

Taxonomic Notes on Some Little Known Oribatid Mites of Japan

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The present paper deals with some oribatid species which were once recorded from Japan with neither description nor figure. For this reason they have not drawn attention of most acarologists, though their existence in Japan is very interesting in zoogeographical point of view. They are *Eulohmannia ribagai* BERLESE, *Palaeacarus hystrichinus* TRÄGÅRDH, and *Peloptulus americanus* (EWING). In addition to them, *Ophidiotrichus ussuricus* KRIVOLUCKIJ is recorded here for the first time from Japan. Some other known species are also mentioned with change in their generic status.

Eulohmannia ribagai BERLESE

(Figs. 1-4)

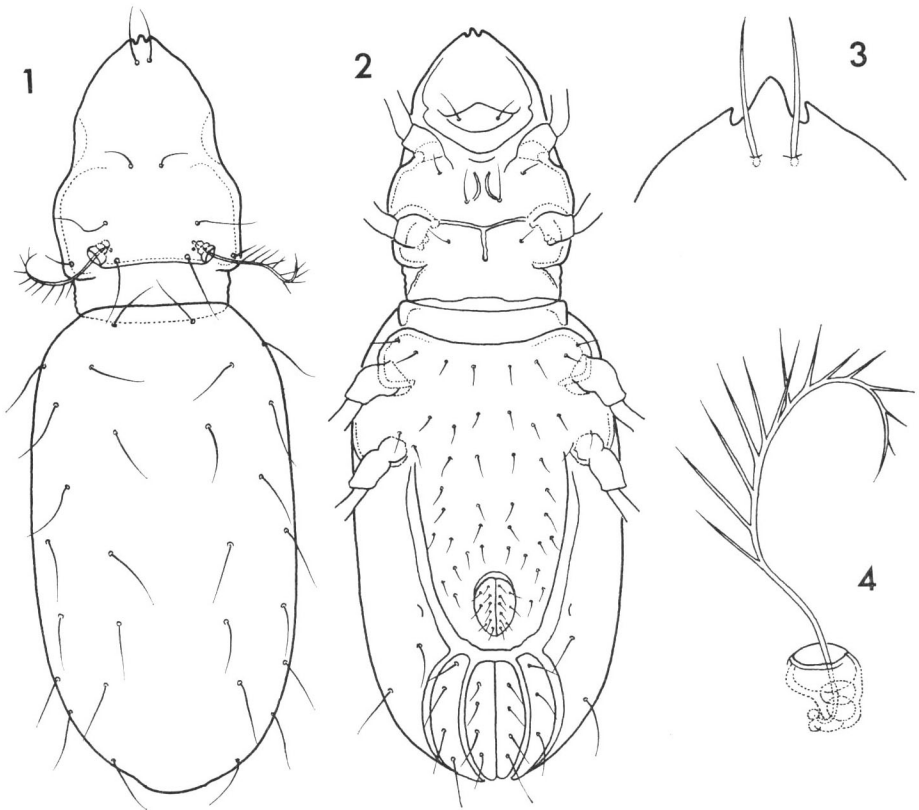
Lohmannia (*Eulohmannia*) *ribagai* BERLESE, 1910, p. 223, pl. 20, fig. 51.

Eulohmannia ribagai: SELLNICK, 1928, p. 24, fig. 52; WILLMANN, 1931, p. 95, figs. 10-11; GRANDJEAN, 1939 a, p. 113, figs. 2-3; 1939 b, p. 300, figs. A-G; BALOGH, 1943, p. 14, pl. 2, figs. 1 & 3; HAMMER, 1952, p. 16, fig. 1; SCHWEIZER, 1956, p. 221, fig. 131; HAMMEN, 1959, p. 55; BULANOVA-ZAKHVATKINA, 1960, p. 1837, fig. 1; AOKI, 1962, p. 178; SCHUSTER, 1965, p. 213.

