

## ACARINA: MESOSTIGMATA: FREE-LIVING MITES OF SOUTH GEORGIA AND HEARD ISLAND<sup>1</sup>

By **Preston E. Hunter**<sup>2</sup>

*Abstract:* Fifteen species, 7 new, of free-living mesostigmatic mites (exclusive of uropodids) are recorded from South Georgia Is. and 2 species, 1 new, from Heard. Only 1 species is recorded from both localities. Descriptions are given for new species; diagnostic characteristics, illustrations, and geographical information are included for known species. A key to adults and a table giving habitat collection data are included. The following families and species are recorded from South Georgia: Parantennulidae—*Davacarus gressitti* n. gen., n. sp. Laelapidae—*Stevacarus claggi* n. gen., n. sp.; *S. evansi* (Hunter); *Ayersacarus tilbrooki* Hunter; *Androlaelaps pachyptilae* (Zumpt & Till). Eviphididae—*Thinoseius hirschmanni* n. sp.; *T. katherinae* n. sp. Rhodacaridae—*Hydrogamasus (Astrohydrogamasus) watsoni* Hirschmann; *Gamasellus gressitti* n. sp.; *G. racovitzai* (Trouessart); *G. rykei* (Hunter); *G. (Hydrogamasus) antarcticus* (Trägårdh). Veigaiaidae—*Cyrthrolaelaps watsoni* Hirschmann; *Veigaia claggi* n. sp.; *Gamasolaelaps arenosus* n. sp. The two species from Heard Island are *Androlaelaps pachyptilae* (Zumpt & Till) (Laelapidae) and *Digamasellus templei* n. sp. (Digamasellidae).

This paper is based on a study of over 3,000 specimens (ca. 2,500 slide mounts) of free-living mesostigmatic mites, exclusive of uropodids, collected from South Georgia and Heard Islands by personnel of the Bishop Museum, Honolulu, Hawaii. Of the total collection, less than 400 specimens were collected from Heard Island. The collection contained 16 species distributed among 10 genera in 6 families. The South Georgia collection consisted of 15 species (7 new), representing 9 genera (2 new) and 5 families. The Heard I. material contained 2 species (1 new), representing 2 genera and 2 families. Only 1 species, *Androlaelaps pachyptilae* (Zumpt & Till) was represented from both Heard and South Georgia Islands. A summary of habitat collection data is given in tabular form (Table 1). Previous reported collection data are included in the comments under each species. A key to species, based on adults, is given as an aid to future workers studying Mesostigmata from the Antarctic and Subantarctic area.

In the descriptions of new species and comments on existing species, dorsal and ventral body chaetotaxy nomenclature follows that given by Lindquist & Evans (1965), leg chaetotaxy nomenclature follows Evans (1963a), and nomenclature of the gnathosomal deutosternum follows Hirschmann (1959). Primary types and paratypes of the new species will be deposited with the Bishop Museum (BISHOP), Honolulu, Hawaii. Where specimens are available, paratypes will be deposited with the United States National Museum (USNM), Washington, D. C., and with the Acarology Collection, University of Georgia (UG), Athens, Georgia.

### KEY TO ADULTS

1. Four dorsal plates; metapodal plate wider than length of trochanter IV (fig. 2)...  
     Parantennulidae ..... ***Davacarus gressitti*\***
- Dorsal plate entire or divided into 2 plates; metapodal plate much narrower than length  
     of trochanter IV.....2
- 2 (1). Dorsal plate entire, without lateral incisions; apotele 2-tined; femur I with 13 setae. ♂ with  
     holoventral plate .....Laelapidae.....3

<sup>1</sup>Results of fieldwork supported by grants (G-23720, GA-166) to Bishop Museum from the Office of Antarctic Programs, U. S. National Science Foundation.

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**Table 1.** Habitat data for mites collected from Heard and South Georgia I. The percent each species represented of the total collection is given for South Georgia collection only.

