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New mite species of the cohort Tarsonemina (Acari: Acarophenicidae and Pygmephoridae)

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ABSTRACT. Four new species and a new genus (Pygmephoroides gen. nov.) of Tarsonemina are described from Central Africa and South America.

KEY WORDS: Parasitic Acari, Tarsonemina, Acarophenax lukoschusi sp. n. (Acarophenacidae), Pygmephoroides margaritatus gen.n., sp.n. Sicilipes crossi sp. n., Sicilipes lindquisti sp.n. (Pygmephoridae), systematic, morphology.

The mite collections in Bruxelles, Gembloux and Tervuren contain some slides with mites belonging to the cohort Tarsonemina and to the families Acarophenacidae and Pygmephoridae. We have examined some of them and in the following we give descriptions of four species, all new for science. The establishment of a new genus (Pygmephoroides gen. nov.) was also necessary.

The species which are described herein were collected by Dr. J. LECLERCQ, Facultés Universitaires de Gembloux, by Mr. F. PUYLAERT, Musé Royal de l'Afrique Centrale, Tervuren, as well as by A. FAIN, Institut Royal des Sciences Naturelles de Belgique, Bruxelles.

ACAROPHENACIDAE

Acarophenax lukoschusi sp. n.

Measurements. - Length: 168-193 µm, width: 128-149 µm.

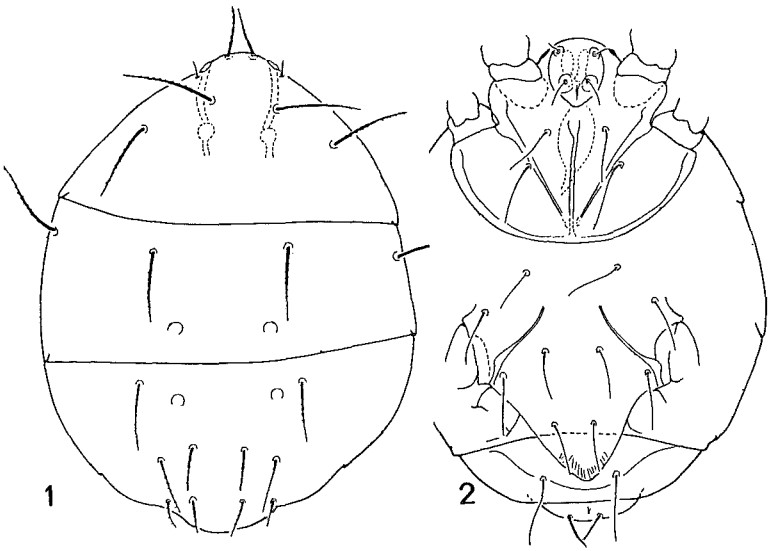
Dorsal side (Fig. 1): Body comparatively wide, rounded. Stigmae opening anteriorly, peritremes well visible. All four pairs of dorsal setae setiform, blunt at tip and finely roughened. Setae sc_1 and sc_2 nearly equal in length, setae v_1 much longer than v_2, but both pairs much shorter than the preceding two pairs. All setae of the opisthosomatal segments strong, blunt at tip and roughened (or finely ciliate) like the prodorsal ones. Segment Ps bearing only one pair of setae. Ratio of the opisthosomatal setae: $ps_1 < h_2 < h_1 < f_1 < e_1 \leq d_1 \leq d_2 < c_1$. Only two pairs of couples (ia, in) were observable.

Ventral side (Fig. 2): Gnathosoma mostly fused with the body surface, but its contour, one pair of infracapitular setae and one pair in palpal position visible. All apodemes well developed, sternal apodema fused with the sejugal ones, but the connection of the sternal and 2nd apodemes distinctly not verifiable. Apodemes on the posterior epimeral region weakly developed, ap.3 very short, ap.4 longer than the former ones, but these are not touching medially. All setae in the epimeral region long, filiform, no essential difference among them. Posterior sternal plate very large, reaching very far posteriorly like a tegula and partly covered the aggenital plates. Epimeral setal formula: 1-1-2-3. One pair of aggenital setae also present.