Material examined. 1 ex., Senjogahara of Nikko, Tochigi-ken, 8-VIII-1961, J. AOKI, from rather deep layer (15-20 cm) of soil under the vegetation of *Larix leptolepis* GORDON; 1 ex., Mt. Hirugatake of Tanzawa, Kanagawa-ken, Central Japan, VIII-1962, Y. KITAZAWA & J. AOKI, from the surface layer of soil under the vegetation of *Fagus crenata* BLUME; 5 exs., the same place, 4-XI-1962.

Measurement. Body length: 670-700 μ ; width: 220-245 μ .

Remarks. Rostrum with a pair of distinct incisions; the part between the incisions projecting forward beyond the outline of rostrum. Such a structure was not mentioned by any author. In most of the figures of *E. ribagai* by European authors the rostrum was drawn as it has a rounded margin. Only in BALOGH's (1943) figure the part has incisions as I ascertained in the Japanese material. Sensillus has many spines unilaterally; the numbers of spines counted from figures are 7 in SCHWEIZER (1956), 8 in BULANOVA-ZACHVATKINA (1960), 10 in BERLESE (1910) and in GRANDJEAN (1939 a), 12-13 in HAMMER (1952), 13-15 in BALOGH (1943) and 16-19 in WILLMANN (1931). In the Japanese material, the number of the spines ranges from 9 to 15, the average number being 11.4; the spines of the Japanese material seem to be much longer as compared to those of the European material. The precise number of genital setae must be nine as



Figs. 1-4. *Eulohmannia ribagai* BERLESE. — 1. Dorsal. — 2. Ventral. — 3. Rostrum with rostral setae and rostral incisions. — 4. Sensillus and bothridium.

GRANDJEAN (1939 b) mentioned, 6 being situated along the median margin and 3 near the lateral margin of each genital plate. Anal and adanal setae are both 4 pairs in the number. A strong neotrichy is found on ventral plate; the number of setae is 20 pairs inclusive of setae on coxisternal plates III-IV.

The species is known from almost all the countries of Europe and U. S. S. R. including the Far East (Kuril Islands). AOKI (1962) recorded it for the first time from Japan based on the material from Nikko.

Palaeacarus hystericinus TRÄGÅRDH

(Fig. 5)

Palaeacarus hystericinus TRÄGÅRDH, 1932, p. 1, figs. 1-6; GRANDJEAN, 1954; STRENZKE, 1962, p. 310; AOKI, 1964, p. 389; 1973 a, p. 190, fig. 66A (photo).

Material examined. 1 ex., at the top of Hirugatake of Tanzawa, Kanagawa-ken,

C. Japan, 4-X-1962, Y. KITAZAWA & J. AOKI, from A₀ layer of soil under the vegetation of *Fagus crenata* BLUME; 3 exs., Senjogahara of Nikko, Tochigi-ken, C. Japan, 8-VIII-1961, J. AOKI, from soil under the vegetation of *Larix leptolepis* GORDON.

