

INSECTS OF CAMPBELL ISLAND. MESOSTIGMATA: LAELAPTIDAE^{1,2}

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Abstract: Three species—2 new—and 1 new subspecies of laelaptid mites representing 3 genera—1 new—are recorded from Campbell Island, one of the sub-Antarctic islands. The following species are listed: *Ayersacarus plumapilus*, n. sp., *A. gressitti*, n. sp., *Leptolaelaps reticulatus* Evans *campbellensis*, n. subsp. and *Androlaelaps* (= *Haemolaelaps*) *pachyptilae* (Zumpt and Till). Collections were made from soil samples, ground litter, and bird nests.

The material included in this study was collected from Campbell Island, from 1961-1963. Collections were made by Dr J. L. Gressitt, K. A. J. Wise, and K. Rennell of Bishop Museum. This paper records 3 species—2 new—and 1 new subspecies of laelaptid mites representing 3 genera, 1 of which is new. Primary types are deposited in the Dominion Museum Wellington, New Zealand, with series in Bishop Museum, Honolulu, Hawaii. Where specimens are available, paratypes will be deposited in the United States National Museum (USNM), Washington, D. C.; British Museum (Nat. Hist.) (BMNH), London; Australian National Insect Collection (ANIC), Canberra, Australia; and Dept. of Entomology, University of Georgia (UG), Athens, Georgia.

Genus *Ayersacarus* Hunter, n. gen.

Large, well sclerotized mites; dorsal plate covering dorsum or all but a narrow band laterally and posteriorly; leg I narrower than other legs; all tarsi with claws, laterodistal elements associated with claws II-IV; palpal tarsal seta 2-tined. ♀ with large metapodal plate, usually with a seta arising from plate; genito-ventral plate slightly expanded behind coxae IV, ending well short of anal plate; 2 pairs of setae arising from surface of genito-ventral plate; sternal plate longer than wide, bearing 3 pairs of setae; chelicera with a spine-like process arising from lateral surface of fixed digit. ♂ with holovertral plate; long posteriorly directed spermatodactyl process arising from mediolateral surface of fixed digit. Type species: *Ayersacarus plumapilus* Hunter, n. sp.

This genus is distinct in the ♀ by its large body size, large metapodal plate, usually bearing a seta, and 2 pairs of setae on the genito-ventral plate. In this last characteristic

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the genus resembles *Pseudopachylaelaps* Evans, but the large metapodal plate plus the metasternal setae arising from separate plates easily separates *Ayersacarus* from *Pseudopachylaelaps*. The long posteriorly directed spermatodactyl process arising from the lateral surface of the chelicera appears to be distinctive in the ♂.

Ayersacarus plumapilus Hunter, n. sp. Fig. 1.

The ♂ and ♀ of this species may be recognized by the following characteristics: dorsal setae fringed; peritremal plate strongly joined to parapodal plate; ventral body setae fringed. In the ♀ the posterior setae on the genito-ventral plate and the seta on the metapodal plate are fringed; in the ♂ some setae on the holoverntal plate are fringed and a spoon-like seta arises from near the base of the spur on femur IV.

♀: Body broadly oval, 1128 μ long, 716 μ wide (all measurements for both sexes are the average of 10 specimens). *Dorsum*. Dorsal plate covering most of dorsum except for a strip at posterior and lateral margins of body; surface of plate marked by scale-like striae and by "granular" spots, which are more abundant along striation lines; 39 pairs of setae plus 3 or more accessory setae between J setae (see Costa, 1961, for setal notations); all dorsal setae fringed, setae up to 58 μ long. [The fringed setae appear to be split longitudinally, 1/2 having a row of fine cilia as a fringe along the inner margins, the other 1/2 of the seta without a fringe and forming a sheath around the basal part of the fringed 1/2 while terminally extending as a guard to the delicate fringe structure (fig. 1C). Apparently the setae can open and close as all conditions, from those with fringe completely