Legs: Tarsus and tibia of leg I (Fig. 3) partly separated from each other, their contour well observable. This part not wider than the other joints. Claw normal, sessile, the modified subunguinal seta (s) large, incised medially. Solenidium ω_1 with long, pointed apex, φ_1 normal, with clavate head. A famulus (ε), very characteristic, lanceolate. Seta dG very strong, erect. Tarsus of legs II-III (Fig. 4) modified, two setae on tarsus II and one on tarsus I strongly dilated, spiniform. Setal formula of legs:

leg I: 1-3-4-16+2-1
leg II: 1-3-3-4-1-6+1-0
leg III: 1-2-2-3+1-6-0
leg IV: 1-2-1-3+1-5-0 (Fig. 5).

Material examined: From the guano of Taphozous nudiventris (Chiroptera), from Camp. Waza, N. Cameroun. Holotype (♀) and 1 (♀) paratype, collected by F. PUYLAERT, 28.VII. 1971. Holotype in the Musée Royal de l' Afrique, Tervuren; 1 paratype (1360-PT-89) in the Hungarian Natural History Museum, Budapest.



Figs 1-2: Acarophenax lukoschusi sp. n.
(1= dorsal side, 2= ventral side)

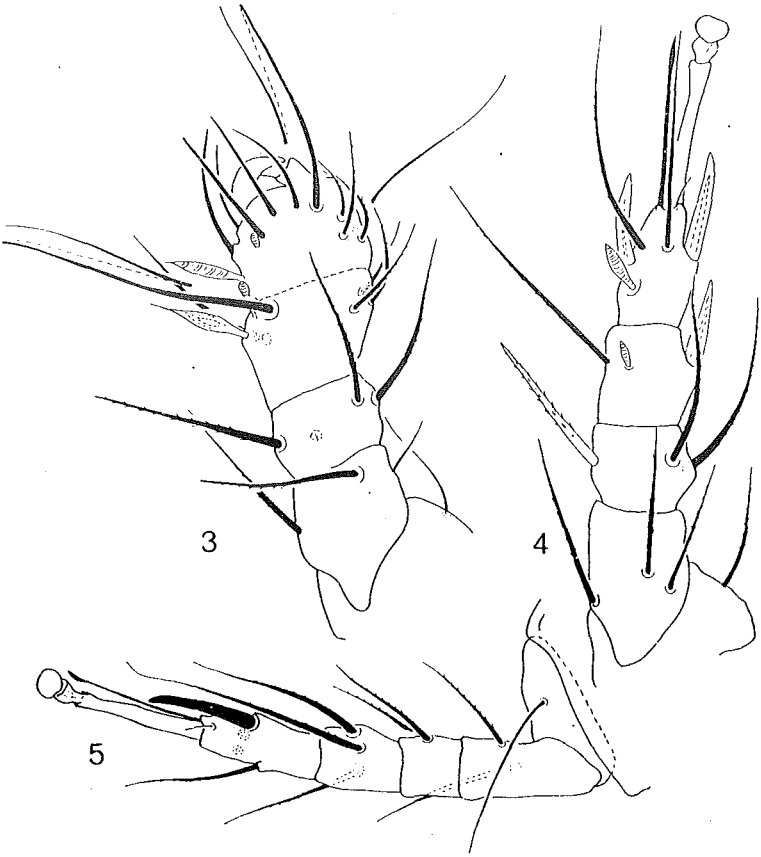
Remarks: On the basis of the dorsal chaetotaxy (c≅ f) the new species stands nearest to the species A. nidicolus Cross et Krantz, 1964. However the new species is distinguished from it by the two very strong spiniform setae on tarsus II and by the much longer epimeral setae.

We dedicate the new species to our friend, the recently departed excellent parasitologist, Dr. F. LUKOSCHUS.

PYGMEPHORIDAE Cross, 1965

Pygmephoroides gen. n.