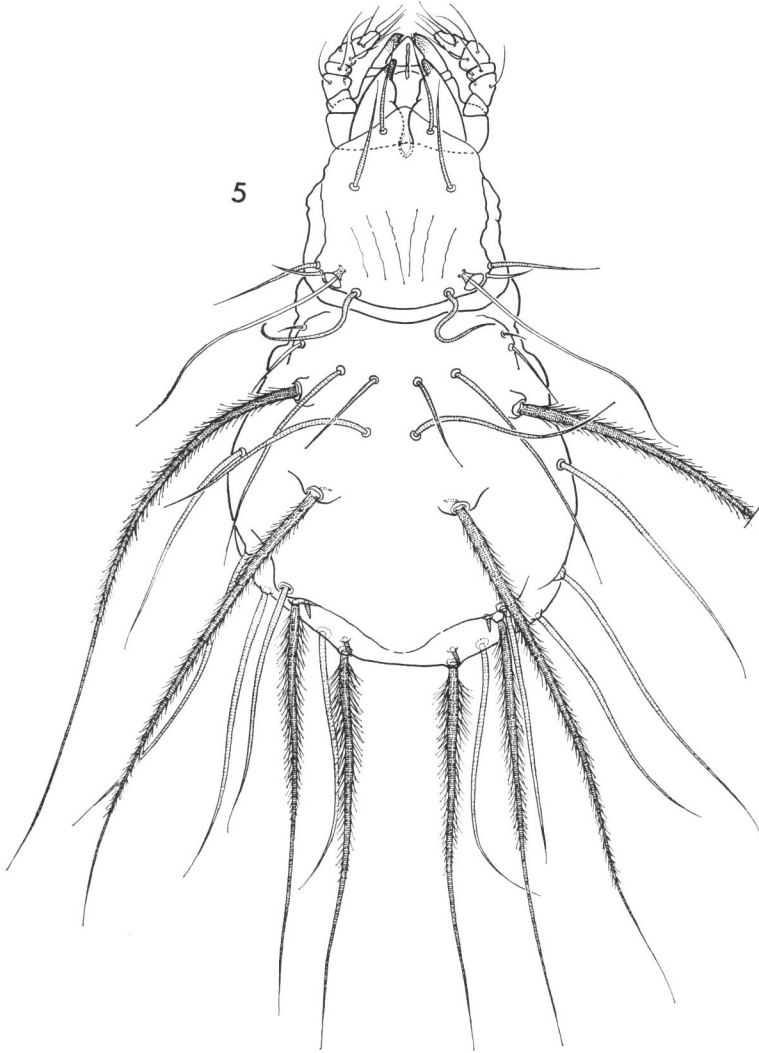


Fig. 5. *Palaeacarus hystricinus* TRÄGÅRDH. Dorsal.

Measurement. Body length: 290–355 μ ; width: 160–210 μ .

The first record of the species in Japan was made by me in 1964 based on the material taken at Tanzawa. In the Japanese material examined the asthenic zone is strongly

contracted as shown in Fig. 5; this may have been resulted from the effect of mounting media.

***Pedrocortesia japonica* (AOKI et SUZUKI), comb. nov.**

Pedrocortesella japonica AOKI et SUZUKI, 1970, p. 118, figs. 1-9.

Lamellar setae of the species are located marginally as shown in the original figure. For this reason, the species is considered to be a member of the genus *Pedrocortesia* and is removed from the genus *Pedrocortesella*, in which the lamellar setae are situated dorsally. However, its systematical position is still uncertain, because of the existence of 6 pairs of notogastral setae and the lacking in prodorsal ridges.

Species of the Genus *Liacarus* MICHAEL (s. lat.)

WOOLLEY (1969) divided the genus *Liacarus* MICHAEL (s. lat.) into four genera based on the shapes of sensilli. Thus, the liacarids with sensilli globose at tip were placed in the genus *Procorynetes*, those with clavate-lanceolate sensilli in the genus *Dorycranosus*, those with setiform sensilli in the genus *Rhaphidosus*, and those with spindle-form sensilli remained in the genus *Liacarus* (s. str.). Though I am not quite approved of this treatment to discriminate the genera based on the shapes of sensilli, the Japanese species of the genus *Liacarus* (s. lat.) are provisionally arranged here according to his system:

1) *Liacarus* MICHAEL, 1898 (s. str.):— *Liacarus orthogonios* AOKI, 1959 (p. 16, fig. 11); *L. flammeus* AOKI, 1967 (p. 123, figs. 1-3); *L. gammatus* AOKI, 1967 (p. 125, figs. 4-5); *L. contiguus* AOKI, 1969 (p. 126, figs. 20-25); *L. yayeyamensis* AOKI, 1973 (p. 91, figs. 15-17); *L. nitens* (GERVAIS, 1877); *L. coracinus* (C. L. KOCH, 1840).

2) *Dorycranosus* WOOLLEY, 1969:— *Dorycranosus acutidens* (AOKI, 1965) (p. 1, fig. 1); *D. yezoensis* (FUJIKAWA et AOKI, 1970), comb. nov. (p. 160, figs. 6-8); *D. indentatus* AOKI, 1973 (p. 244, figs. 10-15).

