro*, *la*, *exa* setiform, hairs *in* phylliform.

Notogaster: A polygonal sculpture consisting of granules. All notogastral hairs expanded, medially with a ridge, marginally involute.

Ventral: Hairs *1b*, *3b* and *3c* basally stelliform in epimeral region. Except for genital hairs, all setae of anogenital region slightly incrassate.

Material examined: 1 ex. (Holotype: 0-585-68): No. 436. 2 ex. (Paratypes: 0-586-68): from the same locality.

Eremobelba ornata n. sp.

(Fig. 18)

411-456 × 215-260 μ . Sensillus ex- and reclinate, apically recurving, throughout ciliate. Hairs *ro*, *la* and *exa* setiform, hairs *in* phylliform.

Notogaster: A polygonal sculpture consisting of granules. All hairs phylliform, their surface aciculate.

Ventral: Hairs *1b*, *3b*, *3c* basally stelliform in epimeral region. Hairs of anogenital region partly phylli-, partly setiform.

Material examined: 1 ex. (Holotype: 0-587-68): No. 396. 8 ex. (Paratypes: 0-588-68): from the same locality.

Eremobelba pulchella n. sp.

(Fig. 19)

416-431 × 221-240 μ . Sensillus long, arcuate, throughout with squamiform cilia. Hairs *ro*, *la* and *exa* setiform, hairs *in* resembling notogastral hairs.

Notogaster: A polygonal sculpture consisting of granules. Hairs *p*₂ and *p*₃ short, setiform, hairs *p*₁ longest of all, these latter weakly, all others strongly incrassate, fusiform, heavily aciculate.

Material examined: 1 ex. (Holotype: 0-589-68): No. 380-2. 2 ex. (Paratypes: 0-590-68): from the same locality.

Eremobelba zicsii n. sp.

(Fig. 20)

63-7686 × 387-441 μ . Sensillus ex- and reclinate, setiform, hardly ciliate. Hairs *ro* and *la* setiform, hairs *in* apically flagellate.

Notogaster: Surface ornamented with granules arranged in rows but not constituting any regular polygonal sculpture. All hairs long, flagelliform.

Ventral: Merely hairs *1b* basally stelliform in epimeral region. In anogenital region, aggenital hair, and the three pairs of hairs in a paraanal position in

immediate vicinity of anal opening, slightly expanding and phylliform. These hairs also shorter than all other ones.

Material examined: 1 ex. (Holotype: 0-591-68): No. 406. 8 ex. (Paratypes: 0-592-68): from the same locality.

We dedicate the new species to Dr. A. Zicsi, our companion in the expedition.

Among the known South American species of the genus *Eremobelba*, the notogastral hairs of *E. hamata* HAMMER, 1961, and *E. zicsii* n. sp., are setiform and flagellate, but the notogastral surface of the latter species also displays granules arranged in rows, whereas *E. hamata* exhibits merely some dispersed granules. Among the species bearing phylliform notogastral hairs, *E. foliata* HAMMER, 1958, has no regularly arranged polygonal sculpture. The new species described herein can be distinguished from one another by the diverse types of the regular polygonal sculpture and the shape of the notogastral hairs.

Heterobelbidae BALOGH, 1961

Heterobelba crassisetosa BECK, 1962

Material examined: No. 380-1 (2).

Heterobelba zikani SELLNICK, 1922

Material examined: No. 465-6 (1).

Haplobelba n. gen.

Rostral, lamellar, interlamellar, and exobothrydial hairs of largely identical conformation, all slightly incrassate and finely aciculate. No heavily incrassate or roughly ciliated hairs present in either anogenital or epimeral regions. All four legs monodactyle.

Type-species: *Haplobelba simplex* n. sp.

Remarks: The new genus is distinguished from the other genus of the family, *Heterobelba* BERLESE, 1913, by the four monodactylous legs and the absence of the incrassate hairs.

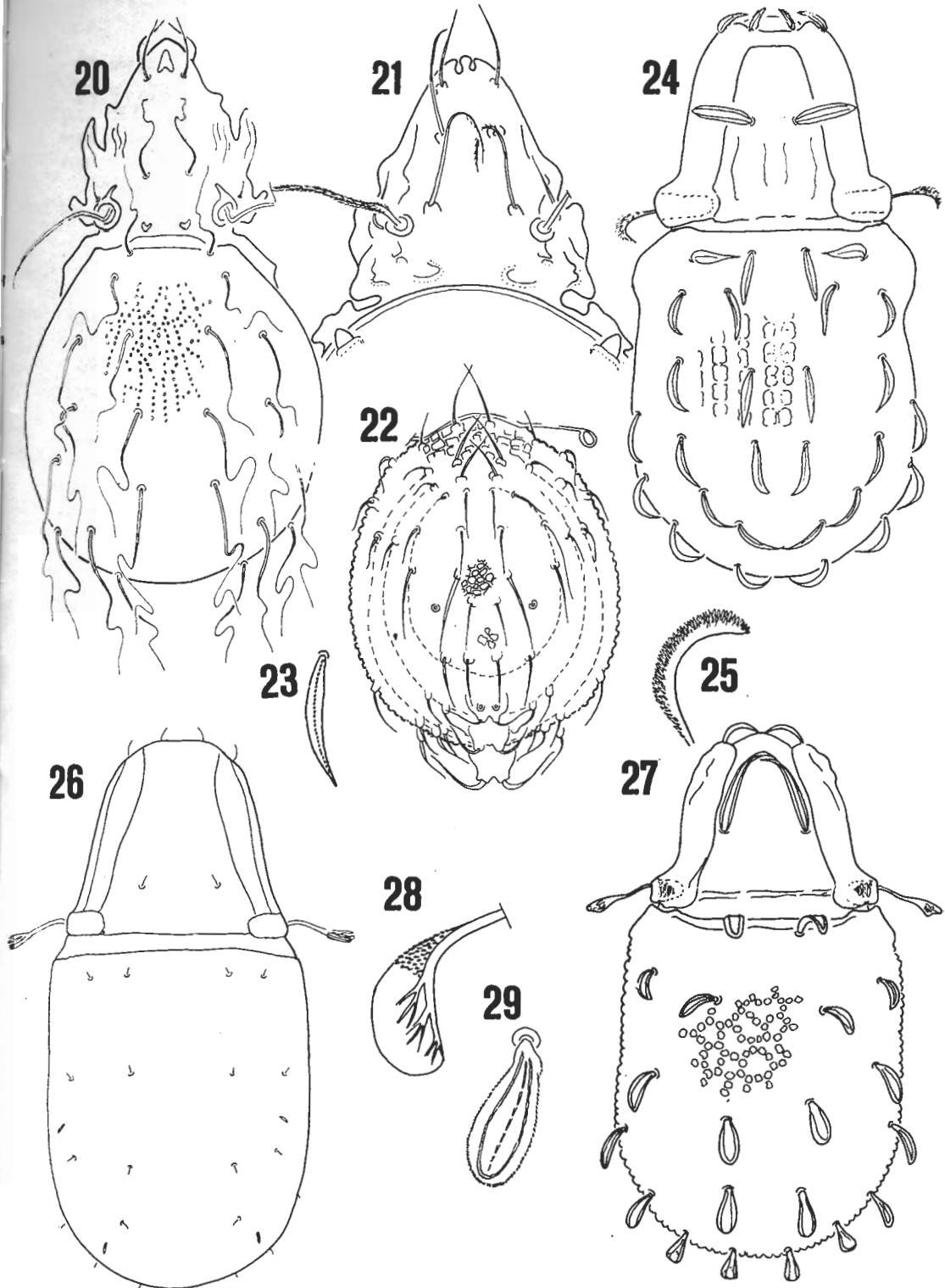
Haplobelba simplex n. sp.

(Figs. 21-22)

272-280 × 165-172 μ . Rostral apex with 2 incisions. Hairs *ro* attenuating apically, hairs *la* and *in* apically obtuse. Sensillus setiform, extremely long, throughout densely ciliate.

Notogaster: Hairs present also in median field on nymphal exuviae. All arising on a high tubercle. Caudal end with a large, double tubercle medially.

Ventral: All hairs thin, setiform. Anal opening extending almost to posterior end of body. All three pairs of adanal hairs in paraanal position.



Figs. 20-29. 20: *Eremobelba zicsii* n. sp. — 21-22: *Haplobelba simplex* n. sp. — 23-25: *Carabodes davisi* n. sp. — 26: *Carabodes depilatus* n. sp. 27-29: *Carabodes excellens* n. sp.

Legs: No incrassate, roughly ciliate hairs present.

Material examined: 1 ex. (Holotype: 0-593-68): No. 380-2. 1 ex. (Paratype: 0-594-68): from the same locality.

Carabodidae C. L. KOCH, 1837

Carabodes davisi n. sp.

(Figs. 23-25)

355-408 × 182-223 μ . Lamella and translamella developed. Hair *la* arising on outer margin of lamella; hairs *in* large, exclinate, phylliform. Sensillus short, its clavate apex recurving, aciculate, similar to that of *C. excellens*.

Notogaster: With 4 pairs of longitudinal, obsolescent ribs. Fourteen pairs of phylliform hairs, their margins and a median crest densely and heavily dentate. Conformation of marginal hairs also similar to that of inner ones, but somewhat smaller.

Ventral: Highly similar to *C. schwartzi* n. sp., described hereunder, but epimeral hairs thicker. Aggenital hairs originating posteriorly to genital aperture, hairs *ad*₃ anteriorly to anal opening. Anogenital region densely punctate.

Material examined: 1 ex. (Holotype: 0-595-68): No. 357-1; 1 ex. (Paratype: 0-596-68): from the same locality.

We dedicate the new species to J. DAVIS, of great help in our investigations in the Amazon area.

Carabodes depilatus n. sp.