	South Georgia													Heard			
	<i>Gamasellus (H.) antarcticus</i> (Trägårdh)	<i>Ayersacarus tilbrooki</i> (Hunter)	<i>Androlaelaps pacheptitilae</i> (Zumpt & Till)	<i>Davacarus gressitti</i> Hunter	<i>Stevacarus claggi</i> Hunter	<i>Gamasellus racovitzai</i> (Tyrouessart)	<i>Gamasellus rykei</i> (Hunter)	<i>Gamasellus gressitti</i> Hunter	<i>Thinoseius hirschmanni</i> Hunter	<i>Gamasolaelaps arenosus</i> Hunter	<i>Cyrtidrolaelaps watsoni</i> Hirschmann	<i>Stevacarus evansi</i> (Hunter)	<i>Hydrogamasus (A.) watsoni</i> Hirschmann	<i>Veigaia claggi</i> Hunter	<i>Thinoseius katherinae</i> Hunter	<i>Androlaelaps pacheptitilae</i> (Zumpt & Till)	<i>Digamasellus templei</i> Hunter
Nest Material of:																	
<i>Diomedea chrysostoma</i> Forster																	
Gray-headed albatross	+	+		+	+			+									
<i>D. exulans</i> L.																	
Wandering albatross	+	+	+	+	+		+	+									
<i>D. melanophris</i> Temminck																	
Black-browed albatross	+	+	+	+	+		+	+									
<i>Larus dominicanus</i> Licht.																	
Dominican gull	+	+					+			+							
<i>Macronectes giganteus</i> (Gmelin)																	
Giant petrel	+	+			+			+									
<i>Oceanites oceanicus</i> (Kuhl.)																	
Wilson's petrel			+					+									
<i>Pachyptila desolata</i> (Gmelin)																	
Dove prion		+	+	+	+			+								+	+
<i>Pelecanoides urinatrix</i> Salvin																	
Diving petrel				+				+									
<i>Phoebastria palpebrata</i> (Forster)																	
Light mantled sooty albatross	+		+							+							
<i>Procellaria aequinoctialis</i> L.																	
Shoemaker	+	+	+	+	+			+				+		+			
<i>Pygoscelis papua</i> (Forster)																	
Gentoo penguin	+	+		+	+					+							
Under rock on beach						+			+	+	+	+	+				
Under rock	+	+			+	+		+		+	+	+	+				
Tussock grass	+	+		+	+		+								+		
Moss	+	+			+	+	+	+		+							
Rotting kelp								+	+		+	+					
Shore vegetation					+												
Percent of Total Collection	26	24	16	6	5	4	4	4	3	3	2	1	1	.9	.1		

Dorsal plate entire or divided; apotele 3 or 4-tined or if 2-tined (or appearing 2-tined) femur I with 12 setae or dorsal plate divided. ♂ with more than 1 ventral plate.....6  
 3 (2). Posterior dorsal body setae, postanal seta and most dorsal setae of leg IV lanceolate. ♀ genitoventral plate with 2 pairs of setae (fig. 1A). ♂ femur IV with ventral apophysis (fig. 1B).....**Ayersacarus tilbrooki** Hunter  
 Without lanceolate setae on body or leg IV. ♀ with 1 pair of setae on genitoventral plate. ♂