3) *Procorynetes* WOOLLEY, 1969:— *Procorynetes clavatus* (FUJIKAWA et AOKI, 1970), comb. nov. (p. 158, figs. 1-5); *P. breviclavatus* (AOKI, 1970), comb. nov. (p. 589, figs. 10-15).

4) *Rhaphidosus* WOOLLEY, 1969:— *Rhaphidosus bacillatus* (FUJIKAWA et AOKI, 1970), comb. nov. (p. 163, figs. 13-15). The sensilli of the species are bacilliform, being almost of equal thickness throughout and not so pointed at tip as in the type-species of the genus, *R. acuminatus* WOOLLEY, 1969.

***Operculoppia restata* (AOKI), comb. nov.**

Oppia restata AOKI, 1963, p. 219, fig. 5.

Lanceoppia simplex SUZUKI, 1973, p. 1 figs. 1-10.

Because of possessing only 4 pairs of genital setae and 9 pairs of notogastral

setae, the species neither classified in the genus *Oppia*, nor in *Lanceoppia*. The species was considered to be a close relative of *Parroppia*, *Laminoppia* or *Operculoppia*. An examination in detail of the type-specimen of *Oppia restata* revealed, however, that there is no such prominent projection on tibia I as found in *Parroppia* and also no broad lamina on femora as found in *Laminoppia*. It is most appropriate to place the species in the genus *Operculoppia*. The bothridial opening seems to be covered by a hyaline membrane with a small orifice, from which sensillus projects.

Having compared the type-specimen of *Lanceoppia simplex* SUZUKI, 1973, with that of *Oppia restata* AOKI, 1963, I found that they are identical. Thus, *L. simplex* becomes a junior synonym of *O. restata*.

*Prionoribatella*¹⁾ gen. nov.

Family Oribatellidae. Lamellar cusp provided with a small inner tooth and a conspicuously large outer tooth. The lateral margin of lamella serrated with several dents. Basal line of lamellae forms a low triangle with its top concave. Rostrum pointed at tip, without incisions. Legs monodactyle. Pteromorpha with transverse striae near its anterior margin.

Type-species: *Anachipteria dentilamellata* AOKI, 1965.

**Key to the Three Allied Genera *Anachipteria*, *Oribatella*
and *Prionoribatella***

1. Basal line of lamellae forms a high triangle without concavity at the top; outer tooth of lamellar cusp small, lacking in inner tooth; pteromorpha without transverse striae; legs heterotridactyle.....*Anachipteria* GRANDJEAN
- Basal line of lamellae forms a low triangle with a concavity at the top, being shaped as an inverted W; outer tooth of lamellar cusp large; pteromorpha with transverse striae near its anterior margin 2
2. Lamellar cusp with two long teeth of about equal length; lamellar seta inserted at the bottom of excavation between the teeth; legs heterotridactyle; rostrum often with a pair of incisions.....*Oribatella* BANKS
- Lamellar cusp with a small inner tooth and a large and broad outer tooth; lamellar seta inserted closer to the inner tooth; legs monodactyle; rostrum pointed, without incisions*Prionoribatella* gen. nov.

Prionoribatella dentilamellata (AOKI), comb. nov.