(Fig. 26)

274 × 152 μ . Sensillus exclinate, apically rapidly expanding, flabelliform, here weakly aciculate. Hairs *in* minute, arising far removed from one another near lamellae.

Notogaster: Surface ornamented with rounded excrescences of divers size. Ten pairs of minute notogastral hairs present, their length not greater than diameter of rounded excrescences.

Ventral: Apodemata well developed, epimeral hairs minute. Genital and anal plates with sparsely spaced small foveolae. Four pairs of genital, 1 pair of aggenital, 2 pairs of anal, and 3 pairs of adanal, hairs. All minute.

Material examined: 1 ex. (Holotype: 0-597-68): No. 462-2.

Carabodes excellens n. sp.

(Figs. 27-29)

318-382 × 186-235 μ . Sensillus directed laterad, apically rapidly expanding, spatulate. Lamellae narrow, hairs *la* arising medially on their cusps. Hairs *in* strikingly long, inclinate, when straightened reaching rostral apex.

Notogaster: Surface with irregular tubercles enclosing areas of various shapes. Ten pairs of spoon-shaped hairs, their margins and two surface stripes dentate, but some minute teeth present also in intermediate areas.

Ventral: Hairs of epimeral region appearing as minute and ciliate spines. Genital plate with 4 pairs of densely ciliate hairs resembling fir-trees; aggenital pair of hairs also resembling them. Two pairs of smooth anal and 3 pairs of spatulate adanal hairs. Entire surface densely punctate, margins of anogenital region with some elevations similar to those on notogastral side.

Material examined: 1 ex. (Holotype: 0-598-68): No. 462-1. 6. ex. (Paratypes: 0-599-68): from the same locality.

Carabodes irmayi n. sp.

(Figs. 30-31)

294-352 × 156-196 μ . Prodorsal surface basally convex on both sides but medially concave. Lamellae tapering cuspidally, hairs *in* large, spatulate, arranged into dense rows, aciculate. Sensillus apically rapidly expanding, similarly to a boomerang; also similar to that of *C. excellens* n. sp. above.

Notogaster: Fourteen pairs of spatulate, slightly spoon-shaped and concave, aciculate notogastral hairs, arranged into rows. Four marginal pairs of hairs smaller than the other ones. Notogastral surface with irregular tubercles, arranged into longitudinal lines on anterior part of notogaster but enclosing polygonal spaces further caudad.

Ventral: Epimeral hairs minute, several indicated merely by their alveoli. Four pairs of small genital, 1 pair of aggenital, 2 pairs of minute anal, and 3 pairs of spatulate adanal, hairs.

Material examined: 1 ex. (Holotype: 0-600-68): No. 380-1. 1 ex. (Paratype: 0-601-68): from the same locality; 1 ex. (Paratype: 0-602-68): No. 357-1; 2 ex. (Paratypes: 0-603-68): No. 462-2.

Carabodes schwartzi n. sp.

(Figs. 32-33)

367-470 × 166-235 μ . Lamellae slightly convergent, towards their cusps with some foveolae. Hairs *ro* and *la* short, hairs *in* arising near one another, long and shaped like willow-leaves. Sensillus gradually and fusiformly incrassate, recurving, elongately aciculate.

Notogaster: With 2 pairs of obsolescent, longitudinal and elongate ribs. Fourteen pairs of notogastral hairs present, 10 pairs shaped like a willow-leaf, hairs *c*₁ and *h*₁ considerably shorter than all other ones. Four pairs of posteromarginal hairs short, thin, hardly dilating.

Ventral: Hairs *4b* strikingly long and flagellate, hairs *4c* represented merely by alveoli in epimeral region. Four pairs of genital, 1 pair of aggenital, 2 pairs of anal, and 3 pairs of adanal, hairs present. Setae *ad*₁ and *ad*₂ in postanal, setae *ad*₃ in paraanal, position.

Material examined: 1 ex. (Holotype: 0-604-68): No. 357-1. 357-1; 22 ex. (Paratypes: 0-605-68): from the same locality.

We dedicate the new species to W. SCHWARTZ, Manaus, for his cordial help rendered to the expedition in Brazil.

Remarks: The notogastral hairs amply characterize all *Carabodes* species

described herein; their figures is given also separately. On this basis, they can be easily distinguished both from each other and from all hitherto described congeners.

Phyllocarabodes n. gen.

Ten pairs of notogastral and 6 pairs of genital hairs. Median portion of notogaster hemispherically elevated, bearing six pairs of hairs (the other four pairs are situated marginally). Epimeral setal formula: 1-1-3-3-.

Type-species: *Phyllocarabodes octogonalis* n. sp.

Remarks: By the above combination of characters, the new taxon could not be relegated to any of the hitherto described Carabodid genera.

Phyllocarabodes octogonalis n. sp.

(Figs. 34—35)

485-515 × 240-259 μ . Sensillus ex- and reclinate, terminally expanding, spatulate, bearing 2-3 ridges, slightly aciculate. Hairs *ro* and *la* narrowly, hairs *in* widely, phylliform. Prodorsal surface sparsely reticulate.

Notogaster: Ten pairs of dilating, phylliform, arcuate hairs, their surface evenly and densely aciculate. Six pairs of hairs arising on median, elevated portion of notogaster, enclosing an octagonal area; four smaller pairs of hairs standing near margins.

Ventral: Surface sparsely reticulate. Epimeral hairs obtuse, densely aciculate. Six pairs of genital hairs and 1 pair of aggenital hair similar to epimeral ones; 2 pairs of anal, and 3 pairs of adanal, hairs. Posterior margin of anal plates medially elongated into a sharp point.

Material examined: 1 ex. (Holotype: 0-606-68): No. 459-1. 1. ex. (Paratype: 0-607-68): from the same locality.

Tectocephidae GRANDJEAN, 1954 (sensu BALOGH, 1965)

Tegeocranellus bolivianus n. sp.

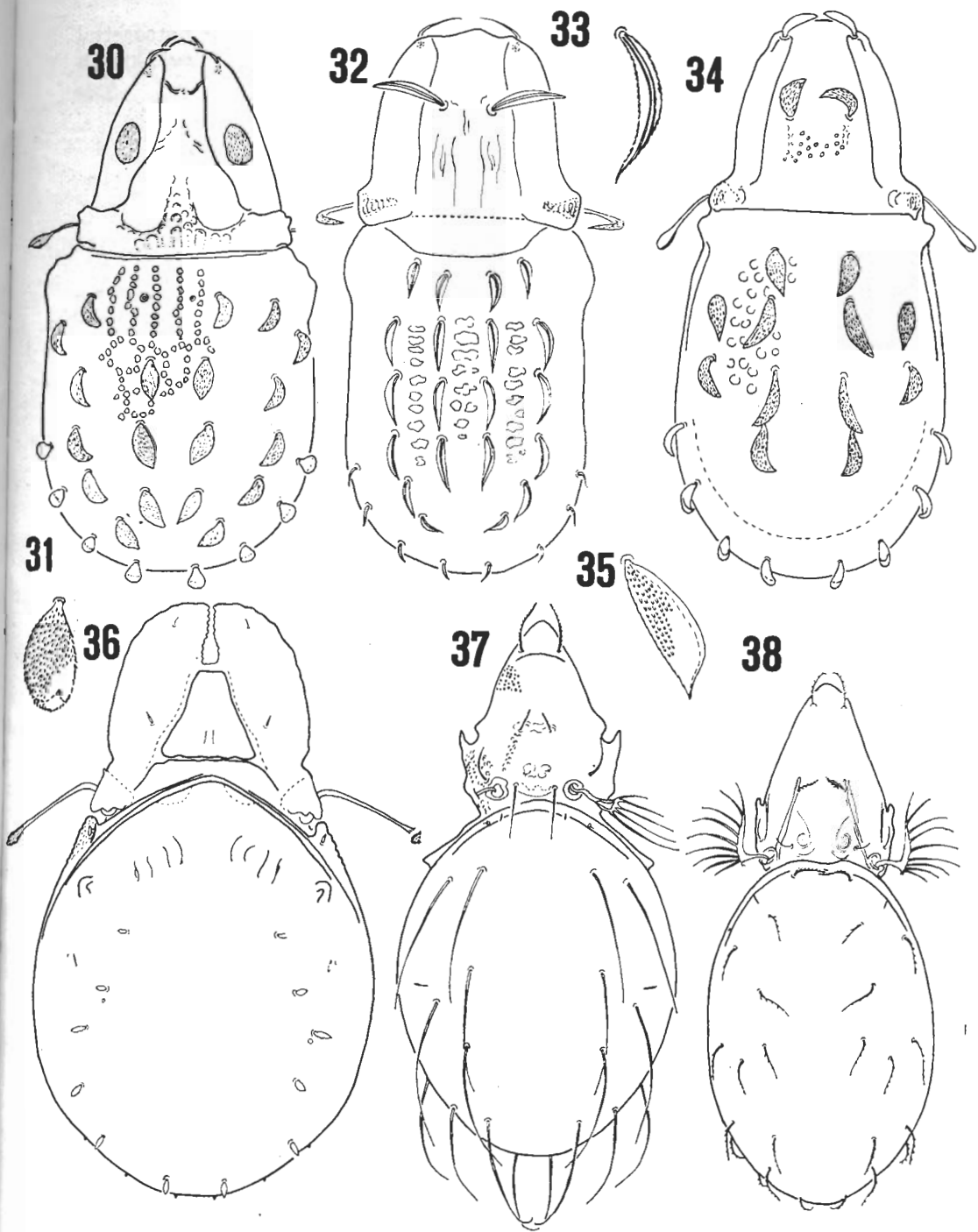
(Fig. 36)

265-270 × 155-160 μ . Lamellae wide, medially nearly touching one another, their inner margin dentate posteriorly to rostrum. Hair *in* minute, spiniform, arising on lamella. Sensillus reclinate, aciculate, hemispatulate.

