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A FEW ORIBATID MITES FROM EASTER ISLAND

By Marie Hammer[1]

Abstract: 11 species of oribatids were collected on Easter Island. 2 species are new to science; a new subspecies of *Carabodes imperfectus* Selln. is established, and 8 are well-known species.

In 1967 Mr G. Schlätzer, M. F., who had been sent out to Easter Island by the UNESCO in order to afforest parts of the island with its indigenous tree *Sophora toromiro* and others, at my suggestion collected some oribatids. For the help thus given to me I offer Mr Schlätzer my most cordial thanks.

Unfortunately it was not possible to take more than 10 samples, from which the mites were expelled immediately after the sampling. The samples were taken in the southwestern part of the Rano Kao crater, about 50 meters from the edge of the lake, 21 September 1967. Rano Kao is filled by a lake said to be extremely deep and its surface is covered by moss belonging to an endemic species of *Campylopus*. The lake is bordered by a fringe of totora (=*Scirpus riparius*), *Cyperus vegetus*, and *Polygonum acuminatum*, all of which are of American origin and are unknown in prehistoric Polynesia (Heyerdahl & Skottsberg; in part); they were probably introduced from the Andes countries. The walls of the crater rise steeply, 100-200 meters above the surface of the lake. Among scree and rocks a number of more or less indigenous species are growing, as well as species which have strayed into the place from the prehistoric and historical colonizations. Among the Filicinae there are *Microlepsia strigosa* and others; among seed plants there are *Thespesia populnea*, which may be spontaneous, and *Solanum insulae-paschalis*. Also present are adventive species and/or species which have run wild, such as *Caesalpinia bonduc*, sugar cane, banana, paper mulberry, and from historical times, pineapple, coffee, lemon-orange, fig, grape, *Robinia*, *Melia azedarach*, and *Cupressus macrocarpa* (information from Mr Schlätzer).

The 10 samples collected by Schlätzer have been classified in accordance with their humidity, so that I-III which were taken at the edge of the totora fringe, with a bottom vegetation of mosses, are "wet"; IV-VII, which were taken in moss, are "dry"; and VIII-X, which were taken on an open island of moss, are "medium".

The Roman numeral after each species indicates the number of the sample, and the Arabic numeral denotes the number of individuals found.

Nothrus oceanicus Sellnick Fig. 1.

Nothrus oceanicus Selln., 1959: 110, fig. 1.

Sample. VII: 1 adult.

Length: 0.72 mm. The single specimen described by Sellnick is 0.765 mm long. The present

1. Roland, Fredensborg 3480, Denmark.

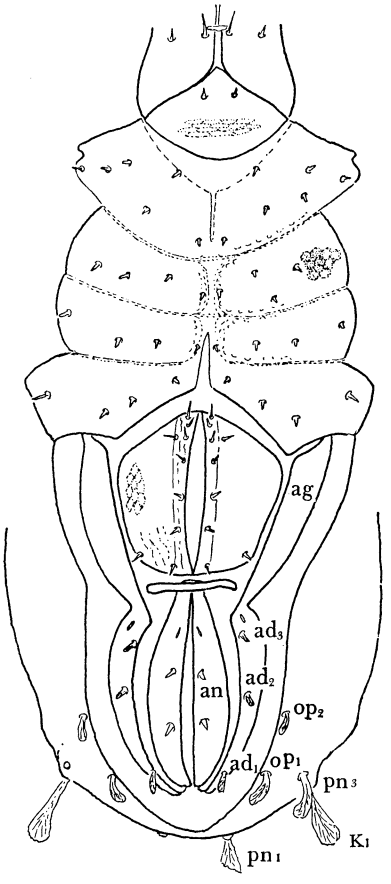

Fig. 1. *Nothrus oceanicus* Selln., ventral side.

specimen agrees with Sellnick's description of a ♀ from Raivavae, SE Polynesia.

An additional description of the ventral side of which only few details are mentioned by Sellnick follows (fig.1). Epimeres I-II from the 2 sides fused. Epimeres IV separated by a deep indentation which cuts halfway between epimeres III. Epimeric hair formula 6 : 4 : 4 : 4. All epimeric hairs appear as short and thick rods, perhaps because they are seen in an erect position. In the only specimen found they are not arranged completely symmetrically (see epimeres I-II). Epimeres pitted and distinctly punctate; faint chitinous knobs can be seen along their borders. There are 9 pairs of genital hairs which are more or less erect and seem short and thick. Seven hairs situated in a longitudinal row and 1 displaced slightly at anterolateral to the third and with another near lateroposterior border. Genital plates faintly pitted or reticulate. Aggenital plates separated from posterior border of epimeres IV by a narrow slit. Anal hairs short, thick, and dull. Adanal hairs ad3 and ad2 slightly longer, broader, and more leaf-shaped. Adl is leafshaped with a middle rib like Op2, Op1, and PN3, but shorter.