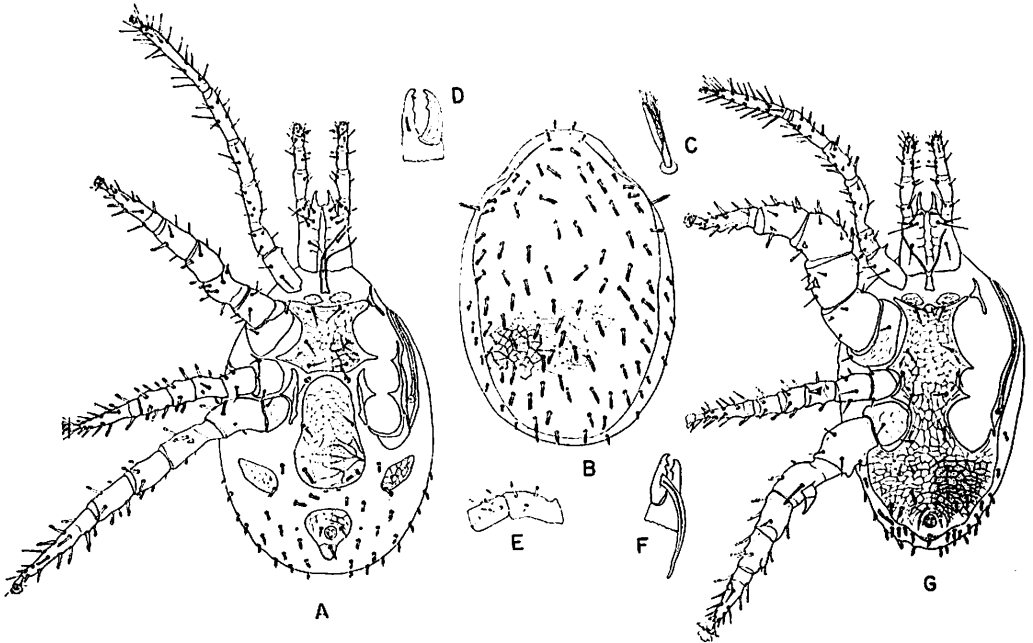


Fig. 1. *Ayersacarus plumapilus*, n. sp. A, ventrum of ♀; B, dorsum of ♀; C, dorsal plate seta; D, ♀ chelicera; E, dorsum of genu and femur IV, ♀; F, ♂ chelicera; G, ventrum of ♂.

exposed to those with fringe enclosed, were found on different specimens without any obvious pattern.] Humeral seta 77μ long, fringed, arising from integument above coxa II. *Ventrum*. Presternal plates connected by semisclerotized integument. Sternal plate 225μ long, 184μ at narrowest width between coxae II; setae, pores, and striations as shown; granular spots on entire surface of plate but chiefly following striation lines. Metasternal seta and pore on small metasternal plate. Tritosternum consisting of a base and 2 feathery lacinae. Genito-ventral plate slightly widened behind coxae IV, anteriorly ending just short of sternal plate; 255μ at widest point, 425μ on midline from posterior of sternal plate to end of genito-ventral plate; striations as shown; surface of plate covered with granular spots, spots more concentrated along striae; 2 pairs of setae on plate, anterior pair simple, posterior pair fringed. Two small platelets in integument behind genito-ventral plate. Anal plate 184μ long, 179μ wide; shape of plate and striations as shown; posterior unpaired seta fringed, paired setae simple. Metapodal plate large, 189μ long, 92μ wide; surface covered by striations and granular spots; pore-like structure present; a fringed seta arises from margin of plate. Well developed endopodal plate median of coxa III and IV. Two parapodal plates: 1 partially encircling coxa IV posteriorly and extending forward to level of posterior $1/2$ of coxa II; forward of this a small separate plate abuts against corner of sternal plate. Peritremal plate well developed; posteriorly strongly fused to parapodal plate; anteriorly joins dorsal plate above coxa I. Ventral body setae fringed, setae up to 28μ long on opisthosoma. *Legs*. Legs I distinctly thinner than others, coxa with a spine on distal margin. Small boss-like structure on ventrum of femurs III and IV, that on IV longest. All legs, especially II-IV, with some lateral and dorsal setae ending in a weakly sclerotized, flattened or spoon-like process (see fig. 2E). Dorsum of femur IV with distal seta spoon-like and of about same length as other dorsal setae on that segment. All tarsi with well developed claws; distinct seta-like laterodistal elements associated with claws II-IV. Legs, including claws and coxae, measured as follows: I, 1146μ ; II, 871μ ; III, 854μ ; and IV, 1207μ long. *Gnathosoma*. Relative lengths of setae as shown. Deutosternal groove with several rows of teeth, many teeth per row. Palpal genu with a blunt, slightly bifid seta arising from medial surface; tarsus with a 2-tined seta. Corniculi well sclerotized. Chelicera strongly chelate; fixed chela with a short anteriorly directed spine-like process arising from lateral surface near base of digit; movable digit with 2 teeth, fixed digit with small spine-like pilus dentilis and several small and 2 larger teeth.