Notogaster: Dorsosejugal suture strongly convex. Cavity *fs* situated between 2 parallel chitinous laths in anterior third of notogaster. Ten pairs of minute notogastral hairs present, well discernibly expanding or phylliform, marginally dentate.

Ventral: All epimeral hairs minute. Epimeral setal formula: 2-1-2-3. Six pairs of genital, 1 pair of aggenital, 2 pairs of anal, and 3 pairs of adanal, hairs.

Material examined: 1 ex. (Holotype: 0-608-56): No. 463-2, 1 ex. (Paratype: 0-609-56): No. 464-1.



Figs. 30-38. 30-31: *Carabodes irmayi* n. sp. — 32-33: *Carabodes schwartzi* n. sp. — 34-35: *Phyllocarabodes octogonalis* n. sp. — 36: *Tegeocranellus bolivianus* n. sp. — 37: *Oppia pseudo-costulata* n. sp. — 38: *Multioppia gyoergyi* n. sp.

Remarks: By the lamellae and the divers conformation of the notogastral and epimeral hairs, the new species is easily separable from the single known species of the genus (*Tegeocranellus levis* BERLESE, 1905).

O p p i d a e GRANDJEAN, 1954

Multioppia gyoergyi n. sp.

(Fig. 38)

260×118 μ . Sensillus proclinate, pectinate, with 8–9 lateral branches. Rostrum rounded. Prodorsal surface with slightly convergent, sharply pointed costulae.

Notogaster: Thirteen pairs of thin notogastral hairs present, also hairs *ta* similar to the other hairs.

Ventral: Five pairs of genital, 1 pair of aggenital, 2 pairs of anal, and 3 pairs of adanal, hairs; setae *ad*₃ removed, in a praeanal position. Pori *iad* parallel with longitudinal axis of anal opening.

Material examined: 1 ex. (Holotype: 0-610-56): No. 459-1.

Remarks: The new species can be distinguished from all other congeners primarily by the sensillus and the configuration of the prodorsum.

We dedicate the new species, as a token of our gratitude, to J. GYÖRGY, of immense help in the realization of the expedition and the success of our collecting activities.

Oppia pseudocostulata n. sp.

(Fig. 37)

328—367×171—186 μ . Sensillus fusiform, terminally attenuating, with 5 branches of divers length. Rostrum rounded. Prodorsal hairs ciliate, their order of sequence as to length: *in* > *ro* > *exa* > *la*. Site of costulae represented by small granuli, at both ends with two larger chitinous tubercles.

Notogaster: Nine pairs of long hairs; hairs *ta* represented only by alveoli.

Ventral: Six pairs of genital, 1 pair of aggenital, 2 pairs of anal, and 3 pairs of adanal, hairs. Setae *ad*₃ in praeanal position. Pori *iad* situated obliquely as related to longitudinal axis of anal opening.

Material examined: 1 ex. (Holotype: 0-611-68): No. 459-1, 1 ex. (Paratype: 0-612-68): from the same locality.

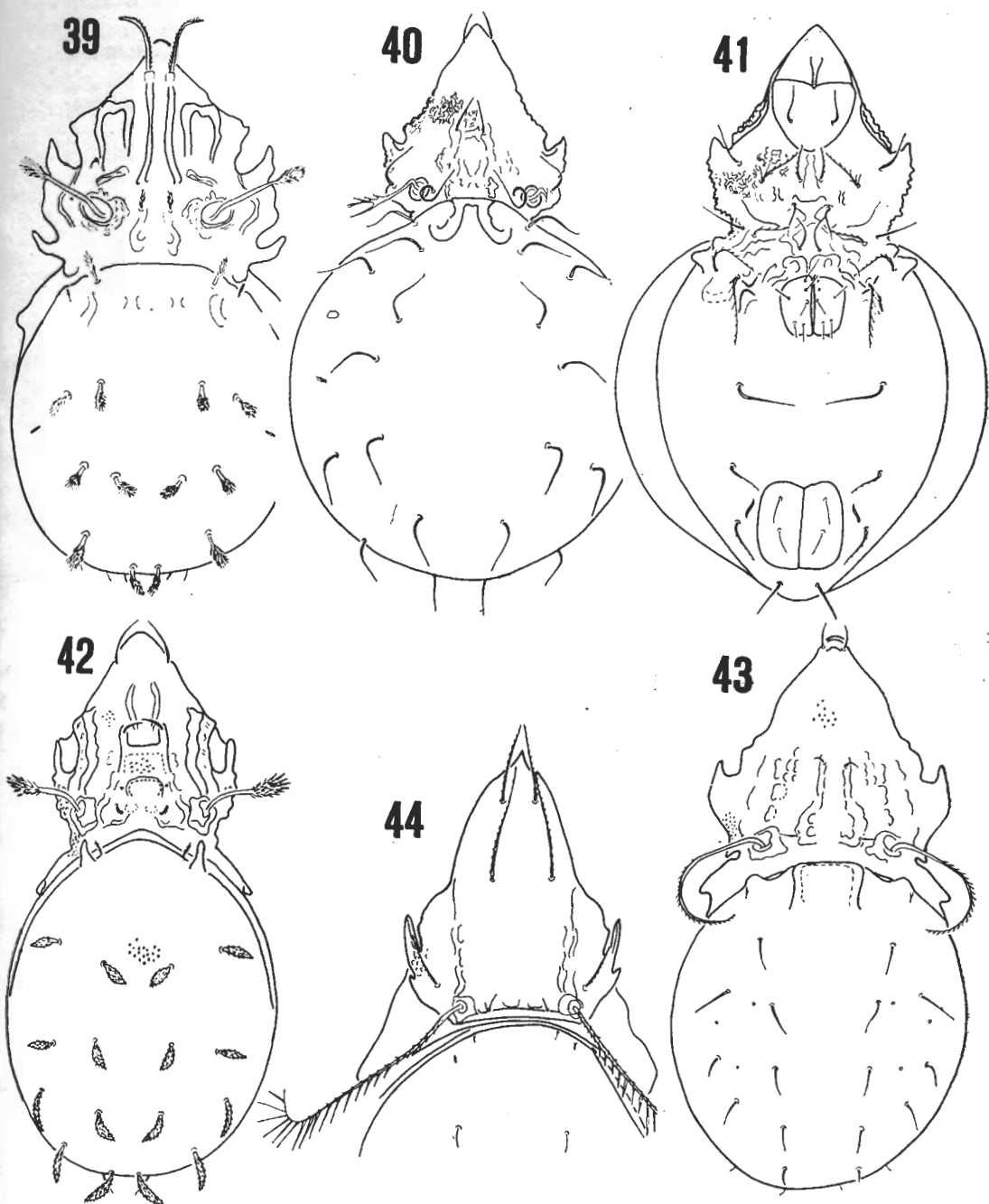
Remarks: The new species is easily separable from all other known congeners by reason of the lath consisting of small granules in place of the costulae.

Carabodoides braziliensis n. sp.

(Fig. 39)

328—382×176—216 μ . Peduncle of sensillus long, clavate portion narrow and small. Hairs *ro* minute, hairs *la* arising on end of costulae. Prodorsum with longitudinal costulae; hairs *la* preceded by a transverse lath.

Notogaster: Notogastral hairs of divers length, all densely ciliate, some



Figs. 39-44. 39: *Carabodoides braziliensis* n. sp. — 40-41: *Enantioppia multituberculata* n. sp. — 42: *Stachyoppia amazonica* n. sp. — 43: *Tecteremaeus anoporosus* n. sp. — 44: *Trapezippia longipectinata* n. sp.

expanded and penicilliform. Anterior portion of notogaster with 2 heavier and 2 weaker chitinous laths.

Ventral: Epimeral setal formula: 3-1-3-3. A pair of condyli on apodemata-3, confronted by another pair.

Material examined: 1 ex. (Holotype: 0-613-68): No. 357-1. 3 ex. (Paratypes: 0-614-68): from the same locality.

Remarks: The new species is extremely similar to *Carabodoides laticeps* BALOGH, 1963, but the shape of the longitudinal chitinous lath on the prodorsum and the conformation of the epimeral region are essentially different.

Enantioppia n. gen.

Median part of prodorsum roughly rugose. Anterior margin of notogaster strongly chitinized medially, with a flat elevated section between two oval hollows. Two pairs of enantiophyses, aligned with genital plates, between apodemata 2 and 3.

Type-species: *Enantioppia multituberculata* n. sp.

Remarks: Among the genera of the family, the new genus is unique by reason of the special structure of the prodorsum and the epimeral region.

Enantioppia multituberculata n. sp.

(Figs. 40-41)

455 × 274 μ . Rostrum rounded. Median third of prodorsum with elevated rugosity and a short costula. Sculpture extending posteriorad in median line. Hairs *la* extremely thin, hairs *in* longer and more robust. Sensillus trifurcate, lateral branches also ramifying.

Notogaster: Ten pairs of long and characteristically shaped notogastral hairs. Also hairs *ta* long. All hairs finely ciliate.

Ventral: Epimeral setal formula: 3-1-3-3. Six pairs of genital, 1 pair of aggenital, 2 pairs of anal, and 3 pairs of adanal, hairs. Body pointed behind anus. Epimeral hairs with long lateral cilia. Pori *iad* situated obliquely as related to longitudinal axis of anal opening.

Material examined: 1 ex. (Holotype: 0-615-68): No. 510.

Stachyoppia amazonica n. sp.

(Fig. 42)

232 × 120 μ . Sensillus exclinate, clavate section small, not recurving. Hairs *ro* long, hairs *la* and *in* short, simple. A robust transversal lath between parallel costulae; two arcuate and longitudinal chitinous laths anteriorly to hairs *la*.