Nothrus oceanicus, which is very similar to *N. biciliatus* C. L. Koch, can be distinguished from the latter by its number of epimeric hairs (*N. biciliatus* 6 : 5 : 4 : 4 according to Sellnick & Forsslund, 1955) and by the appearance and position of the genital hairs (*N. biciliatus* has 8 long and pointed hairs in a longitudinal row, and 1 on the lateroposterior border according to Sellnick and Forsslund, 1955 : fig. 35). *N. biciliatus* is furthermore considerably larger. According to Sellnick (1959) it is 0.92 mm, and Willmann (1931) states it to be 0.925.

Oppiella nova (Oudemans)

Samples. II : 2; III : 4; IV : 4; V : 1; VII : 2; VIII : 4; IX : 1; X : 1; all adults. Length : 0.25-0.28 mm.

The specimens examined do not differ from the main form described from Europe.

Hydrozetes lemnae (Coggi)

Samples : I : 1 adult (young individual); II : 1 tritonymph.
Length : 0.46 mm.

The single adult specimen found differs from the specimens I examined from Ram, Jordan, and New Zealand by being distinctly pitted on the dorsal surface of the hys-

terosoma; this sculpture can perhaps be seen only in young individuals.

Tectocepheus velatus (Mich.)

Samples. VIII: 5; IX: 4; X: 12; all adults.
Length: 0.26-0.28 mm.

The cuspis is narrow at the tip and together with the general appearance, it is a typical *T. velatus*, although small in size.

Austrocarabodes imperfectus (Sellnick) **squamosus** Hammer, new subspecies Fig. 2.

Carabodes imperfectus Selln., 1959: 119, fig. 4b.—Aoki, 1966: 770, fig. 1-7.

Aoki (1966) partially described the species from Midway Island. The original description was made from an incomplete specimen. The specimens from Easter I. agree in all essential characters with the specimens from Midway I., but differ in several characters of less importance, but which warrants its establishment as a new subspecies.

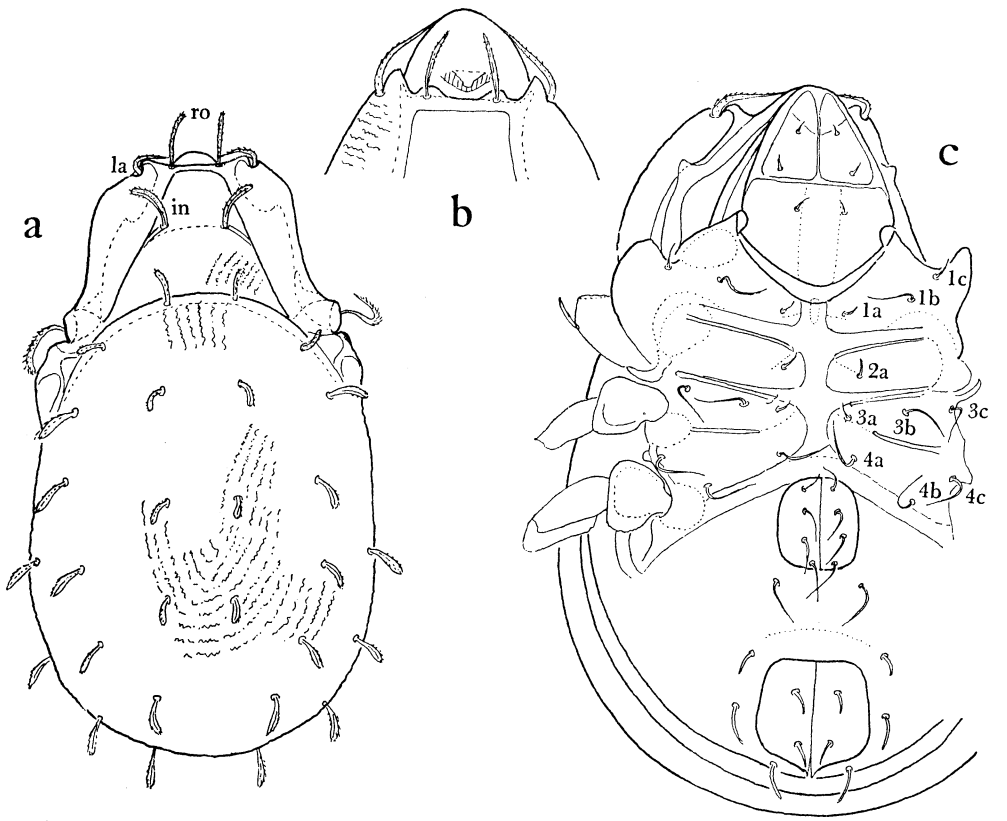

Fig. 2. *Austrocarabodes imperfectus* (Selln.) *squamosus*, n. subsp.: a, dorsal side; b, tip of propodosoma; c, ventral side.