Diagnosis: Family Pygmephoridae. Surface of whole idiosoma and legs strongly sculpturate. Prodorsum with three pairs of setae, sensilli normal. Stigmae composed of four pairs of

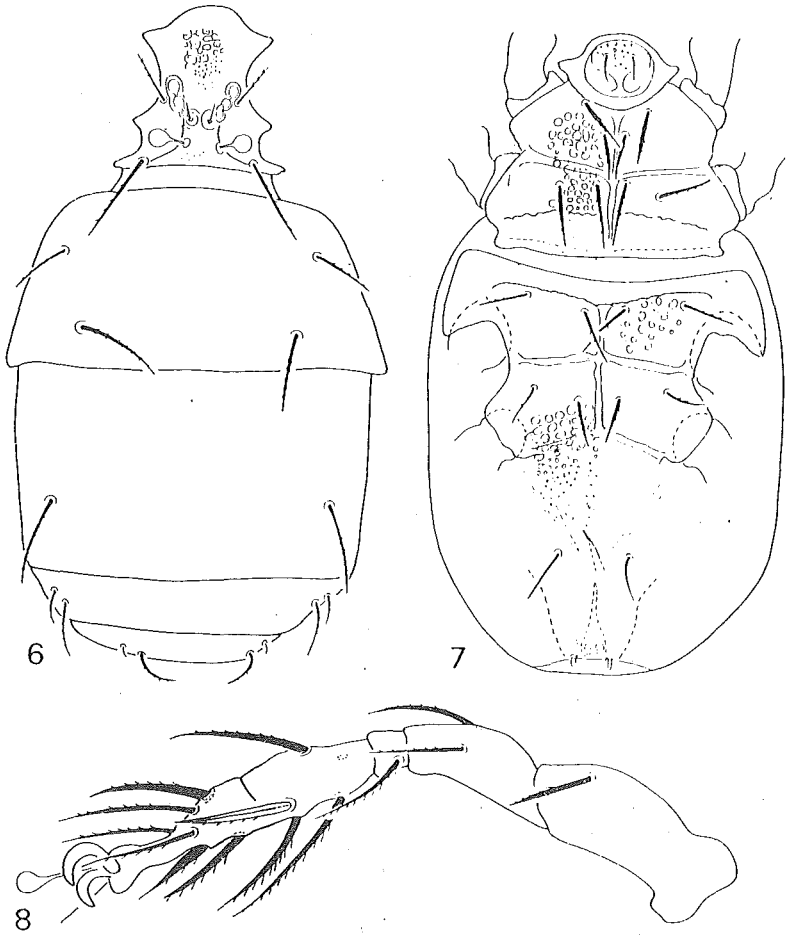


Figs. 3-5: Acarophenax lukoschusi sp. n.
(3= leg I, 4= leg II, 5= leg IV)

guttiform parts. Gnathosoma normal. All apodemes strongly developed and well chitinised. Epimeral setal formula: 2-2-2-3/!/. Tibiotarsus of leg I with simple claw, without striation on its inner surface. Femur of leg I with 3 setae, seta d very long, thick, directed backwards. Tarsus of legs II and III reduced, some setae of them modified, thick, spiniform. Leg 4 without smooth, blade-like setae.

Type species: Pygmephoroides margaritatus sp.n.

Remarks: The genus Pygmephorus Kramer, 1877 consists of uniformly well characterized species. The species described in the following is distinguished from all heretofore known species by the characters mentioned in the preceding diagnosis.