Notogaster: Ten pairs of notogastral hairs; hairs *ta* short, thin, shorter than pointed spine on anterior margin. Hairs *p*₁ thinner than all other hairs.

Ventral: Six pairs of genital, 1 pair of aggenital, 2 pairs of anal, and 3 pairs of adanal, hairs. Of these latter, setae *ad*₃ in praeanal position, setae *ad*₂ situated behind pori *iad*.

Material examined: 1 ex. (Holotype: 0-616-68): Bo. 380-1. 4 ex. (Holotype: 0-505-68: from the same locality.

Remarks: The first South American species of the genus. It stands near the species *Stachyoppia processifera* BALOGH et MAHUNKA, 1968, and *S. trans-lamellata* BALOGH et MAHUNKA, 1966, but the two chitinous ridges in front of the lamellar hairs and the shape of the sensillus distinguish it from both preceding ones.

Tecteremaeus anoporusus n. sp.

(Fig. 43) /

362-397 × 191-216 μ . Rostrum elongated anteriorad, bending downward. Prodorsal hairs short. Costulae weak but well discernible, terminally bearing arcuate hairs 1a. Sensillus typical.

Notogaster: Parallel chitinous laths decurrent posteriorad from anterior margin. Hairs *te* considerably longer than all other hairs, apically very finely attenuating; all other setae much shorter. Posterior margin of notogaster finely convex.

Ventral: Genital plate with elongate pori. Anogenital region ornamented with foveoli of divers size. Posterior section of anal plate with large areae porosae. Six pairs of genital, 1 pair of aggenital, 2 pairs of anal, and 3 pairs of adanal, hairs. Setae *ad*₂ and *ad*₃ in paraanal position.

Legs: In a superior view, inner side of femur of leg I with a plate terminating in a sharp point. Other femoral plates with smooth edges and rounded margins.

Material examined: 1 ex. (Holotype: 0-617-68): No. 357-1. 8 ex. (Paratypes: 0-618-68): from the same locality.

Remarks: The special areae porosae of the anal plate distinguish the new species from all known congeners.

Trapezoppia n. gen.

Genital aperture small, anteriorly narrower than posteriorly, trapezoid in shape. Five pairs of genital hairs. Apodemata weakly developed, apodemata 4 reduced. Apodemata sejugal robust. Legs, and especially leg IV. and mainly the tarsi, extraordinarily elongate and thin. Pori *iad* removed far from, and situated obliquely as related to, anal opening.

Type-species: *Trapezoppia longipectinata* n. sp.

Remarks: Owing to the above combination of characters, the new species could not be assigned to any known genera.

Trapezoppia longipectinata n. sp.

(Figs. 44-45)

495-544 × 270-308 μ . Sensillus elongate, filiform, apical half with long cilia. Rostral apex elongately pointed. No costulae present. Hairs *in* extremely thin and short, arising on a chitinous thickening connecting bothrydia.

Notogaster: Hairs *ta* represented by alveoli; nine other pairs of hardly discernible hairs.

Ventral: Epimeral setal formula: 3-1-3-3. Hairs *3b* extremely long. Setae *ad*₃ in paraanal position, arising near pori *iad*.

Material examined: 1 ex. (Holotype: 0-619-68): No. 371. — 22 ex. (Paratypes: 0-620-68): from the same locality.

Yungaseremaeus n. gen.

Lamellar hair arising immediately in front of apex of costulae. Four pairs of extremely long and six pairs of short notogastral hairs. Five pairs of genital hairs.

Type-species: *Yungaseremaeus longisetosus* n. sp.

Remarks: The new genus stands nearest to *Anderemaeus* HAMMER, 1958, but in the species representing it, the lamellar hairs arise on the apex of the costulae, the notogastral hairs are of equal length, and there are six pairs of genital hairs present. The conformation of the apodemata is also different.

Yungaseremaeus longisetosus n. sp.

(Fig. 46)

735 × 438 μ . Sensillus clavate, its pedicel short. Hairs *ro* and *la* thin, hairs *in* similar to notogastral setae, terminating obtusely. Two condyli between hairs *in*.

Notogaster: Four pairs of long and apically obtuse, and six pairs of short and apically rather incrassate, hairs.

Ventral: Five pairs of genital hairs, first three pairs considerably shorter than succeeding ones. One pair of aggenital, 2 pairs of anal, and 3 pairs of adanal, hairs. Ventral side rather similar to that of *Anderemaeus magellani* HAMMER, 1958.

Material examined: 1 ex. (Holotype: 0-621-68): No. 510.

Sternoppiidae n. fam.

Epimeral region with a characteristic, basket-shaped chitinous structure, surrounded by incrassate and penicillately ciliate hairs.

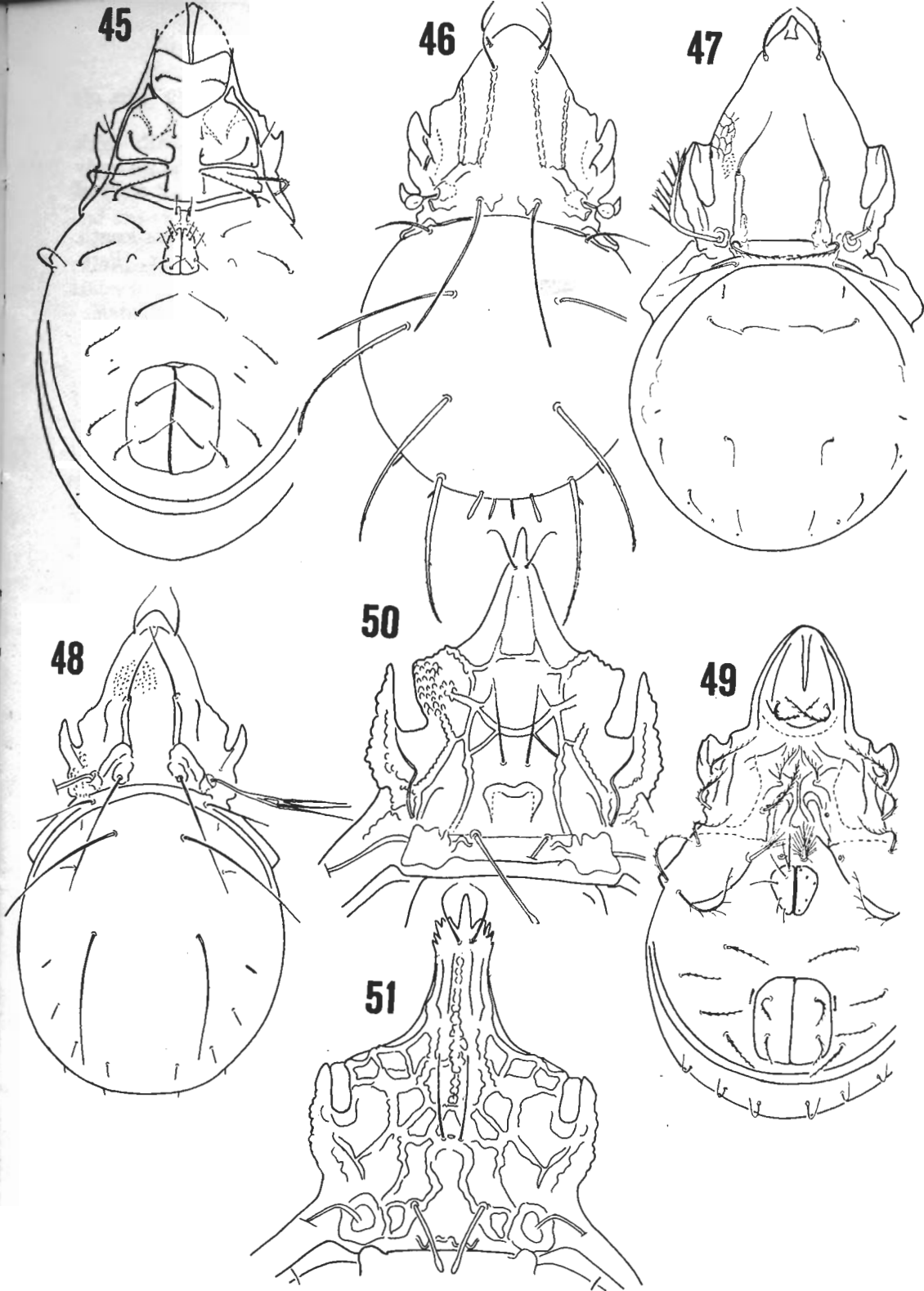
Type-genus: *Sternoppia* BALOGH et MAHUNKA, 1968.

Remarks: The new taxon is removed, on the basis of the specially constructed epimeral region, from the heterogeneous family Oppiidae, in need of further taxonomic splitting.

Sternoppia boliviana n. sp.

(Fig. 47)

426—450 × 245—254 μ . Sensillus proclinate, with 8 lateral (and also further ramifying) branches. Rostral apex pointed, hairs *ro* robust and ciliate. Costula long, hair *la* arising on its cusps, hair *in* on its basal thickening. Prodorsum laterally reticulate and punctate.



Figs. 45-51. 45: *Trapezoppia longipectinata* n. sp. — 46: *Yungaseremaeus longisetosus* n. sp. — 47: *Sternoppia boliviana* n. sp. — 48-49: *Synoppia quadriseta* n. sp. — 50: *Rhynchoribates edentatus* n. sp. — 51: *Rhynchoribates dilatatus* n. sp.

Notogaster: Hairs *ta* long and slightly thicker than all other (9 pairs of) setiform notogastral hairs.

Ventral: Epimeral region rather open. Hypertrophic hairs especially thick in front of genital aperture. Genital plate emitting 4 robust and strongly ramifying and 2 shorter and simple hairs. One pair of aggenital, 2 pairs of anal, and 3 pairs of adanal, hairs; all ciliate.