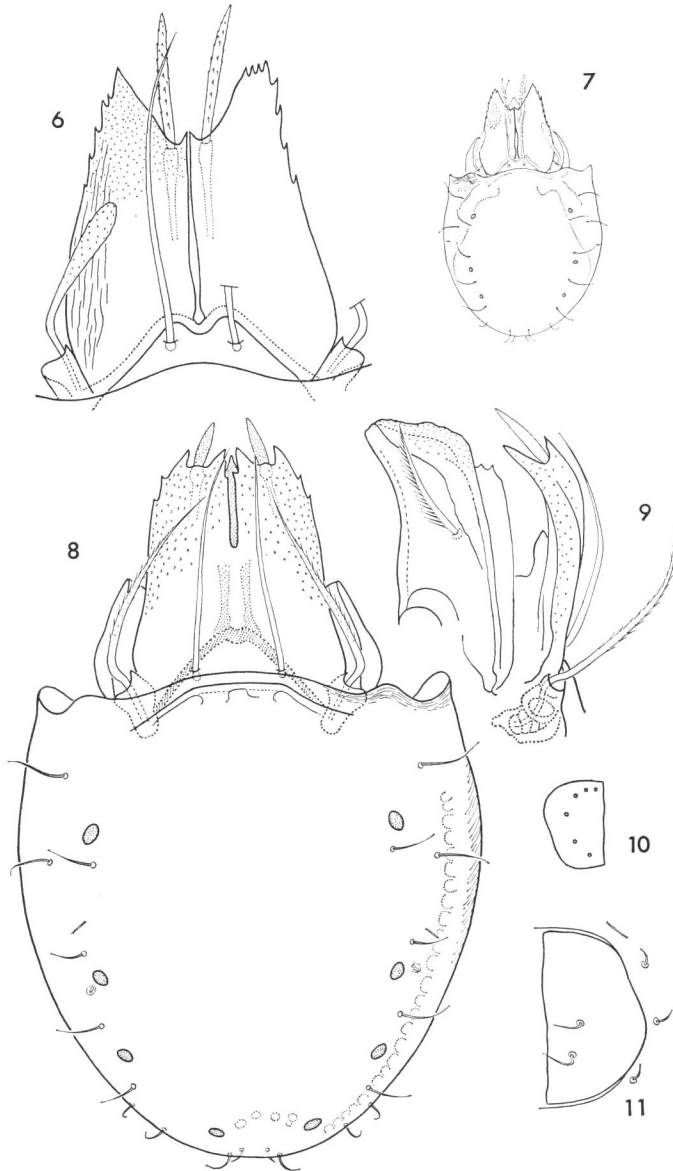
(Figs. 6-7)

Anachipteria dentilamellata AOKI, 1965, p. 7, fig. 4.

At the time of the original description of the species, I placed it in the genus *Ana-*

1) *Prionoribatella* — πριων (saw) + *Oribatella*.

chipteria, because of the shape of the lamellar cusp which is obliquely cut and without two long prominent teeth. However, except for the lamellar cusp, the species has many characters in common to the genus *Oribatella*. Thus, the species is shows an



Figs. 6-11. *Prionoribatella dentilamellata* (AOKI). — 6. Lamellae and sensilli. — 7. Dorsal. *Ophidiotrichus ussuricus* KRIVOLUCKIJ. — 8. Dorsal. — 9. Lateral view of propodosoma. — 10. Genital plate. — 11. Anal plate.

intermediate status between *Anachipteria* and *Oribatella*. However, the legs are monodactyle in this species, while the members of both the cited genera are heterotridactyle, and this is the reason for creating here a new genus *Prionoribatella* for the species under consideration. In preparing the original account of *dentilamellata*, I failed to describe areae porosae. Later re-examination revealed that there were at least three pairs of small areae porosae existing on notogaster. I present here again the original figure after adding the organs (Fig. 7).

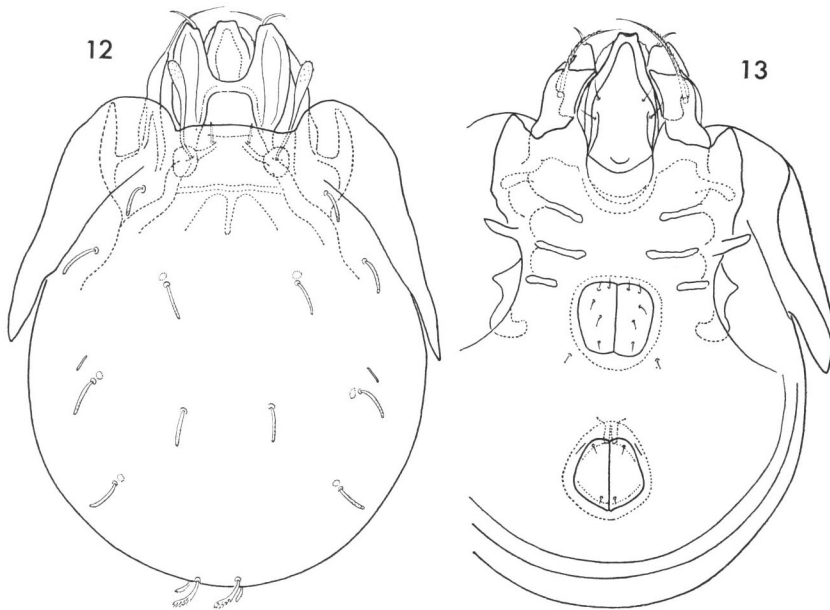
***Ophidiotrichus ussuricus* KRIVOLUCKIJ**