♂: Body widened at level of coxae II; 974μ long, 586μ wide. *Dorsum*. Dorsal plate covering dorsum; surface of plate and setae as in ♀. *Ventrum*. Covered by a holovertral plate 735μ long, 158μ wide between coxae II and 442μ at widest point behind coxae IV; 10 pairs of setae (anterior setae simple, 2-5 pairs of posterior setae fringed) in addition to the 3 anal setae; postanal seta fringed, paired anal setae simple; striations as shown; granular spots on plate generally restricted to area of striae. Peritremal plate strongly fused to holovertral plate lateral of coxae IV, anteriorly joins dorsal plate above coxa I. Two presternal plates connected by semisclerotized integument. Small parapodal plate adjacent to anterior corner of holovertral plate; posterior parapodal plate fused to holovertral plate posterolaterally of coxa IV. Ventral body setae short, fringed. *Legs*. Leg I slender; coxa with lateral spine near junction with trochanter; tarsus with slender, simple setae. Leg II thick (in the illustration this leg is drawn from a lateral view which makes it appear somewhat thicker than normal); blunt spur on ventrum of tibia and ge-

nu, a larger pointed spur on femur; ventrum of tarsus with 2 spur-like knobs. Leg III with strong spine on ventral surface of femur. Leg IV with heavy pointed spur on femur, tip of spur heavily sclerotized, a large spoon-like seta arising from near base of spur; trochanter with 2 boss-like processes ventrally, proximal one with seta arising from surface; boss-like process on tibia from which arises a small seta, similar process but without seta near middle of tarsus. Spoon-like setae present on all legs. Laterodistal elements associated with claws II-IV. Legs including claws and coxae measured as follows: I, 1090 μ ; II, 851 μ ; III, 741 μ ; and IV, 1090 μ long. *Gnathosoma*. Position and relative lengths of setae as shown. Palpal genu setae as in ♀. Chelicera chelate; movable and fixed digits each with 1 large tooth; posteriorly directed spermatodactyl process, 145 μ long, originating from lateral surface of movable digit mid way between base and tip. Paratypes were used for illustration of some ♂ structures.

This species was described from a series of 40 ♀♀ and 22 ♂♂ from Campbell I. Additional specimens not used in the type series were included in the material. Specimens of both sexes of the type series were collected from grey-headed mollymawk nest, 14. XII. 1961 and 13. II. 1963; penguin nest, 28. XI. 1961; chicken yard debris, 6-11. XII. 1961; moss, 4-13. XII. 1961; leaf mold, 5. II. 1963; *Colobanthus* (Umbelliferae), 14. XII. 1961; and Berlese of *Chrysobactron*, 24. II. 1963. Holotype ♀ (DOM. Mus.), Campbell I., ex grey-headed mollymawk nest, 14. XII. 1961, J. L. Gressitt. Allotype ♂, Campbell I., ex Berlese of *Chrysobactron*, 24. II. 1963, K. A. J. Wise.

Paratypes: 10 ♂♀ (BISHOP); 2 ♂♀ (USNM, BMNH, ANIC); 3 ♂♀ (UG); remaining paratypes and material in Bishop Museum.

Two protonymphs and 10 deutonymphs were included in the collection. These specimens were taken in conjunction with adults or from similar habitats. Both stages showed the fringed dorsal plate and ventral body setae of the adult. The chaetotaxy of the deutonymph is quite similar to that of the ♀, but the protonymph shows differences in having the dorsal plate divided and in some leg setae. The ventral plate chaetotaxy is typical of laelaptid and protonymphs and deutonymphs, the type of setae being similar to corresponding setae of the ♀.