Legs: Spines u_1 and u_2 adjacent to claws on legs II—IV of divers length.

Material examined: 1 ex. (Holotype: 0-622-68): No. 507-1. 2 ex. (Paratypes: 0-623-68): from the same locality.

Synoppia n. gen.

Sensillus slightly fusiform, with 4 simple lateral branches. Two pairs of extremely long and 8 pairs of short notogastral hairs. Chitinous structure in epimeral region open only anteriorly, posterior section (toward genital aperture) closed.

Type-species: *Synoppia quadriseta* n. sp.

Remarks: The new genus differs from the nominate genus of the family Sternoppiidae in the conformation of the notogastral hairs, the shape of the sensillus, and the configuration of the epimeral region.

Synoppia quadriseta n. sp.

(Figs. 48-49)

$347 \times 210 \mu$. Sensillus slightly fusiform, apically trifurcate. Rostrum rounded. A strong costula present, continuing by a lateral lath each toward bothrydia. Hairs *ro*, *la* and *in* long.

Notogaster: Hairs *ta* comparatively long; also two other very long pairs of hairs present, all other setae minute.

Material examined: 1 ex. (Holotype: 0-624-68): No. 513.

R h y n c h o r i b a t i d a e BALOGH, 1961

Rhynchoribates dilatatus n. sp.

(Fig. 51)

$500 \times 392 \mu$. Rostral apex narrow, short, with 5 large teeth immediately behind it. Hairs *ro* inclinate, hairs *la* thin and simple, hairs *in* thicker and apically spatulate. Prodorsal surface with a polygonal sculpture.

Notogaster: Hairs thick, relatively short, apically spatulate.

Material examined: 1 ex. (Holotype: 0-625-68): No. 357-2.

Rhynchoribates edentatus n. sp.

(Fig. 50)

724 × 459 μ . Rostrum narrow, apex elongated, lateral teeth absent. Hairs *ro* long, exclinate. Prodorsal surface with a polygonal sculpture. Hairs *la* and *exa* thin, setiform, hairs *in* long, apically weakly spatulate.

Notogaster: Anterior margin with 2 chitinous pairs of teeth, inner ones emitting a short lath posteriorad. Notogastral hairs long, apically spatulate. Hairs *p*, especially *p*₂ and *p*₃, longer than all other ones.

Material examined: 1 ex. (Holotype: 0-626-68): No. 416-2.

Rhynchoribates insignis n. sp.

(Fig. 52)

1,122 × 714 μ . Rostrum wide, marginally completely smooth. Rostral hairs short, smooth; hairs *la* thin but rather long, extending to lateral margin of prodorsum; hairs *in* very long, longer than all other hairs of body.

Notogaster: Hairs short, very finely aciculate, apically not spatulate. Anterior margin of notogaster with 2 chitinous pairs of teeth.

Ventral: Aggenital hair slightly incrassate. Order of size of adanal hairs: $ad_1 > ad_2 > ad_3$.

Material examined: 1 ex. (Holotype: 0-627-68): No. 510.

Rhynchoribates spathulatus n. sp.

(Fig. 54)

734 × 469 μ . Rostrum wide, lateral margins completely smooth. Hairs *la* short, exclinate, but not reaching lateral margin of prodorsum. Hairs *in* extremely long, throughout dentate laterally, weakly spatulate apically. Prodorsal surface with merely a granulate sculpture.

Notogaster: Anterior margin with a pair of weak teeth. Hairs short, wide, spatulate, their surface aciculate.

Ventral: Aggenital hair phylliform. Among adanal hairs, setae *ad*₁ thick, setae *ad*₂ and *ad*₃ narrow, phylliform. Pori *iad* situated obliquely as related to longitudinal axis of anal opening.

Material examined: 1 ex. (Holotype: 0-628-68): No. 462-1.

Rhynchoribates spectabilis n. sp.

(Fig. 53)

1,173 × 601 μ . Rostrum wide, without lateral teeth. Hairs *ro* thin, exclinate. Lamellar hairs thin, short, hairs *exa* minute. Hairs *in* very long.

Notogaster: All hairs extraordinarily long, laterally throughout dentate, apically weakly spatulate.

Ventral: Aggenital hairs phylliform. Among adanal setae, hairs *ad*₁ considerably longer than hairs *ad*₂ and *ad*₃ in a paraanal position.

Material examined: 1 ex. (Holotype: 0-629-68): No. 508.

A diagnostic key for the South American *Rhynchoribates* taxa may be construed as follows:

- 1 (4) Prodorsal surface with polygonal sculpture created by chitinous laths.
- 2 (3) Five large lateral teeth each posteriorly to rostral apex. Hairs *in* shorter than hairs *la*:
dilatatus n. sp.
- 3 (2) Rostral margin smooth, without lateral teeth. Hairs *in* longer than hairs *la*:
edentatus n. sp.
- 4 (1) Prodorsal surface without polygonal sculpture, largely covered by distinct tubercles.
- 5 (8) Teeth present on rostral margin.
- 6 (7) A large species, about 1,300 μ . 2-3 small teeth each on rostral margins:
grandis HAMMER, 1961
- 7 (6) A small species, below 1,000 μ ; 4-5 larger teeth on rostral margins:
mirus BECK, 1962
- 8 (5) Rostral margins smooth.
- 9 (12) Large species, above 1,000 μ .
- 10 (11) Hairs *la* long, extending to rostral margin. Hairs *ro* inclinate:
insignis n. sp.
- 11 (10) Hairs *la*, terminating from lateral margin of rostrum at a distance equalling their own length:
spectabilis n. sp.
- 12 (9) Small species, below 800 μ .
- 13 (14) Hairs *la* long, reaching lateral margin of rostrum, hairs *in* essentially shorter:
rostratus GRANDJEAN, 1929
- 14 (13) Hairs *la* short, not reaching lateral margin of rostrum, hairs *in* considerably longer than former ones:
spathulatus n. sp.

Dampfiellidae BALOGH, 1961

Beckiella elongata n. sp.

(Figs. 55-56)

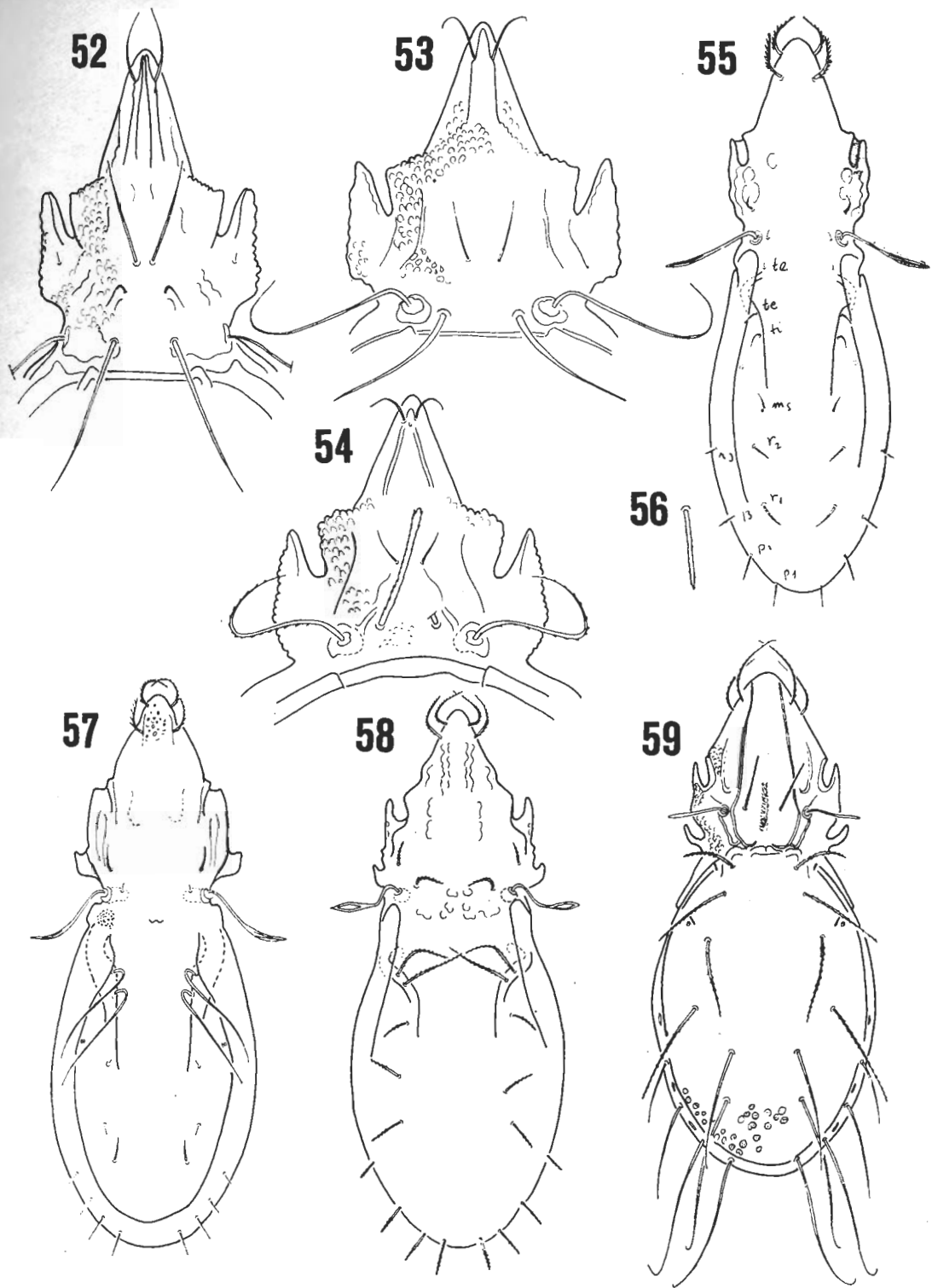
313-324 \times 103-113 μ . Sensillus long and thin, its apical portion hardly incrassate. Hairs *ro* and *la* not conspicuously thickened. Hairs *in* and *exa* extremely short, latter hardly longer than former ones.