Samples. I: 13; II: 9; III: 33; VIII: 6; X: 1, all adults.

Length: 0.42 (0.51)-0.57 mm (in 13 specimens)

As stated by Aoki the anterior end of the lamella in this species is angulate. This cannot, however, be seen in a dorsal view. When it is laid bare, i. e. when crushed, a big triangular cuspis appears between the lamellar and the rostral hair (fig. 2b). The rostrum, which in a dorsal view projects but slightly beyond the translamella, is, when laid bare, almost as long as broad. A V-shaped figure can be seen immediately in front of the translamella. Lamellar hairs almost reach tip of rostrum.

Sellnick states that the part in front of the translamella is distinctly pitted and he indicates pits or knobs on the propodosoma as well as on the hysterosoma. At the same time, he writes that the "surface of hysterosoma not perfectly smooth, but lacks both knobs and pits." Aoki shows a pitted lamella. The specimens from Easter I. have no pits anywhere. The sculpture of both the dorsal and the ventral surface consists of fine irregular jagged lines, which on the posterior part of the propodosoma run obliquely towards the anterior border of the hysterosoma. On the hysterosoma the lines are more or less longitudinal near the anterior border, oblique in the middle of the hysterosoma, and in the posterior part of the hysterosoma they run in transverse curves. They give the surface a scaly appearance (hence the subspecific name).

As Aoki pointed out, the hairs 1a, 1c, 2a, and 3a are considerably shorter than the rest. The 4 pairs of genital hairs are much longer than described by Aoki, and the same is true of the aggenital hairs. The adanal hairs are pointed, short, and thick (fig. 2c). The differences between the species and the specimens from Easter Island are all of minor importance and do not justify the establishment of a new species.

The species agrees with the species *Austrocarabodes* from New Zealand (Hammer 1966: 59, fig. 82–84) by having 14 pairs of notogastral hairs (none of them situated on the shoulder); by the position of the rostral hairs on the dorsal surface behind the tip of the rostrum; by having 4 pairs of genital hairs; and by the sharp medioposterior tip of the anal plates. Epimeric hair formula 3: 1: 3: 3 (not 4 in epimere IV as stated by Hammer 1966: 59, the 4th one being caused by a light puncture near the sternal plate).

Siculobata sicula (Berl.)

Siculobata sicula Granjean, 1953: 128, fig. 4-6.

Samples. I: 1; VII: 1.

Length: 0.42; 0.48 mm.

The 2 specimens found agree with the description by Grandjean except that 1 specimen has only 4 sacculi on either side of the hysterosoma while the others have 4 on the left side, 5 on the right side, all of them very distinctly noticeable on the completely clean surface. Grandjean states that there are always more than 4 sacculi on each side.

Scheloribates praeincisus (Berl.) var. **interruptus** Berl. Fig. 3

Scheloribates praeincisus (Berl.) var. *interruptus* Berl., 1916: 315.

Protoribates (Scheloribates) praeincisus v. *interruptus* Willm., 1931: 273, fig. 45.—Sellnick, 1925: 82, fig. 4-5.

Samples. I: 1; II: 2; III: 3, all adults.
Length: 0.35 (0.38)-0.41 mm.

The present specimens in all essential characters agree with the description of the main form given by Sellnick, and in details in the description of the variety *interruptus* given by Willman. As both authors did not figure the notogastral hairs due to their minute size, a figure of the dorsal side is illustrated. It is necessary to add only a few characters to the previous descriptions.

Pseudostigmatic organs as longish clubs, rounded at tip and set with minute bristles. Notogastral hairs hardly discernible, easily seen in profile on posterior border. Hairs pl set very close together. Hair pores longish, narrow in middle, or divided into 2 parts, with the hair issuing from the smaller part. All tarsi with 3 claws as Willmann stated for the variety. Berlese indicates the length to be 500 μm; Sellnick states from 319 to 462 μm for the main form; Willman says 345 to 375 μm for the main form, 570 μm for the variety. The specimens from Easter I. thus are of small size. Willman found the variety on a lake bank and in *Nepenthes* flower in Sumatra, and in coconuts full of water on Java. Sellnick found it on dead banana leaf on Rurutu I. in SE Polynesia.