- with or without apophysis on femur IV.....4
- 4 (3). Genu III with 9 setae; dorsal plate covering most or all of dorsum; never more than 6 rows of deutosternal denticles. ♀ with inflated pilus dentilis (fig. 1C). ♂ with chelicera edentate (fig. 1D); femur II unarmed.....**Androlaelaps pachyptilae** (Zumpt & Till)
- Genu III with 8 setae; dorsal plate not covering all of dorsum; 9 rows of deutosternal denticles. ♀ pilus dentilis setiform. ♂ chelicera dentate; femur II with ventral apophysis.....5
- 5 (4). Terminal 4 setae of tarsi II-IV simple, of same type as other tarsal setae. ♂ femur IV unarmed. (fig. 3).....**Stevacarus claggi**\*
- Tarsi II-IV with terminal 4 setae heavy, spinelike. ♂ with apophysis on femur IV. (fig. 4E-G).....**Stevacarus evansi** (Hunter)
- 6 (2). Dorsal plate entire; apotele 2-tined; anal plate separate; femur I bearing 12 setae. ♀ with only setae st-1 arising from sclerotized portion of sternal plate. (fig. 5 & 6).....**Thinoseius hirschmanni**\*
- Dorsal plate divided or entire; apotele 2, 3 or 4-tined, if 2-tined (or appears 2-tined) dorsal plate divided; anal plate separate or fused to ventral plate; femur I with 13 setae. ♀ with 2 or more pairs of setae arising from sclerotized portion of sternal plate.....7
- 7 (6). Dorsal plate divided; apotele 2-tined; ventrianal plate present; sternal setae st-1 arising anterior of sclerotized area of sternal plate; posterior denticular row of deutosternum 2-3 × width of other rows. (fig. 7)...Digamasellidae.....**Digamasellus templei**\*
- Dorsal plate entire or divided; ventrianal plate present or absent; apotele 3 or 4-tined (if 3rd tine is minute giving appearance of 2 tines, then pre-endopodal plates distinct); if posterior denticular row extends beyond other rows, dorsal plate is entire.....8
- 8 (7). Ventrianal plate present (see fig. 8). ♀ with separate genital plate. ♂ femur II with ventral apophysis .....9
- Anal plate separate from ventral plate (see fig. 9 & 10). ♀ with genitoventral plate. ♂ femur II unarmed...Veigaiaidae .....13
- 9 (8). Dorsal plate divided; dorsal setae short, curved, spined on convex margin (fig. 1E); palpal genu with median setae not treelike.....**Gamasellus rykei** (Hunter)
- Dorsal plate divided or entire; dorsal setae not short and curved; palpal genu with distal median seta treelike or not.....10
- 10 (9). Dorsal plate divided; palpal genu with a treelike setae; peritreme not extending beyond coxa III. ♀ femur IV with ventral apophysis (fig. 1F). ♂ spermadactyl extends well beyond chelicera (fig. 1G); tarsus II with proximal dorsal process.....
- .....**Gamasellus racovitzai** (Trouessart)
- Dorsal plate divided or entire; palpal genu with or without treelike seta; peritreme extending to coxa II or beyond. ♀ femur IV without apophysis (may have 3 spurs). If ♂ spermadactyl extends beyond chelicera, tarsus II is without dorsal process.....11
- 11(10). Palpal genu with treelike seta; peritreme ventral, extending to coxa I; dorsal plate entire. ♀ trochanter III with apical posterodorsal tooth (fig. 1H). ♂ spermadactyl approximately equal to chela in length (fig. 1I); tarsus II with proximal dorsal process.....
- .....**Gamasellus (Hydrogamasellus) antarcticus** (Trägårdh)
- Palpal genu without treelike seta; peritreme not extending beyond coxa II, or extending to dorsum above coxa I; dorsal plate entire or divided. ♀ trochanter III without posterodorsal tooth. ♂ tarsus II without dorsal process.....12

\*Described as new

<sup>3</sup>*T. katherinae* Hunter, n. sp., known only from the deutonymph, may be separated from *hirschmanni* deutonymph by the absence of spinelike setae on the dorsum of femora I and II. The same characters will probably separate the adults.