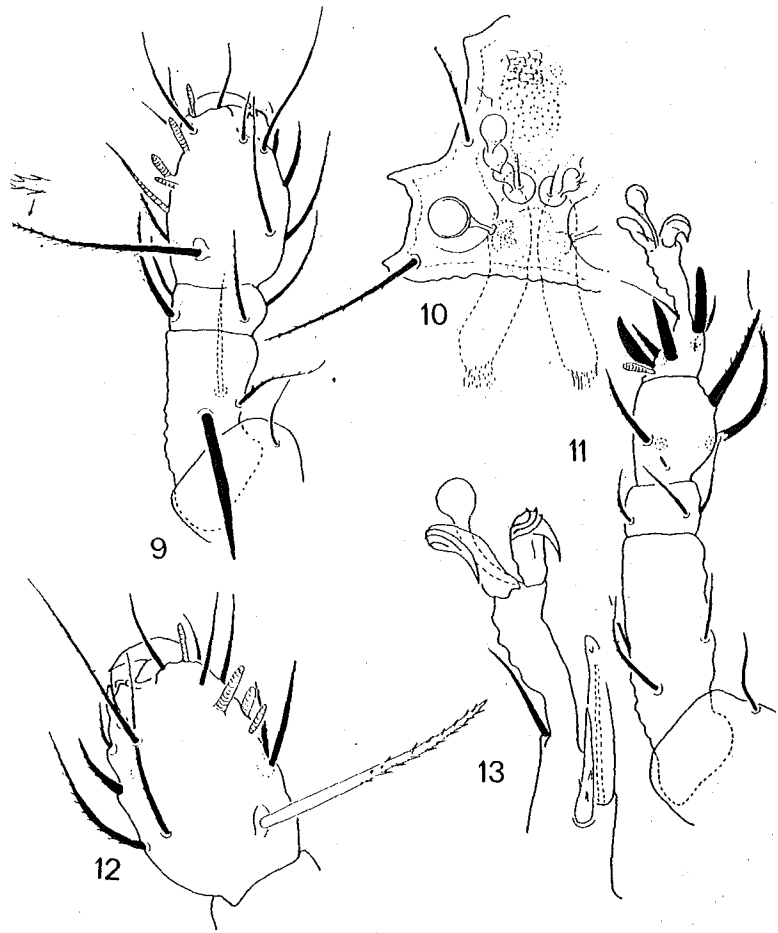


Figs. 6-8: Pygmephoroides margaritatus sp. n.
(6=dorsal side, 7= ventral side, 8= leg IV)

Pygmephoroides margaritatus sp.n.

Measurements. - Length: 355-398 µm, width: 182-221 µm.

Dorsal side (Fig. 6): Prodorsum well chitinised, its surface mostly coarsely sculptured by various spots and a weak polygonate network. Partly, e.g. between the trichobothria, only finely punctate. Its rostral part convex, basally framed by waved chitinous laths. A pair of weak hollows, beside the trichobothrium, present. Peritremes consist of four pairs of drop-shaped parts, they connect to each other like a string (Fig. 10). Sensilli normal, their head round and smooth. Three pairs of prodorsal setae present two pairs (ex_1 and ex_2) of them blunt at tip, pilose, one pair (ro) minute, originating medially between the peritremes.



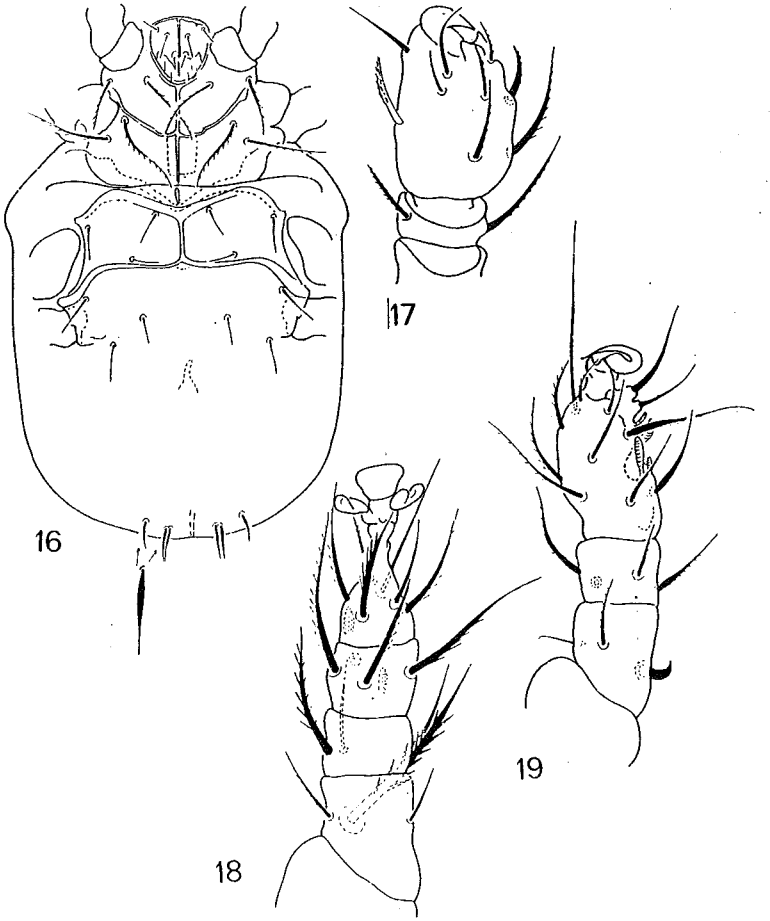
Figs 9-13: Pygmephoroides margaritatus sp. n.
(9= leg I, 10= prodorsum, 11= leg II, 12= tarsus of leg I, 13= tarsal end of leg II)