(Figs. 8–11)

Ophidiotrichus ussuricus KRIVOLUCKIJ, 1971, p. 125, fig. 5.

Material examined. 1 ex., Kisarazu in Chiba-ken, Central Japan, 20–II–1967, J. AOKI, from litter under a deciduous forest.

The genus *Ophidiotrichus* of the family Oribatellidae is for the first time recorded here from Japan. The specimen is well in accord with the original description and the figures of *O. ussuricus* KRIVOLUCKIJ from the southern part of the Soviet Far East region. The Japanese material is slightly different from the Soviet one in the anal setae (an_1 and an_2) situated close together and in the lamellar cuspides not so different in length from each other.



Figs. 12–13. *Peloptulus americanus* (EWING). — 12. Dorsal. — 13. Ventral.

Peloptulus americanus (EWING)

(Figs. 12–13)

Pelops americanus EWING, 1907, p. 111, pl. 3, figs. 2–4.*Peloptulus americanus*: WOOLLEY, 1958, p. 271, pl. 3, figs. 3–4.

Material examined. 1 ex., Torami in Chiba-ken, Central Japan, 10–VII–1968, K. KUROSA.

The present material is closely, though not completely, similar to *Peloptulus americanus* described from North America, in having 1) the lamellar cusp without inner tooth, 2) the anterior marginal part of notogaster well projecting and covering greater part of interlamellar setae, 3) the anterior position of humeral setae, and 4) the sensillar head comparatively well swollen. The rostrum is, however, rather narrowed at tip and not so distinctly expanded as in the American form.

References

- AOKI, J., 1959. Die Moosmilben (Oribatei) aus SüdJapan. *Bull. biogeogr. Soc. Jap.*, **21** (1): 1–22.
- 1962. Untersuchungen über die Zönosen der Oribatiden in Nikko in Beziehung zu Pflanzendeckung und Boden. I. Beschreibungen der Pflanzendeckung, des Bodens und der Oribatiden im Untersuchungsgebiete. *Jap. J. Ecol.*, **12**: 169–180.
- 1963. Einige neue Oribatiden aus dem kaiserliche Palastgarten Japans. *Annot. zool. Japon.*, **36**: 218–224.
- 1964.²⁾ The oribatid mites of the Tanzawa Mountains. In: Scientific Researches of the Tanzawa-Oyama Mountains. 477 pp. Kanagawa Prefecture. (In Japanese.)
- 1965. Neue Oribatiden von der Insel Sado. *Jap. J. Zool.*, **14** (3): 1–12.
- 1967. The soil mites of the genera *Liacarus* and *Xenillus* from the Kanto District, Central Japan. *Misc. Rept. Res. Inst. Nat. Resources*, (69): 123–130.
- 1969. Taxonomic investigations on free-living mites in the subalpine forest on Shiga Heights IBP area. III. Cryptostigmata. *Bull. Natn. Sci. Mus. Tokyo*, **12**: 117–141.
- 1970. Descriptions of oribatid mites collected by smoking of trees with insecticides. I. Mt. Ishizuchi and Mt. Odaigahara. *Ibid.*, **13**: 585–602.
- 1973 a. Soil Zoology. An Introduction to Classification and Ecology of Soil Animals. Hokuryu-kan Publishing Co., Tokyo, pp. i–xiii+1–814. (In Japanese.)
- 1973 b. Oribatid mites from Iriomote-jima, the southernmost island of Japan (I). *Mem. Natn. Sci. Mus. Tokyo*, (6): 85–101.
- AOKI, J., & K. SUZUKI, 1970. A new species of the genus *Pedrocortesella* from Japan (Acari, Cryptostigmata). *Bull. Natn. Sci. Mus. Tokyo*, **13**: 117–120.
- BALOGH, J., 1943. Magyarország Páncélosatkái (Conspectus Oribateorum Hungariae). *Mat. Termés. Közlem.*, **39**: 1–202, pls. 1–18.
- BERLESE, A., 1910. Acari nuovi. Manipulus V, VI. *Redia*, **6**: 199–234, pls. 18–21.
- BULANOVA-ZAKHVATKINA, E. M., 1960. New representatives of primitive oribatid-mites from the superfamily Perlohmannoidea GRANDJEAN, 1958 (Acariformes). *Zool. Zhur.*, **39**: 1835–1848.
- EWING, H. E., 1907. New Oribatidae. *Psyche*, **14**: 111–115, pl. 3.
- FUJIKAWA, T., & J. AOKI, 1970. Five species of the genus *Liacarus* MICHAEL (Acari: Liacaridae). Taxonomic notes on oribatid mites of Hokkaido. III. *Annot. zool. Japon.*, **43**: 158–165.