Notogaster: Hair arising in anterior depression of notogaster minute but clearly visible, also the 2 pairs originating marginally extremely short, especially posterior ones; all hairs arising on posterior half of body longer than these.

Ventral: Epimeral setal formula: 1-0-2-3. Apodemata thin. Genital and anal plates small, separating distance rather big. Four genital, 1 small aggenital, and longer anal and adanal, hairs present. Setae *ad*₃ in praeanal position.

Legs: Number of dorsal teeth on tarsi: 4-4-4-2.

Material examined: 1 ex. (Holotype: 0-506-68): No. 512. 1. ex. (Paratype: 0-630-68): from the same locality.



Figs. 52-59. 52: *Rhynchoribates insignis* n. sp. — 53: *Rhynchoribates spectabilis* n. sp. — 54: *Rhynchoribates spathulatus* n. sp. — 55-56: *Beckiella elongata* n. sp. — 57: *Beckiella irmayi* n. sp. — 58: *Beckiella lamellata* n. sp. — 59: *Dolicheremaeus bolivianus* n. sp.

Beckiella irmayi n. sp.

(Fig. 57)

617-686 × 245-294 μ . Rostrum coniform, hairs *ro* and *la* long, comparatively thin. Hairs *in* arising immediately near bothrydia, minute, similarly to hairs *exa*.

Notogaster: Only 9 pairs of hairs present: those originating in anterior hollow reduced. The two pairs of hairs arising on margin of hollow extremely long, extending to lateral margin of body.

Ventral: Epimeral setal formula: 1-0-2-3. In all other characters similar to *B. cejanensis* BECK, 1962.

Legs: Number of dorsal teeth on tarsi: 4-4-4-2. Dorsal hair on femur of leg III furcate, with a great difference in length between the two branches.

Material examined: 1 ex. (Holotype: 0-631-68): No. 508. 2 ex. (Paratypes: 0-632-68): from the same locality.

The new species is respectfully dedicated to the late H. DE IRMAY, our companion during the expedition.

Beckiella lamellata n. sp.

(Fig. 58)

568 × 225 μ . Stalk of sensillus strongly arcuate, apical portion heavily expanding terminally, rather lanceolate. No foveolae anteriorly on rostrum. Two weakly developed costulae just discernible. Hairs *exa* thin but comparatively long; hairs *in* similar to notogastral setae.

Notogaster: Inner line of notogastral margin extending to merely half length of body. Two hairs arising on margin of hollow thick, robust, similarly to all other hairs.

Ventral: Epimeral setal formula: 1-0-2-3. Hairs *4a* represented merely by alveoli. Genital, aggenital, and anal hairs extremely small.

Legs: Dorsal teeth of tarsi reduced.

Material examined: 1 ex. (Holotype: 0-633-68): No. 436.

The main features of the species hitherto described from South America are tabulated below, showing the diagnostic differences of the respective taxa.

- 1 (8) Notogaster with 10 (?11) pairs of hairs.
- 2 (7) Hairs *te* and *ti* of equal or hardly subequal length, also without conspicuous difference in shape.
- 3 (4) Longest notogastral hairs *te* and *ri*, longer even than hairs *p*. Hairs *in* and *exa* of equal length:
carinata BECK, 1962
- 4 (3) Hairs *te* and *ti* at most half as long as hairs *p*. Hairs *exa* longer than hairs *in*.
- 5 (6) Sensillus only gradually and slightly expanding, apically not lanceolate. Hairs r_1 and p_1 of equal length:
elongata n. sp.
- 6 (5) Sensillus apically lanceolate, hair r_1 at most half as long as hair p_1 :
sellnicki HAMMER, 1958
- 7 (2) Hairs *te* long, convolute, at least twice longer than straight hairs *ti*:
foveolata BAL. et MAH., 1969

8 (1) Notogaster with only 9 pairs of hairs, hairs *ta* reduced.

9 (10) Hairs *te* and *ti* shorter than hairs p_1 and p_2 :

cejanensis BECK, 1962

10 (9) Hairs *te* and *ti* essentially longer than hairs p_1 and p_2 .

11 (12) Sensillus apically lanceolate, hairs *te* and *ti* rigid, thick, ciliate, Hairs *in* and *exa* of equal length:

lamellata n. sp.

12 (11) Sensillus only slightly and gradually expanding. Hairs *te* and *ti* extremely long, thin, reclinate:

irmayi n. sp.

Otocephidae BALOGH, 1961

Dolicheremaeus bolivianus n. sp.

(Fig. 59)

816–1,163 × 367–571 μ . Sensillus exclinate, apically not or hardly discernibly incrassate. Lamellae long, extending almost to rostral apex; hairs *la* arising beside them. Hairs *exa* minute, hairs *in* elongate.

Notogaster: Median notogastral condyles almost coalescent. Hairs *ta*, *te*, *ti* and m_3 apically obtuse, merely hairs *ta* shorter than the other ones. Hairs r_1 , r_2 , p_1 , p_2 , and p_3 long, apically flagellate. Hairs r_3 short.

Ventral: Epimeral setal formula: 3–1–3–3. Inner hairs essentially shorter than outer ones. Genital plate with 2 longitudinal furrows.

Legs: Type of ultimate setae: L–L–L–L.

Material examined: 1 ex. (Holotype: 0–634–68): No. 462–1. 2 ex. (Paratypes: 0–635–68): from the same locality.

Remarks: It is only among the African *Dolicheremaeus* species that a similar sensillus and notogastral hairs appear. The new species stands nearest to *D. minor* (WALLWORK, 1962), but the notogastral condyles distinguish it from this as well as from all other congeners; the sort hairs r_3 are also characteristic.

Pseudotocephus geminatus n. sp.

(Fig. 60)

1,040 × 549 μ . Sensillus throughout evenly incrassate, apically pointed. Lamellae elongate, hairs *la* thin, terminally flagellate. Hairs *exa* minute.

Notogaster: Median notogastral condyles immediately adjacent, basally coalescent, the two parts indicated by an incision anteriorly. All ten pairs of notogastral hairs extremely long, terminally flagellate.

Ventral: Three pairs of genital, 1 pair of aggenital, 2 pairs of long anal, and 3 pairs of adanal, hairs. Setae ad_3 in paraanal position, but far removed from anal opening. Pori *iad* situated in vicinity of anal opening.

Material examined: 1 ex. (Holotype: 0–636–68): No. 357–2.

Remarks: In all hitherto described species of the genus *Pseudotocephus* BALOGH, 1961, the pori *iad* are situated far from the anal plate, and the setae ad_3 in a praeanal position. Besides these, the conformation of the condyles also distinguish the new species from all known congeners.

Arcozetes bicuspidatus HAMMER, 1958

The Bolivian specimens are hardly identifiable by the unsatisfactory description and figure published by HAMMER. The cuspides of the lamellae taper gradually, their inner margins throughout concave. In the epimeral region, hair *la* is essentially smaller than hair *lb*. There are 5 pairs of genital, 1 pair of aggenital, 2 pairs of anal, and 2 pairs of adanal, hairs present. Insofar as the dots drawn by HAMMER in the anogenital region represent setal alveoli, our specimens should be considered representatives of a distinct species.

Material examined: No. 46-42 (3); No. 465-5 (4).

Fenestrobates n. gen.

Oribatellid in habit. Two pedotecta present, coalesced below into a tectum covering epimeral region. Tectum with two large, rounded foramina. Ten pairs of notogastral and six pairs of genital hairs.

Type-species: *Fenestrobates capucinus* n. sp.

Remarks: The fenestrate tectum, covering the epimeral region, is unique in the family Oribatellidae.

Fenestrobates capucinus n. sp.

(Figs. 61-62)

289-333 × 196-225 μ . In a superior view, rostrum forming a hood-shaped cap. Lamellae large, their inner cuspis longer than the outer one. Hairs *la* and *in* robust, latter ones arising on external margin of lamellar base. Sensillus filiform, apical half aciculate.

Notogaster: Surface very finely punctate. Anterior margin straightly truncate, parallel with base of lamellae.

Ventral: Three pairs among epimeral hairs heavily incrassate and elongate. Tectum striated. Six pairs of genital, 1 pair of aggenital, 2 pairs of anal, and 3 pairs of adanal, hairs. Setae *ad*₁ in postanal, setae *ad*₂ and *ad*₃ in paraanal, position. Pori *iad* in praeanal position.