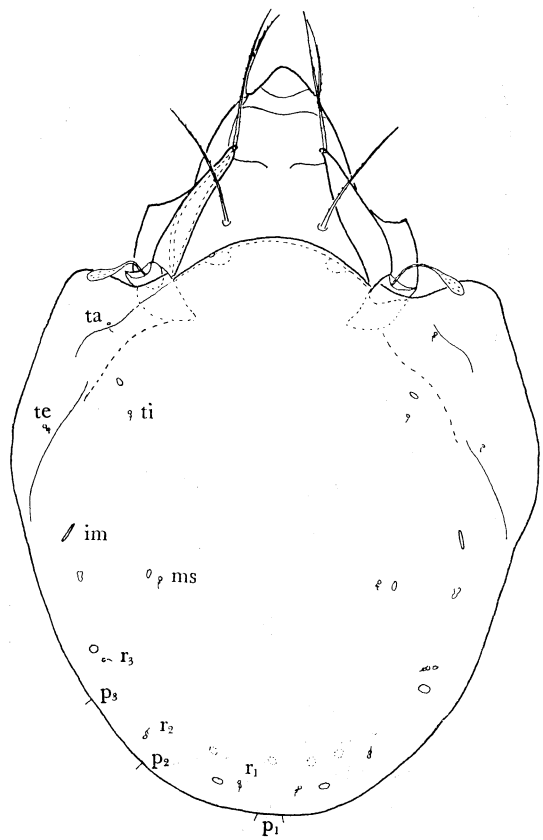

Fig. 3. *Scheloribates praeincisus* Berl. var. *interruptus* Berl., dorsal side.

Anellozetes fusiformis Hammer, new species Fig. 4.

Samples. I: 42; II: 30; III: 45; IV: 8; V: 15; VI: 24; VII: 19; VIII: 8; IX: 5; X: 8, all adults.

Length: 0.44 (0.47)-0.51 mm (in 15 specimens).

Present species with semilunar ring surrounding rostrum on lateral sides very distinct immediately in front of translamella, the 2 parts joining here. Rostral hairs, lamellar, and interlamellar hairs are all very long, and of approximately the same length. They are barbed. The translamella is a narrow straight line. Cuspes low and almost 2 × as broad as lamella immediately behind translamella. Tutorium with 2 distal tips, dorsal one being the longest. Pseudostigmatic organs (fig. 4b) slender, as spindle-shaped clubs (hence the specific name), equally broad throughout with a very short stalk. Area porosa adalaris a little larger than the rest. Notogastral hairs tiny.

Ventral side (fig. 4c). There is no sternal plate and no sculpture. Apodema II and sejugal apodema well chitinized, but do not by far reach middle of ventral side. Epimeric hair for-