2) The paper was published in anonymous status by careless mistake of the editor.

- GRANDJEAN, F., 1939 a. Observations sur les Oribates (11^e série). *Bull. Mus. Hist. nat. Paris*, (2), 11: 110–117.
- 1939 b. Ditto (12^e série). *Ibid.*, 11: 300–307.
- 1954. Étude sur les Palaeacaroides (Acariens, Oribates). *Mém. Mus. Hist. nat. Paris*, (n.s.), (A-Zool.), 7: 179–274.
- HAMMEN, L. VAN DER, 1959. BERLESE's primitive oribatid mites. *Zool. Verh.*, (40): 1–93.
- HAMMER, M., 1952. Investigations on the microfauna of northern Canada. Part 1. Oribatidae. *Acta Arct.*, 4: 1–108.
- KRIVOLUCKIJ, D. A., 1971. Some new oribatid mites from Altaj and Soviet Far East (Acariformes, Oribatei). *Věst. Čs. spol. zool.*, 35: 118–125.
- SCHUSTER, R., 1965. Über die Morphologie und Verbreitung einiger in Mitteleuropa seltener Milben (Acari-Oribatei). *Mitt. Naturwiss. Ver. Steiermark*, 95: 211–228.
- SCHWEIZER, J., 1956. Die Landmilben des schweizerischen Nationalparkes. 3. Teil: Sarcoptiformes REUTER 1909. *Ergebnisse der wissenschaftlichen Untersuchungen des schweizerischen Nationalparkes*, 5: 215–377.
- SELLNICK, M., 1928. Formenkreis: Hornmilben, Oribatei. *Tierw. Mitterleut.*, 3 (IX): 1–42.
- STRENZKE, K., 1962. Der erste Fund der Oribatide *Palaeacarus hystrichinus* in Deutschland (Acarina). *Zool. Anz.*, 168: 310–311.
- SUZUKI, K., 1973. Some new species of oribatid mites from the Izu Peninsula. IV. *Lanceoppia simplex* sp. n. *Bull. biogeogr. Soc. Jap.*, 29 (1): 1–6.
- TRÄGÅRDH, I., 1932. Palaeacariformes, a new suborder of Acari. *Ark. Zool.*, 24 B (2): 1–6.
- WILLMANN, C., 1931. Moosmilben oder Oribatiden (Oribatei). *Tierw. Deutschl.*, 22: 79–200.
- WOOLLEY, T. A., 1958. Redescription of EWING's oribatid mites, VIII–IX. *Trans. Amer. microsc. Soc.*, 77: 258–279.
- 1969. North American Liacaridae, III—New genera and species (Acari: Cryptostigmata). *J. Kansas ent. Soc.*, 42: 183–194.