Ayersacarus gressitti Hunter, n. sp. Fig. 2.

Both sexes of *gressitti* have fringed dorsal setae and the peritremal plate is not fused to the parapodal plate. The ♀ is distinct in not having a setae on the metapodal plate and in having simple setae on the genito-ventral plate. The ♂ has a simple seta arising from near the base of the spur on leg IV, and 2 pairs of fringed setae on the holovernal plate.

♀: Body elongate, 1143 μ long, 654 μ wide (measurements are the average of 6 specimens). *Dorsum*. Dorsal plate covering dorsum; surface of plate marked by striations; granular spots along striae; 40 pairs of dorsal plate setae; all dorsal plate setae fringed; anterior setae longest, median opisthosomal setae up to 62 μ long; 3 to 4 pairs of accessory setae between the J rows. Shorter fringed setae arise from lateral body integument; fringed humeral seta, which is about 2 \times as long as adjacent setae, arises from integument above coxa II. *Ventrum*. Sternal plate 241 μ long on midline, 167 μ at narrowest width between coxae II; 3 pairs of setae, 1st pair arising from extreme anterior margin of plate; 2 pairs of pores; surface of plate marked by striations with granular spots along striae. Two sclerotized spots in integument behind sternal plate. 2 small presternal plates. Meta-

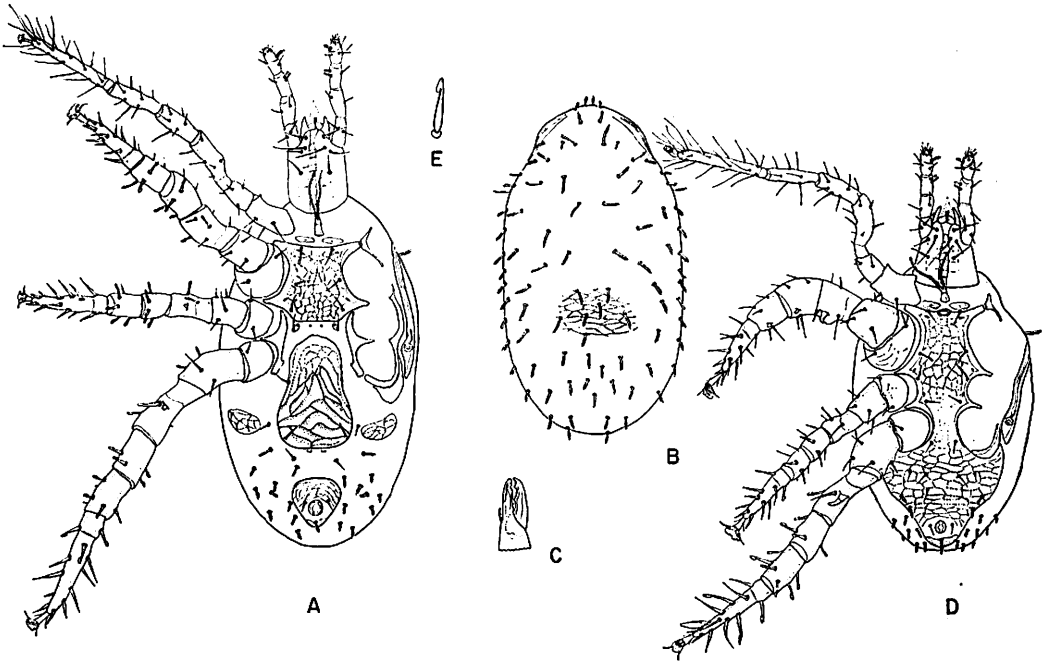


Fig. 2. *Ayersacarus gressitti*, n. sp. A, ventrum of ♀; B, dorsum of ♀; C, ♀ chelicera; D, ventrum of ♂; E, spoon-shaped leg seta.