Hysterosoma with ornamentation similar to the prodorsum. Hysterosomatal setae short, with the exception of h_2 thickened, rarely pilose and blunt at tip. Their ratio: $d_1 > c_1 > c_2 > f > h_1 > e > h_2$. Ps segment very small, fold into the body; its setae very short, smooth and arising medially, ps_1 characteristically more anteriorly than the other two pairs. Cupules not visible.

Ventral side (Fig. 7): Infracapitulum and the whole ventral surface strongly sculpturate, like the dorsal ones. Some pars, e.g. apimeral region, ornamented by double sculpture: punctulate and areolate but this sculpture gradually decreasing posteriorly. Apodemes, also ap.5, strong, normally developed, ap.4. reaching to the lateral part of epimeral plates. All setae slinghtly lanceolate, with some short, but strong spicules. Epimeral setal formula 2-2-2-3 (!). Setae 1c, 2c and 3b absent, setae 4b originating far posteriorly from ap.5.

Figs 14-15: Sicilipes crossi sp. n.
14= dorsal side, 15= leg IV)

Legs: Surface of all joints well ornamented by points and/or alveoli. Dorsal part of femur 1 and 2 with very strong, conspicuous sculpture (Fig. 9). Tibiotarsus of leg I (Fig. 12) only slightly thicker than the other joints of leg. Claw normal, without elongate apex, its ventral surface smooth, striation absent. The modified subunguinal seta (s) strong, bifurcate or a short squamiform appendage observable beside it. Seta d on tibiotarsus thickened, its apex blunt. Seta l'' shorter but thicker than the famulus (ε). All three setae of femur 1 conspicuously long, setae d directed backwards, like the same seta of the Pediculaster Vitzthum, 1927 species. Tarsus of legs II and III (Fig. 11) short (shorter than tibia!), its basal part compresed. All setae of these joints - with the exception of seta u' - modified, extremely thick, spiniform (Fig. 13). Seta v' on femur originating behind seta l'. Claws of these legs peculiarly modified, splitted into two parts dorsally, with long distal end. Their inner surface smooth. All setae of leg IV (Fig. 8) spiculate, without any smooth and blade-