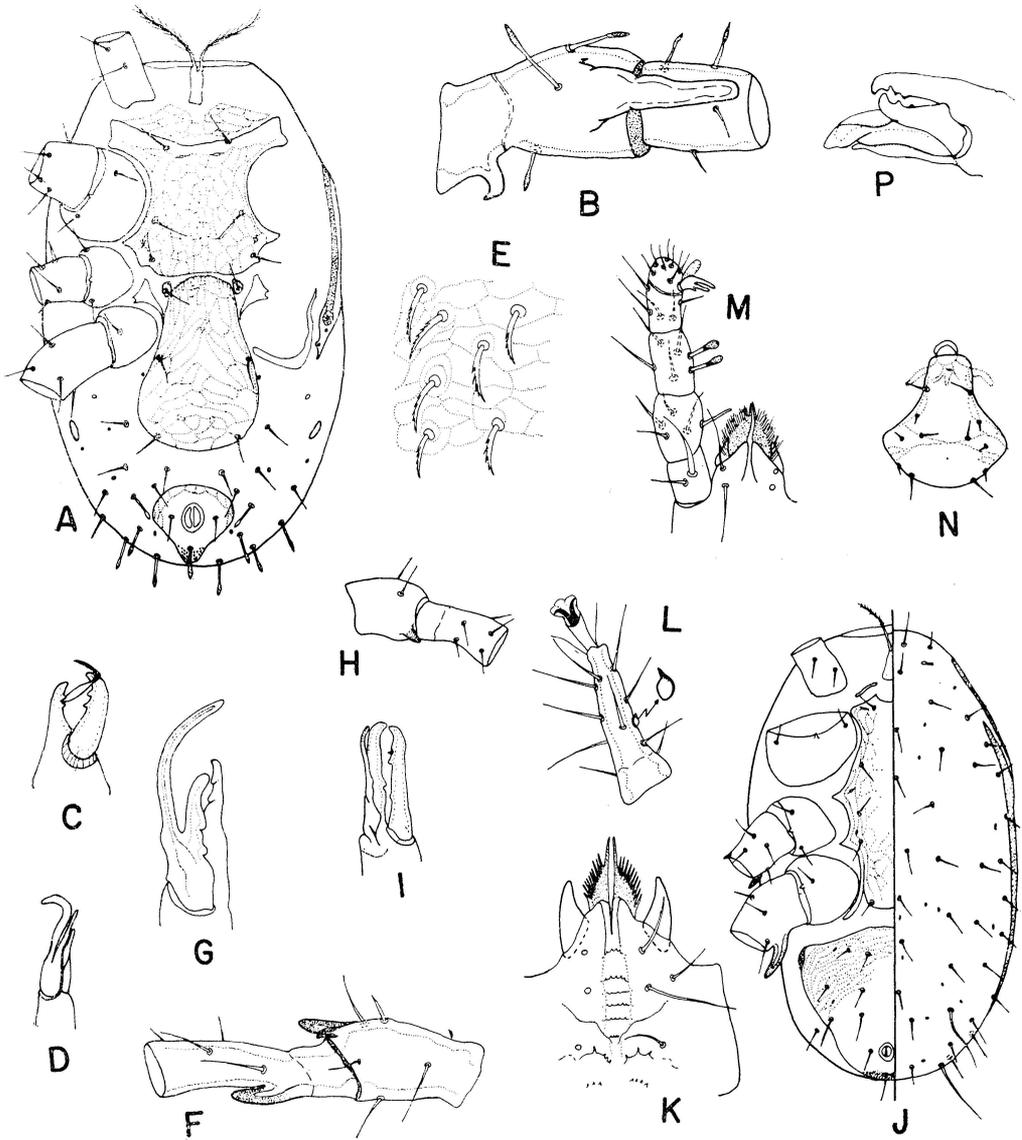


Fig. 1. *Ayersacarus tilbrookii* Hunter: A, ♀ venter; B, ♂, venter of femur IV. *Androlaelaps pachyptilae* (Zumpt & Till): C, ♀ chelicera; D, ♂ chelicera. *Gamasellus rykei* (Hunter): E, dorsal setae. *G. racovitzi* (Trouessart): F, ♀ trochanter and femur IV; G, ♂ chelicera. *G. (Hydrogamasus) aniarcticus* (Trägårdh): H, ♀, dorsum of trochanter III; I, ♂ chelicera. *Hydrogamasus (Austrohydrogamasus) watsoni* Hirschmann: J, ♂ venter—♀ dorsum; K, ♂ gnathosoma; L, lateral view, ♂ tarsus II. *Cyrrhydroaelaps watsoni* Hirschmann: M, ♀ gnathosoma; N, ♀ genitoventral plate; P, ♂ chelicera.