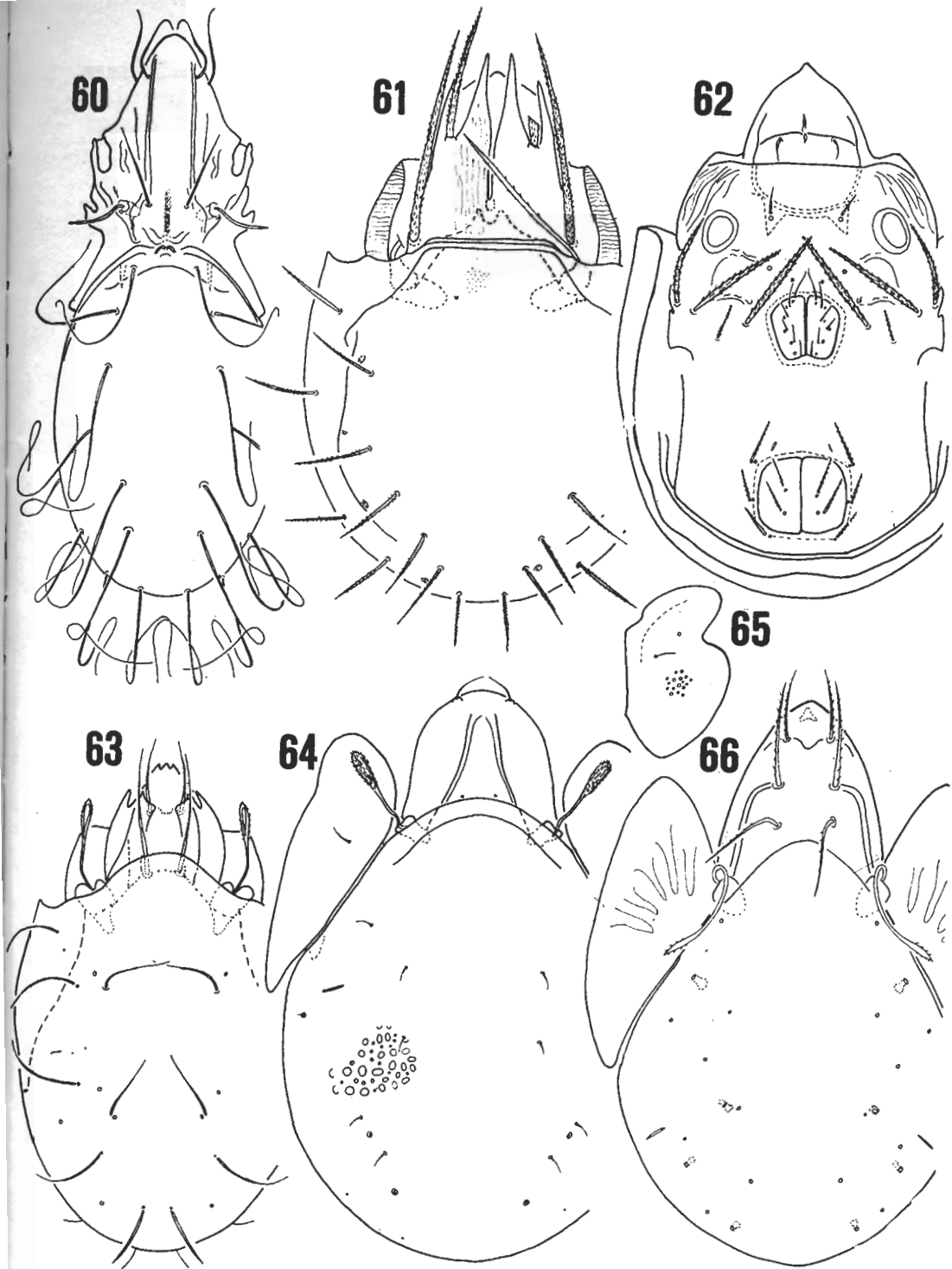
Material examined: 1 ex. (Holotype: 0-637-68): No. 416-1. 6. ex. (Paratypes: 0-638-68): from the same locality.

Ceratozetidae JACOT, 1925

Ceratobates n. gen.

Pteromorpha immovable. Lamellae with sharp external cuspis, inner margin concave, covering insertion point of hairs *la*. Four pairs of sacculi or pori. Pteromorpha emitting a bridge covering dorsosejugal suture, hairs *in* arising below it. Legs monodactyle. Six pairs of genital hairs.

Type-species: *Ceratobates pontiger* n. sp.



Figs. 60-66. 60: *Pseudotocepheus geminatus* n. sp. — 61-62: *Fenestrobates capucinus* n. sp. — 63: *Ceratobates pontiger* n. sp. — 64-65: *Epactozetes setosus* n. sp. — 66: *Protokatumma erecta* n. sp.

Remarks: The new genus belongs to the relationship of *Lamellobates* HAMMER, 1958, but it is distinguished by the peculiar shape of the lamellae and the bridge connecting the pteromorpha.

Ceratobates pontiger n. sp.

(Fig. 63)

269–299 × 161–196 μ . Sensillus fusiform, aciculate. Rostrum tricuspidate, tutorial apex sharp.

Notogaster: Nine pairs of notogastral hairs present; 7 pairs long and thick, 2 pairs minute, in posteromarginal position.

Ventral: Apodemata short and weakly developed. Excepting setae 1 *c*, epimeral hairs short. Six pairs of genital, 1 pair of aggenital, 2 pairs of anal, and 2 pairs of adanal, hairs. Setae *ad*₃ reduced.

Material examined: 1 ex. (Holotype: 0-639-68): No. 371. 4 ex. (Paratypes: 0-640-68): from the same locality.

Epactozetidae GRANDJEAN, 1930

Epactozetes setosus n. sp.

(Figs. 64–65)

235–260 × 186–235 μ . Lamellae apically connate, entirely covering rostrum. Hairs *la* ciliate, arising on outer margin of lamellae. Hairs *in* represented only by alveoli. Sensillus fusiform, its apical portion densely aciculate.

Notogaster: Surface, together with that of pteromorpha, ornamented with foveolae of divers size. Ten pairs of thin yet well discernible notogastral hairs. Antero-exterior margin of pteromorpha deeply excised.

Ventral: Entire surface foveolated, similarly to notogastral one. Epimeral hairs minute. Five pairs of genital, 1 pair of aggenital, 2 pairs of anal, and 2 pairs of adanal, hairs.

Material examined: 1 ex. (Holotype: 0-641-68): No. 396. 7. ex. (Paratypes: 0-642-68): from the same locality.

Remarks: By the shape of the lamellae and the pteromorpha, the new species is easily distinguished from the sole known species of the genus (*E. imitator* GRANDJEAN, 1930).

Parakalummidae GRANDJEAN, 1936

Protokalumma erecta n. sp.

(Fig. 66)

363–382 × 270–294 μ . Insertional points of hairs *ro*, *la*, and *in* framed by chitinous rings. Hairs, especially setae *la* and *in*, robust and rigid. Sensillus pro- and exclinate, slightly fusiform, laterally with 5–6 short cilia.

Notogaster: Hairs represented merely by their alveoli. Four pairs of sacculi present; *Sa* and *S*₁ slightly slit-shaped.

Ventral: Epimeral hairs minute. Four pairs of genital, 1 pair of aggenital, 2 pairs of anal, and 3 pairs of adanal, hairs. Setae ad_3 in praeanal position.

Material examined: 1 ex. (Holotype: 0-643-68): No. 371. 2 ex. (Paratypes: 0-644-68): from the same locality.

Remarks: The new species is satisfactorily distinguishable from all known congeners by the characteristic hairs of the prodorsum, and the chitinous ring surrounding their base.

Oribatulidae THOR, 1929

Fissurobates n. gen.

Pteromorpha immovable. 6 pairs of sacculi. Sacculi slit-shaped, arranged around notogastral margins. Notogaster entirely glabrous, hairless, merely some minute alveoli discernible. Four pairs of genital hairs. Legs tridactylous.

Type-species: *Fissurobates spectabilis* n. sp.

Remarks: The uniquely shaped and arranged sacculi separate the new taxon from all hitherto known genera.

fissurobates spectabilis n. sp.

(Fig. 67)

1,050-1,122 × 897-1,010 μ . Sensillus small, with an exclinate clavus, this latter, however, not thicker than its peduncle. Hair *la* arising on lamellar cuspis; hairs *in* extremely long.

Notogaster: Extraordinarily wide, of a Scheloribatoid type. Pteromorpha finely venose. Anterior portion of notogaster with some longitudinal rugosity medially.

Ventral: Apodemata short, not touching medially. Fours pair of genital, 1 pair of aggenital, 2 pairs of anal, and 3 pairs of adanal, hairs. Setae ad_3 in praeanal position.

Material examined: 1 ex. (Holotype: 0-645-68): No. 510. 4 ex. (Paratypes: 0-646-68): from the same locality.

Haplozetidae GRANDJEAN, 1936

Rostrozetes carinatus BECK, 1962

Well identifiable by BECK's description and figure. Lamellae also connected by a fine and hardly discernible translamella, not mentioned by BECK.

Material examined: No. 357-1 (5).

Rostrozetes cristatus n. sp.

(Fig. 68)

343-402 × 235-284 μ . Rostrum rounded, tutorial tooth small, lamellar cuspides straightly truncate. Hairs *in* extremely long, projecting beyond rostral apex. Aciculation of sensillus extremely short.

Notogaster: With 2 pairs of chitinous, extrorsely convex cristae. Surface with large foveolae, enclosed space punctate. Ten pairs of smooth and basally slightly incrassate hairs.

Ventral: Foveolae between genital and anal plates large, their diameter considerably bigger than enclosed intervals. Genital plate with 3-4 minute foveolae, anal plate entirely covered with larger foveolae. All hairs of anogenital region minute. Hairs *ad*₃ in praeanal position.

Material examined: 1 ex. (Holotype: 0-647-68): No. 357-1. 3 ex. (Paratypes: 0-648-68): from the same locality.

Rostrozetes irregularis n. sp.

(Figs. 69-70)

387-407 × 328-348 μ . Rostrum rounded. Tutorial tooth small. Exterior tooth of lamellae hardly recognizable. Proportional length of prodorsal hairs: *la* > *in* > *ro*. Clavus of sensillus elongate, apically rounded, aciculate.

Notogaster: Ornamented with irregular, short, catenate excrescences, extending also onto pteromorpha. Ten pairs of thin notogastral hairs.

Ventral: Sculpture resembling that of notogastral side, but elevated excrescences enclosing somewhat circular spaces. Genital and anal plates foveolate. Discidium a wide, conical plate. Hairs *ad*₃ situated slightly anteriorly to anterior margin of anal plate.

Material examined: 1 ex. (Holotype: 0-649-68): No. 421-1. 2 ex. (Paratypes: 0-650-68): from the same locality.