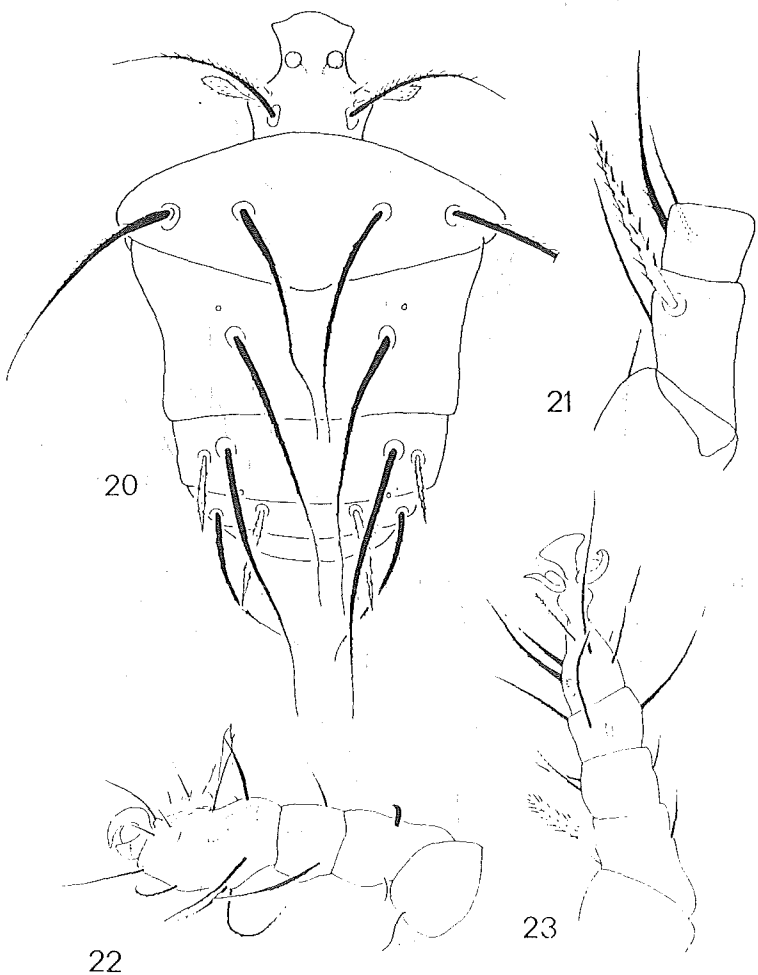


Figs 16-19: Sicilipes crossi sp. n.
(16= ventral side, 17= tarsus of leg I, 18= leg II, 19= leg I)

like setae. Setal formula of legs:

leg I: 1-3-4-(18+4)-1
leg II: 1-3-3-(4+1)-6+1-2
leg III: 1-2-2-4+1-6-2
leg IV: 1-2-1-4+1-6-2

Material examined: From elephant-dung, Rugege Forest, Rwanda (alt. 2500 m). Holotype and 8 paratypes, collected by A. FAIN, 15.III.1968 and 6.IV.1968). Holotype and 6 paratypes in the Musée Royal de l' Afrique Centrale, Tervuren, 2 paratypes (1361-PT-89) in the Hungarian Natural History Museum, Budapest.



Figs 20-23: Sicilipes lindquisti sp. n.
(20= dorsal side, 21= Femur and genu of leg III, 22= leg I, 23= leg II)

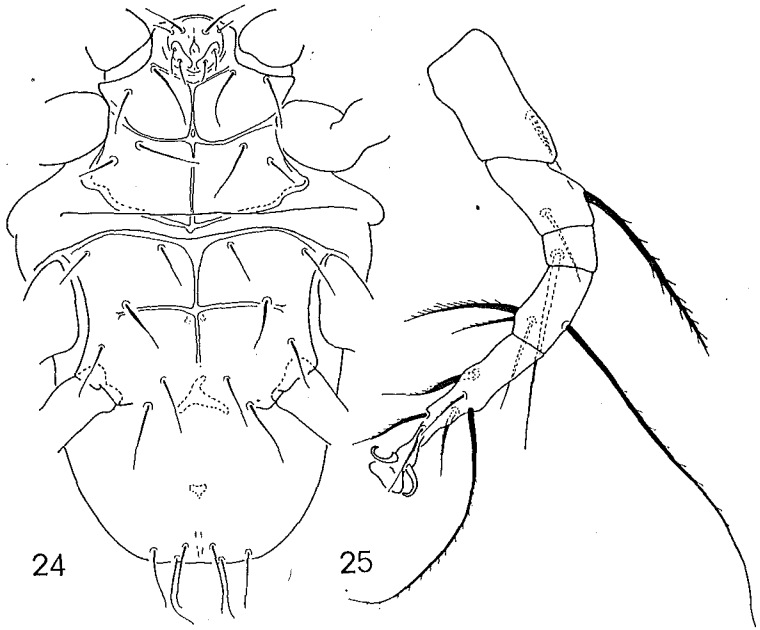
Remarks: On the basis of the generic diagnosis the new species is distinguished by a lot of very important characters from all other Pygmephorus Kramer, 1977 species.