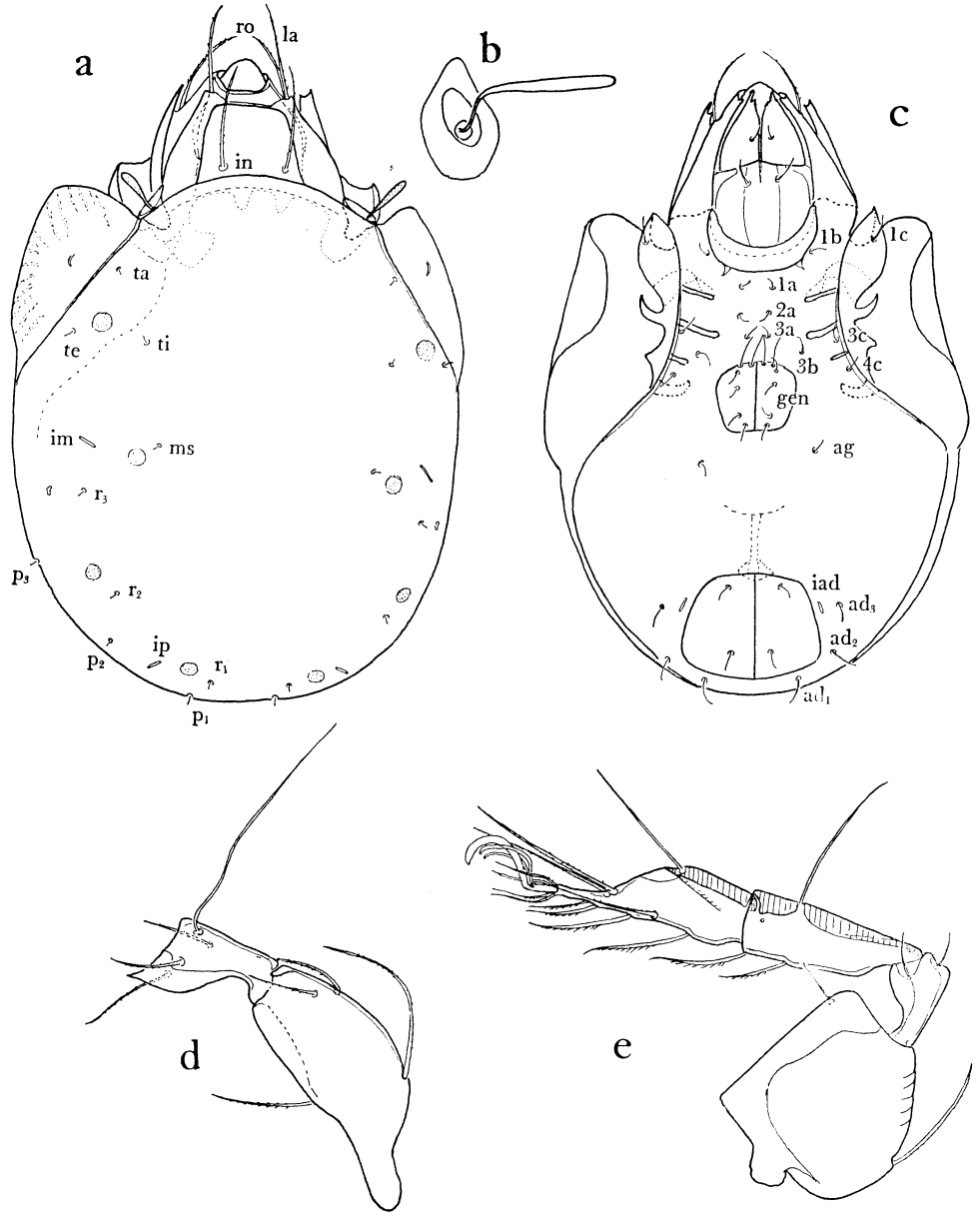

Fig. 4. *Anellozetes fusiformis*, n. sp.: a, dorsal side; b, pseudostigmatic organ from right side; c, ventral side; d, femur and genu I; e, leg IV.

mula 3: 1: 3: 1. All the hairs short and thin. There are 6 pairs of genital hairs. The 2 anterior pairs are so long that they reach 3a. Remainder much shorter. There is a long distance between number 4 and number 5. Aggenital hairs as long as epimeric hairs. Adanal hairs

perhaps slightly longer. Genu I and II have a strong pointed tooth (fig. 4d). Leg IV (fig. 4e) with a very broad ventral keel on femur, but what makes it interesting is a strong chitinization on the dorsal side of the tibia and the tarsus. On the tarsus it ends distally in a tip behind which there is a stiff, thin spine or hair; a hollow can be seen below and in front of the chitinized tip.

Note. The present species can easily be distinguished from other previously described species of *Anellozetes* by its broad cuspes, the fusiform pseudostigmatic organs, the presence of tiny notogastral hairs together with the complete ring in front of the translamella and the long rostral, lamellar and interlamellar hairs.

Galumna fordi (Jacot)

Zetes fordi Jacot, 1934: 73, pl. 11, fig. 118-120.

Samples: I: 5; II: 3; III: 4.

Length: 0.46 (0.49)-0.52 mm (in 5 specimens). Jacot indicates the length to be 0.49 mm.

The specimens from Easter I. agree with the original description of *fordi*, which was found under stones on a hillside, Manoa Valley, Oahu, in a much drier biotope than that of Easter Island.

Microtritia tropica Markel Fig. 5.

Microtritia tropica Mark., 1964: 48, fig. 11.