Rostrozetes foveolatus SELLNICK, 1925

Our specimens were best identifiable as BECK's animals (p. 44, Fig. 143). Material examined: No. 357-1 (5).

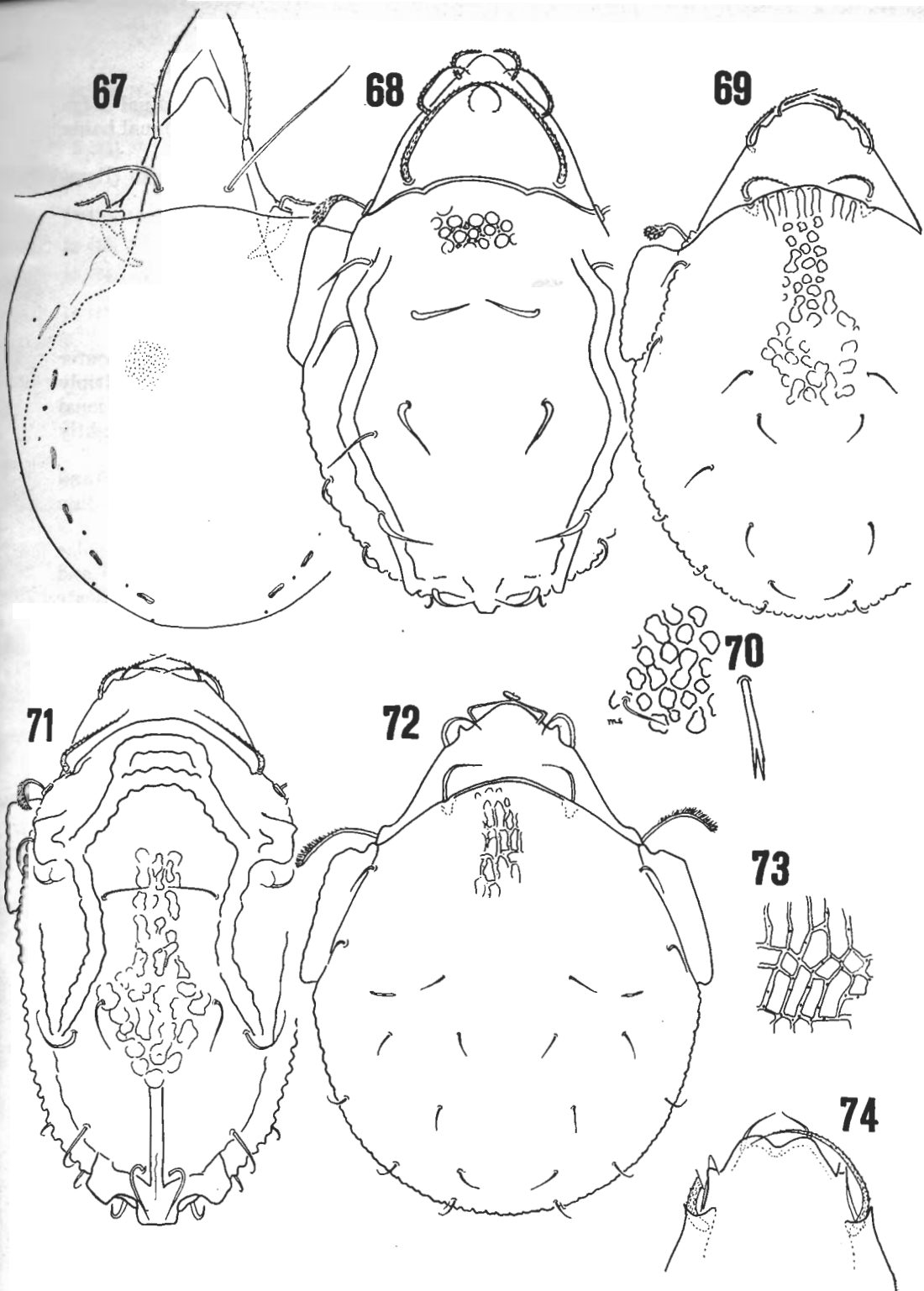
Rostrozetes monstruosus n. sp.

(Fig. 71)

499-520 × 294-318 μ . Prodorsum narrow. Hairs *ro*, *la*, *in* lengthening in order of above sequence, all extremely densely aciculate. Sensillus terminally rapidly expanding, aciculate, apically acicular.

Notogaster: Elongate, partially covering prodorsum. Surface ornamented with a characteristical sculpture consisting of ribs and rough tubercles. Ten pairs of notogastral hairs.

Ventral: Surface ornamented with irregular foveolae, especially in region



Figs. 67-74. 67: *Fissurobates spectabilis* n. sp. — 68: *Rostrozetes cristatus* n. sp. — 69: *Rostrozetes irregularis* n. sp. — 70: *Rostrozetes irregularis* n. sp. — 71: *Rostrozetes monstruosus* n. sp. — 72-73: *Rostrozetes polygonatus* n. sp. — 74: *Rostrozetes rimachensis* BECK, 1965.

between genital and anal apertures. Anal plates with a longitudinal ridge each, genital plates with smaller foveolae. Proportional length of adanal hairs: $ad_3 > ad_2 > ad_1$.

Material examined: 1 ex. (Holotype: 0-651-68): No 357-1. 6 ex. (Paratypes: 0-652-68): from the same locality.

Rostrozetes polygonatus n. sp.

(Figs. 72-73)

338-402 × 274-314 μ . Rostrum rounded. Tutorial tooth very large, outer tooth of lamella obliquely truncate, hardly discernible. Hairs *ro* thin, multiply curved, formed completely differently than hairs *la* and *in*. Proportional lengths as: $ro > la > in$. Sensillus with long stalk, terminally only slightly incassate.

Notogaster: Surface polygonated. Bordering lines of polygons lighter and also sparsely punctate. Enclosed spaces convex. Ten pairs of short, thin notogastral hairs.

Ventral: Region between genital and anal apertures with round foveolae displaying a central point. Genital plates with 2-3 longitudinal ridges and 5 pairs of minute genital hairs. Discidium incurving, with a very long, falcate apex.

Material examined: 1 ex. (Holotype: 0-653-68): No. 357-1. 6 ex. (Paratypes: 0-654-68): from the same locality.

Rostrozetes rimachensis BECK, 1965

Our specimens display some smaller differences against BECK's description and figure (Fig. 74), but their separation as a distinct form is not considered necessary at the moment. The dimensions of the specimens from Manaus are: 553-598 × 348-421 μ .

Material examined: 357-1 (5).

The *Rostrozetes* taxa, hitherto described from South America, can be distinguished by recourse to the following key:

- 1 (2) Fourteen pairs of notogastral hairs present: **schalleri** BECK, 1965
- 2 (1) Ten or twelve pairs of notogastral hairs.
- 3 (18) All notogastral hairs thin, setiform.
- 4 (9) Notogaster with at least 2 well discernible, sharp, chitinous ridges or ribs.
- 5 (8) Interlamellar hairs extraordinarily long, reaching to rostral apex. No third rib in median line on posterior third of notogaster.
- 6 (7) Hair *la* arising on a sharp cuspis, also tutorial tooth big. Marginal rib not extending to posterior margin of body. Spaces enclosed by foveolae smooth: **carinatus** BECK, 1965
- 7 (6) No cuspis present, lamellar apex straightly truncate. Tutorial tooth not discernible. Marginal chitinous rib long, framing notogaster also posteriorly: **cristatus** n. sp.

- 8 (5) Hairs *in* short, terminating far behind rostral apex. A third rib also present in median line of posterior third of notogaster:
monstruosus n. sp.
- 9 (4) Notogastral surface without ribs.
- 10 (11) Rostral apex medially concavely excised:
rimachensis BECK, 1965
- 11 (10) Rostral apex whole, convexely arcuate.
- 12 (15) Notogastral surface with round, regular foveolae.
- 13 (14) Hair *in* arcuate, apically mucronate:
foveolatus SELLNICK, 1925
- 14 (13) Hair *in* bacilliform, terminally obtuse:
foveolatus nebulosus BECK, 1965
- 15 (12) Notogastral surface with irregular sculpture.
- 16 (17) Notogastral surface with polygonal sculpture, borders also punctate:
polygonatus n. sp.
- 17 (16) Notogastral surface with irregular tubercles, occasionally coalescing into a rugulose pattern.
- 18 (3) Notogastral heterotrichy: some hairs furcating or fusiformly incrassate.
- 19 (20) Three pairs of hairs among twelve notogastral pairs bifurcate, connected by a chitinous membrane:
pseudofurcatus BAL. et MAH., 1968
- 20 (19) Three pairs of hairs among ten notogastral pairs fusiform:
dimorphichaites HIGGINS, 1966

ZUSAMMENFASSUNG

Oribatiden (Acari) aus den Aufsammlungen der II. Expedition nach Südamerika

Die Verfasser besprechen den zweiten Teil ihres Oribatiden-Materials, das sie im Jahre 1966 in Brasilien und besonders in Bolivien gesammelt hatten. Sie stellen eine neue Familie — Sternoppiidae n. fam. (typische Gattung: *Sternoppia* BALOGH & MAHUNKA, 1968) — und 15 neue Gattungen — *Austrozetes*, *Brazilozetes*, *Cosmozetes*, *Stylozetes*, *Szentivanyiella*, *Undulozetes*, *Haplobelba*, *Phyllocarabodes*, *Enantioppia*, *Trapezoppia*, *Yungaseremaeus*, *Synoppia*, *Fenestrobates*, *Ceratobates* und *Fissurobates* n. genera — auf. Ferner beschreiben sie 56 für die Wissenschaft neue Arten und geben die Bestimmungsschlüssel der Gattungen *Rhynchoribates*, *Beckiella* und *Rostrozetes* an.