sternal seta and pore on small metasternal plate. Strongly developed endopodal plate medial of coxae III and IV. Two parapodal plates: posterior one extending from behind coxa IV to area of coxa II, enlarged posterior of coxa IV; anterior plate small and abuts against sternal plate. Peritremal plate free in integument, extends anteriorly to join dorsal plate. Metapodal plate oval shaped, $123\ \mu$ long, $65\ \mu$ wide; striations on plate with granular spots along striae; plate without pore or seta. Genito-ventral plate drop-shaped, $400\ \mu$ long on midline from posterior margin of sternal plate, $239\ \mu$ wide, ending short of sternal plate anteriorly; striations as shown; some concentrations of granular spots on posterior 1/2 of plate in addition to those along striae; plate bears 2 pairs of simple setae. Two small platelets in integument just behind genito-ventral plate. Anal plate $184\ \mu$ long, $160\ \mu$ wide; with striations and granular spots; 1 pair of simple setae, unpaired seta fringed. Two pairs of simple ventral body setae—1 pair lateral and 1 pair immediately posterior to genito-ventral plate—remaining setae fringed; anterior pair of fringed setae longer than posterior setae (this anterior pair of setae are located on the metapodal plate in *A. plumapilus*). *Gnathosoma*. Deutosternal groove with 7 rows of teeth, up to 15 teeth per row; relative lengths of setae as shown; hypostome with a median seta-like projection, lateral of this a bulbous structure. Corniculi well sclerotized. Palpal genu with a rod-like seta and 1 seta slightly divided on medial surface. Chelicerae chelate, fixed digit with small spine-like pilus dentilis, and on lateral posterior 1/2 a strong spine-shaped anteriorly directed process; movable digit with 2 subterminal teeth. *Legs*. Leg I slender, coxa with lateral distal point; setae simple. Legs II-IV with some setae which end in a weakly sclerotized, flattened or spoon-like structure. Femur III and IV each with a ventral spur. Tarsus IV with some heavy spine-like setae. Dorsum of femur IV with distal seta of about same length as other setae of that segment. Seta-like lateral distal elements associated with

claws II-IV. Legs, including claws and coxae, measured as follows: I, 1145 μ ; II, 870 μ ; III, 845 μ ; and IV, 1230 μ long.

♂: Known from a single specimen. Body slightly widened at level of leg II; 970 μ long, 580 μ wide. *Dorsum*. Dorsal plate covering dorsum; striations and chaetotaxy as in ♀; setae fringed, appear slightly more pointed than in ♀. *Ventrum*. Holoventral plate 760 μ long, 150 μ wide between coxae II, 410 μ wide behind coxae IV; striations becoming very faint between legs IV, elsewhere striations with granular spots along striae lines; plate bears 9 pairs of simple setae and 2 pairs of short, fringed setae in addition to a fringed postanal seta. Peritremal plate free in integument posteriorly, fused to dorsal plate anterodorsally. Small parapodal plate abuts against corner of holoventral plate between coxae I and II, a 2nd plate is fused to holoventral plate posterior to coxa IV. All setae arising from integument fringed. Two presternal plates between holoventral plate and tritosternum. *Gnathosoma*. As in ♀. Chelicera as in *A. plumapilus*. *Legs*. Leg I slender, spine-shaped process on distal margin of coxa; setae simple. Leg II with a ventral lateral spur on tibia, genu, and femur; spur on femur considerably the largest. Leg IV with 2 weakly developed boss-like structures on trochanter, a seta associated with proximal one; strong ventral spur on femur, tip of spur heavily sclerotized; a long simple seta arises from near base of spur; tarsus with heavy spine-like setae. All tarsi with claws; seta-like laterodistal elements associated with claws II-IV. Legs, including claws and coxae, measured as follows: I, 1060 μ ; II, 840 μ ; III, 780 μ ; and IV, 1120 μ long.

Type series consisted of 25 ♀♀ and 1 ♂ all collected from Campbell I. Holotype ♀ (DOM. Mus.), Mt. Lyall, Berlese of low plants, 19.II.1963, K. A. J. Wise. ♀ paratypes data: penguin nest, 28.XI.1961; *Colobanthus*, 12.XII.1961; *Puffinus griseus* (sooty shearwater) burrow, 12.II.1963; leaf mold, 3.III.1963; moss, 6.II.1963; and *Dracophyllum*, 5.II.1963. Paratypes were collected by Dr. Gressitt and K. A. J. Wise. Allotype ♂ (BISHOP), S of Courrejolles, ex *Puffinus griseus* burrow, 12.II.1963, K. A. J. Wise. Fourteen paratypes (BISHOP); 12 paratypes (USNM, BMNH, ANIC, DOM. Mus., and UG).