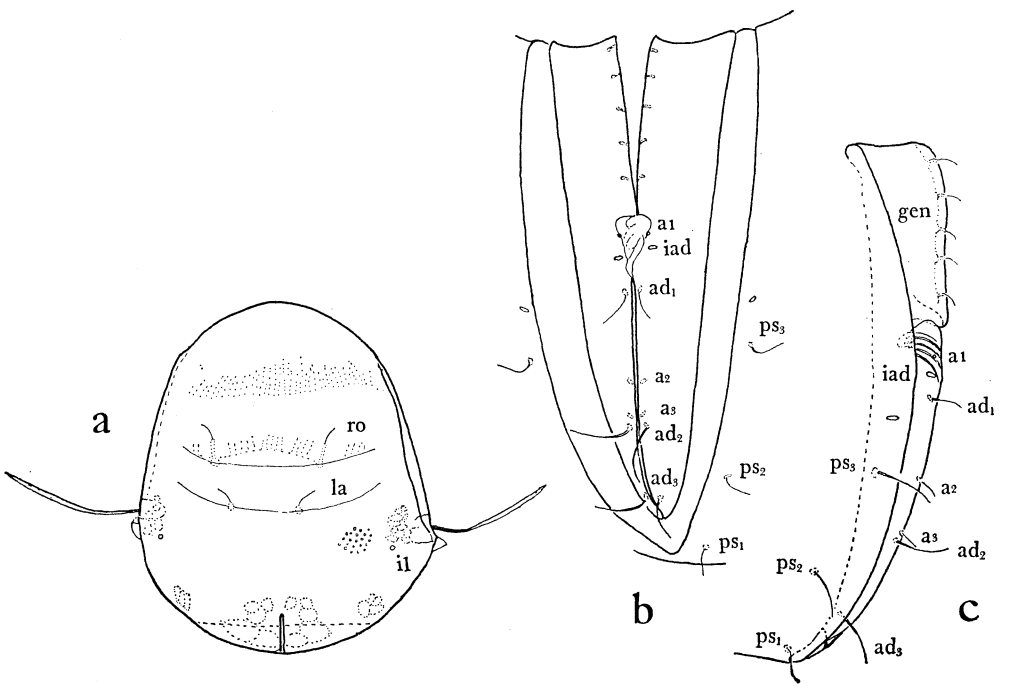

Fig. 5. *Microtritia tropica* Markel: a, aspis in dorsal view; b, genital-anal plates in ventral view; c, genital-anal plates in profile.

Samples. I: 1; IV: 6; V: 19; VI: 25; VII: 19; VIII: 14; IX: 3.

Length of notogaster: 0.34 mm; height of notogaster: 0.28 mm.

Length of genital plate: 0.10 mm; length of anal plate: 0.16 mm.

The specimens from Easter I. agree in all essential characters with the description given by Markel, but differ in a few details, mostly regarding the appearance of the aspis, where more details can be seen than shown by Markel. Across the aspis there is a belt bordered on both sides by a distinct clear line. Between the rostral hairs there is a curved line, as also drawn by Markel, from where short broken lines run forwards. They can easily be seen against the darker surface. Further anteriorly a broad transverse belt of short lines with luminous punctures is easily perceptible. This part of the dorsal surface is darker in color than the posterior part of the aspis. In the latter faint whitish punctures can be seen, apparently under the surface at a slightly deeper level.

The ventral plates agree with the description given by Markel. I am, however, unable to see the genital and the anal hairs in a ventral view (fig. 5b); in profile they are distinct (fig. 5c). The notogaster is finely shagreen, but seen from a deeper level it is distinctly punctate.

This species has previously been found only in Peru, mainly in tropcial rain forests.

Sabacarus ranokaoensis Hammer, new species Fig. 6.

Samples. V: 2; VI: 1; VII: 1.

Aspis approximately 0.225 mm long. Aspis broad with almost parallel sides and rostrum broadly rounded (fig. 6b). Rostral hairs 2× as long as their mutual distance. On either side of them the integument is longitudinally striated. Lamellar hairs slightly longer than rostral hairs and situated far laterally. Interlamellar hairs as long as rostral hairs and situated slightly further laterally than lamellar hairs, off pseudostigma. Pseudostigmatic organ (fig. 6c), slightly curved, moderately long, dilated and membranous whereas the stalk is thickened. Exopseudostigmatic hair only 1/2 as long as interlamellar hair. There is no lateral keel. A posterior median keel is present. Below and behind the pseudostigma there is a very pointed triangular scale.

Notogaster light brown, approximately 0.45 mm long diagonally (fig. 6a). There are 14 pairs of thin curved hairs. Psl is situated very low. Fissures ih and gla markedly anterior in position. The hair pore f2 seen immediately in front of gla, but separated from the latter. Ia, im and ip are absent.

Genital-anal region (fig. 6d). There are 7 short genital hairs and 2 aggenital hairs, the pores being distinct, but I have been able to see only the hair ag2. There are 2 rather long anal hairs and 3 adanal hairs, the latter being a little longer than anal hairs. Ad2 and ad3 longer than ad1. Iad is situated off anl and in front of adl.

Infracapitulum and palp shown in fig. 6d. There are only 2 pairs of adoral hairs, orl being broad and hairy distally. The infracapitular hairs are long.

Legs I and III are shown in fig. 6f and g. Short coupling hairs present on genus I-III; genu IV without solenidion. The coupling hairs of all the tibiae are longer than associated solenidia. The famula is thick and hooked. All tarsi monodactylous.