Sicilipes crossi sp.n.

Measurements. - Length: 279-296 µm, width: 173-204 µm.

Dorsal side (Fig. 14): The whole surface finely punctate. Prodorsum normal-sized, stigmae round, originating far from each other. Sensilli asymmetrically lanceolate, their surface spiculate. Both pairs of prodorsal setae arising in front of the trichobothria. Setae exa very short, completely smooth, setae exp robust, distinctly but irregularly spinose. All hysterosomatal setae - with the exception of ps setae - setiform, long, sparsely spinose. Setae d and f longest, h_2 shortest of all. The three pairs of ps setae characteristically dilate, slightly lanceolate and smooth. Setae ps_3 shorter than the two inner pairs.

Ventral side (Fig. 16): Gnathosoma has typical pygmephoroid characters, slightly elongate, both pairs of infracapitular setae simple, nearly equal in length. Pharynx very long. Apodemes show characteristic morphology: ap.sej. very strong, dilate laterally; ap. 4 long, reaching to the lateral margin of the posterior epimeral plates; ap. sp. short, its posterior part (behind ap.4) completely absent. Among the epimeral setae great difference observ-



Figs 24-25: Sicilipes lindquisti sp.n.
24= ventral side, 25= leg IV)

able: all setae on the anterior epimeral plate long, well ciliate; all on the posterior epimeral plate short, smooth, much thinner than the former ones. Setae 2a > 2c, 3c > 3a or 3b, 4c > 4a or 4b.

Legs: Tibiotarsus of leg I (Fig.17) not thicker than the other joints. Claw normal-sized, a short peduncle present, the modified seta s originating on it. Seta d and arising on a strong, well separable, bifid tubercle. All four solenidium blunt, rounded, φ_2 longest of all. Seta l' G very strong and long. Seta dG of legs II (Fig.18) and III similar to the preceding one, but this seta on leg III the longest of all. Tibia of leg IV conspicuously long, not shorter than trochanter of femur. Its setation shown in Fig.15. All setae setiform and only sparsely ciliate.

Material examined: From Podagritus pecunius (♂) in Tucuman, Argentina. Holotype (♀) and 2 paratypes (♀), collected by J. LECLERCQ, 12.XI. 1967. The mites were fixed to the propodeum. Holotype in the Institut Royal des Sciences Naturelles de Belgique, Bruxelles; 2 paratypes (1362-PT-89) in the Hungarian Natural History Museum, Budapest.

Remarks: See after the description of the next species.

We dedicate the new species to Dr. E.A. CROSS (Alabama, USA) the renowned acarologist.

Sicilipes lindquisti sp.n.

Measurements: Length: 205-216 μm, width: 145-161 μm.

Dorsal side (Fig.20): The surface of the dorsal side finely punctate. Prodorsum relatively small. Stigmae large, nearly round, peritremes hardly observable, only a short part of them visible. Sensilli lanceolate, their surface spiculate. Among the bothridial setae a very large difference present, setae exa minute, completely smooth, setae exp very strong, irregularly spinose. Most of the hysterosomatal setae similar to the preceding pair, but their end very long and filiform. Setae a slightly dilate and very long and filiform. Setae e slightly dilate and without filiform end, setae ps_1 located well anteriorly in front of setae ps_2. Setae ps_3 shorter than the other two pairs.

Ventral side (Fig.24): Gnathosoma normal-sized. Infracapitulum with two pairs of seta, inner pair much thicker and longer than the outer one. Apodemes well developed, they compose on both epimeral plates an interrupted network, only ap.4 not reaching to the lateral margin of the posterior epimeral plate. Posterior sternal apodema comparatively short, ap.5 reduced. A well observable knot located on the anterior part of sternal apodema, near to the junction of apodemes 2. All epimeral setae smooth, but all slightly dilate in their basal part medially. Setae 2b much shorter than 2a, setae 4a - 4b - 4c nearly equal in length.