Genus *Leptolaelaps* Berlese, 1918

Leptolaelaps reticulatus Evans *campbellensis* Hunter, n. subsp. Fig. 3.

The generic characteristics of *Leptolaelaps* Berlese were given by Evans (1957) in his revision of the genus. At that time he described *L. reticulatus* from New Zealand. Through the courtesy of Dr. G. O. Evans of British Museum (Nat. Hist.), London, an unmounted paratype of *L. reticulatus* was obtained for study. The subspecies described below appears identical to *reticulatus* except for the following: the new subspecies is much larger, the parapodal plates are not strongly enlarged behind coxae IV, and the striations of the genitoventral plate are slightly more undulating. In addition, the lateral sclerites of the genitoventral plate do not project beyond the margin of the plate, and the setae posterior to the dorsal plate do not arise from platelets; however, these last 2 characteristics may be variable in *reticulatus* as the paratype did not show the lateral sclerites projecting beyond the margin of the plate and the dorsal platelets were very much reduced if present.

The material included 3 ♂♂, 23 ♀♀ and 1 deutonymph. The ♂ of *reticulatus* has not been described and a description and illustration are given below. The ♀ is illustrated primarily to show the legs and gnathosoma which were not included in the original de-

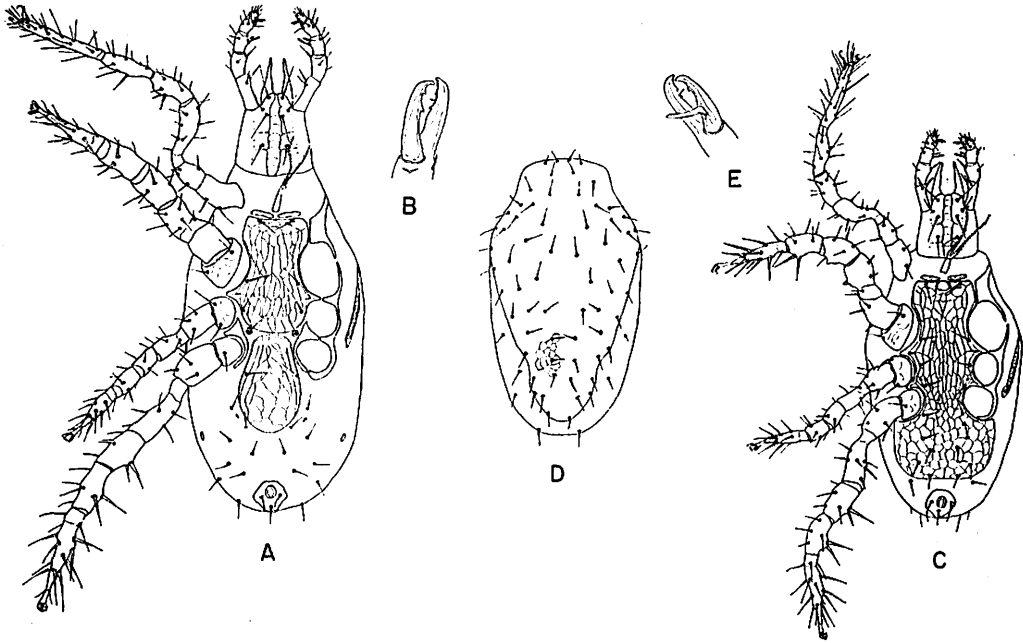


Fig. 3. *Leptolaelaps reticulatus* Evans *campbellensis*, n. subsp. A, ventrum of ♀; B, ♀ chelicera; C, ventrum of ♂; D, dorsum of ♂; E, ♂ chelicera.

scriptions of *reticulatus*.