Sabacarus ranokaoensis is very similar to the type specimen, *S. corneri* Ramsay & Sheals, 1969 from North Borneo, but can be distinguished as follows: 1) Better developed aspal setae. 2) Shape of the sensillus which is distally dilated and membranous in both, but membranous part much more elongate in Eastern Island specimen. 3) Bothridium has

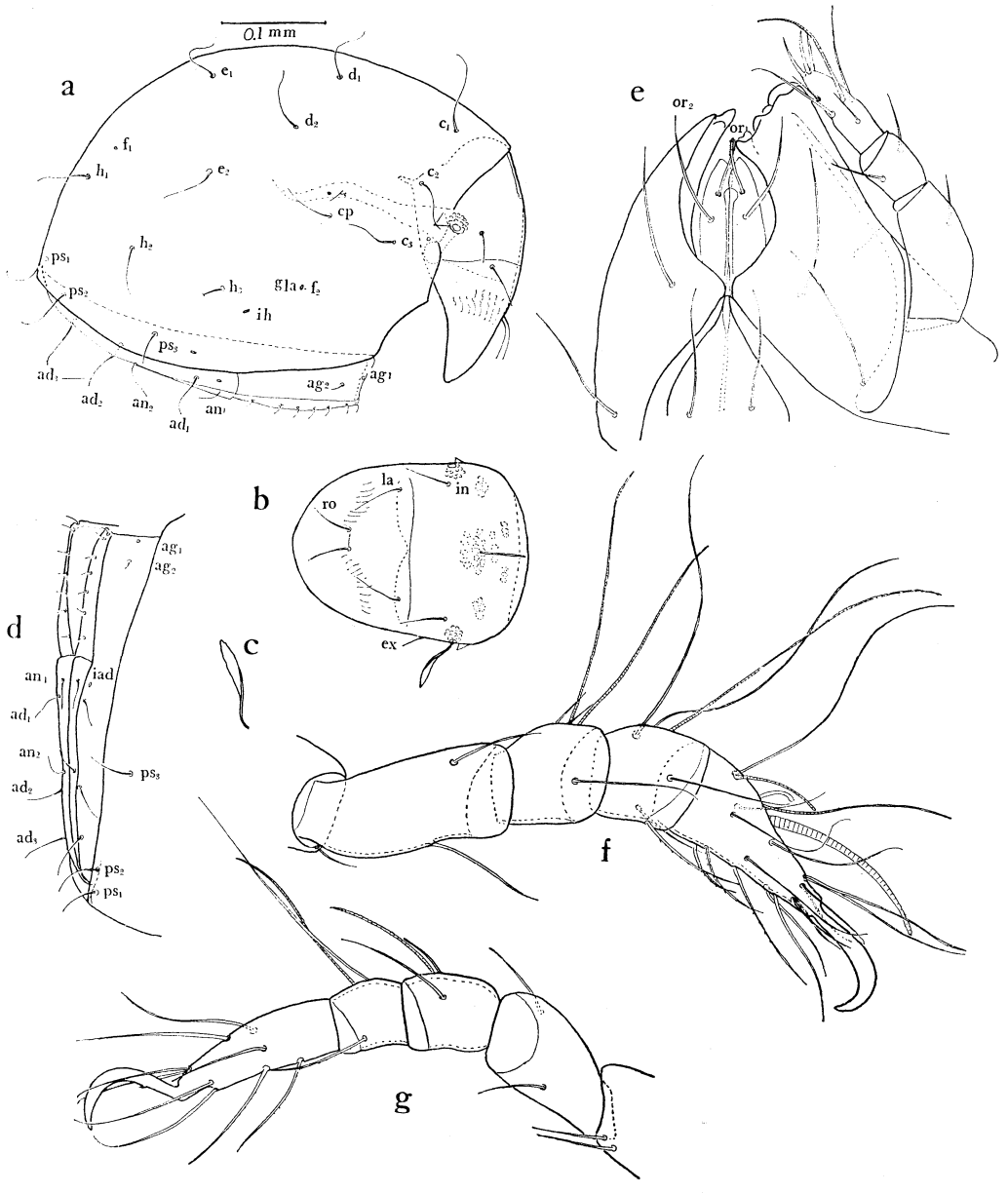

Fig. 6. *Sabacarus ranokaoensis*, n. sp.: a, dorsal side; b, aspis in dorsal view; c, pseudostigmatic organ; d, genital-anal plates in ventral view; e, infracapitulum and palp; f, leg I; g, leg III.

alveoli associated with its chambers - not so in the North Borneo species. 4) Notogastral setae better developed. 5) Greater relative length of setae an2, an3, and ad3 (in fig. 6d - anl, an2, and adl [M. H.]). 6) Vestige of seta f2 not contiguous with gla. 7) Palp setae better developed—3 terminal eupathidia present. 8) Relatively longer infracapitular setae. 9) The size is similar, the Easter Island specimen is slightly larger.