Legs: Tibiotarsus of leg I (Fig. 22) well chitinised, a little thicker than the other joints. Claw sessile and its opposite part (s) strong, sharply pointed. Four short solenidia present, three of them pointed, φ_2 rounded and the longest of all. Some of setae characteristically dilated. Seta d arising on a simple tubercle. All joints of legs II and III (Fig. 23) conspicuously thick, seta dF on leg II very strong, with long spiens. The same seta on leg III (Fig. 21) longer but also dilate. Tarsus of leg IV (Fig.25) comparatively short, only twice longer than the tibia. Seta dTr very short and fine. Seta dF strong, blunt at tip, dT very long with

flagellate end. Setal formula of legs:

leg I: 1-3-4-(16+4)-1
leg II: 1-3-3-4+1-6+1-2
leg III: 1-2-2-4+1(!)-6-2
leg IV: 1-2-1-4+1-6-2

Material examined: From Rhopalum longinodum, from Chile. Holotype (♀) and 2 paratypes (♀) collected by J. LECLERCQ, in January 1962. Holotype and 1 paratype in the Institut Royal des Sciences Naturelles des Belgique, Bruxelles; 1 paratype (1363-PT-89) in the Hungarian Natural History Museum, Budapest.

Remarks: Both new Sicilipes species well characterized by some important and conspicuous features, and they are well distinguished from all heretofore known taxa. E.g.: Seta dF on leg II and the very short epimeral setae of S. lindquisti, dilated hysterosomatal setae and very short setae of epimer 3 and epimer 4 of S. crossi sp.n.

We dedicate the new species to Dr. E. LINDQUIST (Ottawa, Canada), the world-famous explorer of the Heterostigmata mites.

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MAHUNKA S. és FAIN A.: Új Tarsonemina atkafajok (Acari: Acarophenicidae és Pygmephoridae)

A szerzők négy, a tudományra új parazita atkafaj és egy új nem (Acarophenax lukoschusi sp.n., Pygmephoroides margaritatus gen.n. sp.n., Silicilipes crossi sp.n. és Sicilipes lindquisti sp.n.) leírását adják Afrikában és Dél-Amerikában gyűjtött példányok alapján.

REFERENCES

CROSS, E.A. (1965): The generic relationships of the family Pyemotidae (Acarina: Trombidiformes). - Kans.Univ.Sci.Bull., 45 (2): 29-275.

CROSS, E.A. and KRANTZ, G.W. (1964): Two new species of the genus Acarophenax Newstead and Darvall 1918 (Acarina: Pyemotidae). - Acarologia, 6 (2): 287-295.

LINDQUIST, E.E. (1986): The world genera of Tarsonemidae (Acari: Heterostigmata). A morphological, phylogenetic, and systematic revision, with a reclassification of family-group taxa in the Heterostigmata. - Mem.ent.Soc. Canada, 136: 1-517.

MAHUNKA, S. (1970): Consideration on the systematics of the Tarsonemina and the description of New European taxa (Acari: Trombidiformes). - Acta zool. hung., 16: 137-174.

MAHUNKA, S. (1974): New data to the knowledge of Pygmephorus species (Acari: Tarsonemida) living on small mammals in North America. - Parasit. hung., 7: 197-200.

RACK, G. (1975): Phoretisch auf Kleinsäugern gefundene Arten der Gattung Pygmephorus (Acarina: Pygmephoridae). - Mitt. Hamb. Zool. Mus. Inst., 72: 157-176.

RAKHA, M.A. and KANDEEL, M.M.H. (1983): Acarophenax meropsi n. sp., from the European bee eater, Merops apiaster in Egypt (Acari: Tarsonemida). - Acarologia, 24 (3): 295-297.

SMILEY, R.L. and WHITAKER, Jr. J.O. (1978): Mites of the genus Pygmephorus (Acari: Pygmephoridae) on small mammals in North America. - Acta zool. hung., 25: 383-408.

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