♀: General characteristics of *reticulatus* except for differences pointed out above. Size (average of 7 specimens) as follows: body 768 μ long, 401 μ wide; dorsal plate 637 μ long, sternal plate 250 μ long, 120 μ at narrowest point between coxae II, genito-ventral plate 238 μ long, 143 μ at greatest width. Legs with ventral enlargement on tibia and genu (this is also true in the *reticulatus* paratype); tarsus I with a distinct S-shaped seta arising from the dorsal, distal surface; average measurements, including claws and coxae, as follows: I, 722 μ ; II, 564 μ ; III, 494 μ ; and IV, 730 μ long.

♂: Body shape as in ♀, smaller, 560 μ long, 295 μ wide. *Dorsum*. Dorsal plate 530 μ long covering proportionately more of dorsum than in ♀, slightly constricted near posterior end (no pronounced constriction seen in ♀♀). *Ventrum*. Presternal plates conspicuous. Sternal, genital and ventral plates fused into a single plate, 450 μ long, 105 μ wide at narrowest width between coxae II; truncate posteriorly, bearing 9 pairs of setae, striations as shown. Genital opening in anterior of sterno-genito-ventral plate. Anal plate separate; 50 μ long, 60 μ wide; bearing 3 relatively long setae. Parapodal plates not fused to sterno-genito-ventral; anterior parapodal plate located between coxae I and II, separate from posterior plate which surrounds coxae IV, III, and part of II. Peritremal plate narrow, not fused to parapodal, extends dorsally; peritreme short, ending anteriorly at level of coxa II. One pair of seta arise from integument between sterno-genito-ventral and anal plates. *Gnathosoma*. Relative lengths of setae as illustrated; palpal setae as shown. Movable digit of chelicerae with distinct spermatodactyl process; fixed digit bidentate, movable digit with 1 tooth. *Legs*. Tibia and genu enlarged ventrally on all legs, tarsus only slight-

ly enlarged; ventral setae long, spine-like. Femur and genu II with a short ventral spur.

The ♂♂ were collected by Dr. Gressitt from moss 30. XI. 1961 and 17. XII. 1961. ♀♀ were collected 26, 30. XI. 1961 and 2, 6. XII. 1961 by Dr. Gressitt ex *Poa* roots, moss and mollymawk nest, and by K. A. J. Wise, 2, 24. II. 1963 and 3. III. 1963 from Berlese of *Dra-cophyllum*, tussock leaf mold, and *Chrysobactron*. The ♂ slides are in the collection of Dominion Museum and Bishop Museum. Two ♀♀ specimens (USNM, BMNH), 1 specimen (ANIC), 3 specimens (UG); deutonymph and remaining ♀♀ (BISHOP, DOM. Mus.).

Previously only 1 species of *Leptolaelaps*, *L. macquariensis* (Womersley), has been recorded from the Antarctic Islands. This species was collected from Macquarie Island by the Australian Antarctic Expedition of 1911-14. *L. macquariensis* is easily separated from the above species by having the dorsal plate covering the dorsum, a greater number of dorsal plate setae, and body smaller in size.

Genus *Androlaelaps* (= *Haemolaelaps*) Berlese, 1903

Androlaelaps pachyptilae (Zumpt and Till)

The Campbell material included 25 ♀ specimens that appeared identical to *Androlaelaps pachytilae* (Zumpt and Till, 1956) (= *Haemolaelaps pachytilae* Zumpt and Till) which was originally collected from a dove petrel nest on Heard Island. Dr. Till has very kindly compared this mite with *pachytilae* and found only minor differences between the two. The genus *Haemolaelaps* Berlese has recently been synonymized with *Androlaelaps* Berlese (Till, 1963) and *Androlaelaps pachytilae* and other closely related species were placed in a "zulu-glasgowi" complex.

This species was collected from the following habitats on Campbell Island: nest and rookery of grey-headed mollymawk; nest of sooty albatross (*Phoebastria palpebrata*); Berlese of moss, Tussock leaf mold, and low plants; sooty shearwater (*Puffinus griseus*) burrow; dove prion (*Pachyptilae desolata*). Collections were made by Dr. J. L. Gressitt, XII. 1961; K. Rennell, XI. 1962; and K. A. J. Wise, II. 1963. Specimens will be deposited as follows: 2 specimens (USNM), 3 specimens (BMNH, UG); remaining specimens are in the Bishop Museum collection.

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