This comparison between *Sabacarus corneri* and *S. ranokaoensis* has been made by Dr Ramsay and I here take the opportunity to thank both Drs Ramsay and Sheals for their great help in the identification of *S. ranokaoensis*. In the description of *ranokaoensis* I have not used the same terminology as that used by Ramsay & Sheals, for which reason there is some disagreement between my description and that part made by Ramsay.

It is surprising that this presumably small part of the fauna of oribatids of Easter Island mainly consists of well-known species. Some of these, such as *Nothrus oceanicus* Selln. (SE Polynesia, Easter I.), *Austrocarabodes imperfectus* (Selln.) (SE Polynesia, Midway, and Easter I.), and *Scheloribates praeincisus* (Berl.) (Java, Sumatra, SE Polynesia, and Easter I.) are known only from the Pacific area, inclusive of Java and Sumatra. The fact that the comparatively few species of oribatids are found again and again scattered over so great distances as here, relates a little about the difficulty of possible adventive species from other parts of the globe gaining footage. It is the area's own species which turn up again and again. Several of the species mentioned here appear as subspecies, which suggests a very long isolation on the various islands or groups of islands. This fact, too, seems to show the species are not easy to carry from island to island.

Other Easter I. oribatids have obviously been brought in within historical times. This applies to *Oppiella nova* (Oudms.), *Hydrozetes lemnae* (Coggi), *Tectocepheus velatus* (Mich.), *Siculobata sicula* (Berl.), and presumably to *Microtritia tropica* Markel, the distributon of which is still little known. The first-mentioned 3 species are widely distributed nearly all over the globe, thus all of them in New Zealand, on Viti Levu (the Fiji Is.), and in South America, where *Microtritia tropica* also occurs. It cannot be precluded that they may have been brought in by totora rushes from the Titicaca Lake at a possible settlement on Easter I. by South American Indians; nor can the possibility be ruled out that they have been brought in a different way, e. g. in earth together with the adventive trees mentioned in the introduction. As they do not differ from the main form, as is the case of *Oppiella nova* (Oudms.) var. *sumatrensis* Willm. on the Sunda Islands, or in the case of the same species in an isolated valley in the mountain range Tien-schan in Turkmenistan (Hammer, in press), the species in question presumably cannot have been on Easter Island within an incalculably long period.

Siculobata sicula (Berl.) may have been an adventive species introduced by Citrus fruits or trees. According to Grandjean (1953), Berlese described this species from individuals collected in large numbers from lemon and orange trees at Palermo. Grandjean, who found it in Algeria, writes that it is xerophilous, arboricolous, or saxicolous.

REFERENCES

Aoki, Jun-ichi. 1966. Oribatid mites from bird's nests on Midway Island (Acari : Cryptostigmata). *Pacif. Ins.* **8** (3).

Berlese, A. 1916. Centuria terza di Acari nuovi. *Redia* **12.**

Grandjean, F. 1948. Sur les Hydrozetes (Acariens) de l'Europe occidentale. *Bull. du Museum,* 2e serie, **20** (4).

1949. Sur le Genre Hydrozetes Berl. (Acariens). *Bull. du Museum,* 2e serie, **21** (2).

1953. Sur les Genres "Hemileius" Berl. et "Siculobata", n. g. *Mem. Mus. Nat. Hist. Nat.,* n. ser., A Zoologie, **6** (2).

Hammer, M. 1968. Investigations on the oribatid fauna of New Zealand. Part III. *Biol. Skr. Dan. Vid. Selsk.* **16** (2).

1970. A few oribatid mites from Centralasia. *Zool. Anz.* (in press).

Jacot, A. P. 1934. Some Hawaiian Oribatoidea (Acarina). *Bull. B. P. Bishop Mus.* **121.**

Markel, K. 1964. Die Euphthiracaridae Jacot, 1930, und Ihre Gattungen (Acari Oribatei). *Zool. Verh. Rijksmus. Nat. Hist., Leiden* **67.**

Ramsay, G. W. & J. G. Sheals. 1969. Euphthiracaroid mites (Acari: Cryptostigmata) from North Borneo. *Bull. Brit. Mus. (Nat. Hist.) Zool.* **18** (3).

Sellnick, M. 1959. Acarina from Southeastern Polynesia - II (Oribatidae). *Occ. Pap. B. P. Bishop Mus.* **22** (9).

Sellnick, M. & K. - H. Forsslund. 1955. Die Camisiidae Schwedens (Acar. Oribat.) *Arkiv Zool.* ser. 2, **8** (4).

Willmann, C. 1931. Moosmilben oder Oribatiden (Oribatei). *Tierwelt Deutschlands,* **22.**

1931. Oribatei (Acari) gesammelt von der Deutschen Limnologischen Sunda-Expedition. *Archiv Hydrobiol.* suppl. 9 (Tropische Binnengewässer II).