- 12(11). Dorsal plate entire; peritremes extending dorsally above coxa I (fig. 1J); posterior denticular rows much wider than deutosternal groove (fig. 1K). ♂ femur IV with ventral apophysis (fig. 1J); tarsus I with ventral bulbous seta (fig. 1L).....  
 .....**Hydrogamasus (Austrohydrogamasus) watsoni** Hirschmann  
 Dorsal plate divided; peritreme ventral, not extending beyond coxa II; denticular rows not as above. ♀ femora III with 2 and IV with 3 ventral spines. ♂ leg IV unarmed; femur III with 1 ventral spine. (fig. 8).....**Gamasellus gressitti**\*
- 13 (8). Dorsal plate with lateral incisions, not completely divided; some dorsal setae pilose; each tritosternum lacina ending in 2-3 filaments. ♀ sternal plate deeply notched posteriorly. (fig. 9) .....**Veigaia claggi**\*
- Dorsal plate completely divided; dorsal setae not distinctly pilose; lacinae pectinate or pilose. ♀ sternal plate not deeply notched posteriorly.....14
- 14(13). Internal malae fringed; apotele 3-tined (fig. 1M); posterior rostral setae not forming a transverse row between anterior rostral and capitular setae. ♀ genitoventral plate bearing 6 pairs of setae (fig. 1N). ♂ spermadactyl 2-3 leaflike processes (fig. 1P).....  
 .....**Cyrthrolaelaps watsoni** Hirschmann  
 Internal malae not fringed; apotele 4-tined; posterior rostral setae forming a transverse row between anterior and capitular setae. ♀ genitoventral plate bearing 2 pairs of setae. ♂ spermadactyl a single fingerlike process. (fig. 10).....**Gamasolaelaps arenosus**\*

#### Family PARANTENNULIDAE

Willmann (1940) established the family Parantennulidae for the genera *Parantennulus* Berl., 1904, and *Diplopodophilus* Willmann, 1940. The Antarctic material representing this family does not fit either genus and is described as a new genus. Both known genera have separate ventral and anal plates and 1 large dorsal plate, whereas the new genus has a ventrianal plate and 4 dorsal plates.

#### Genus **Davacarus** Hunter, new genus

Dorsum with 1 large podonotal and 3 smaller opisthonotal plates. Metapodal plates large, not fused with other plates; ventrianal plate present; sternal setae I arising from weakly sclerotized plates. Leg I with claws, without pretarsus. Chelicerae strongly chelate-dentate. In the ♀ the latogynial plates are long and slender, the mesogynial plate large and triangular, and the sternal plate is weakly sclerotized. Male with sternogenital plate; genital opening at a level between coxae III and IV.

Type-Species: *Davacarus gressitti* Hunter, n. sp.

**Davacarus gressitti** Hunter, new species      Fig. 2A-I; 3A

*Diagnosis.* Dorsum of adults with large podonotal plate and with 3 opisthonotal plates; ventrianal plate present; large metapodal plates. ♀ with triangular mesogynial plate; ♂ genital opening at level between coxae III and IV.

♀. *Dorsum:* Fig. 2B. Bearing 4 plates (pigmentation of integument gives appearance of dorsum bearing 2 subequal plates); podonotal plate bearing 13 pairs of setae; opisthosoma of dorsum with 3 plates, 7-8 setae on each of the paired plates, 4 pairs of setae plus 1 or more unpaired setae on the single posterior plate; 30 pairs of setae arising from small platelets in integument around margin of body and between plates, setae j1 and z1 arising from integument, not from platelets; all setae simple; setae up to 52 µm long. *Venter.* Fig. 2A. Each sternal seta st-1 arising from a jugular plate; sternal plate fused to endopodal plates at level of coxa II; sternal plate weakly sclerotized, bearing 3 pairs of setae, positioned as shown. Sternogynial plate absent. Latogynial plate long, narrow, semisclerotized medially; sclerotized area bearing a seta and pore and attached posteriorly to triangular shaped mesogynial plate (fig. 2C). Mesogynial plate without setae, cover-

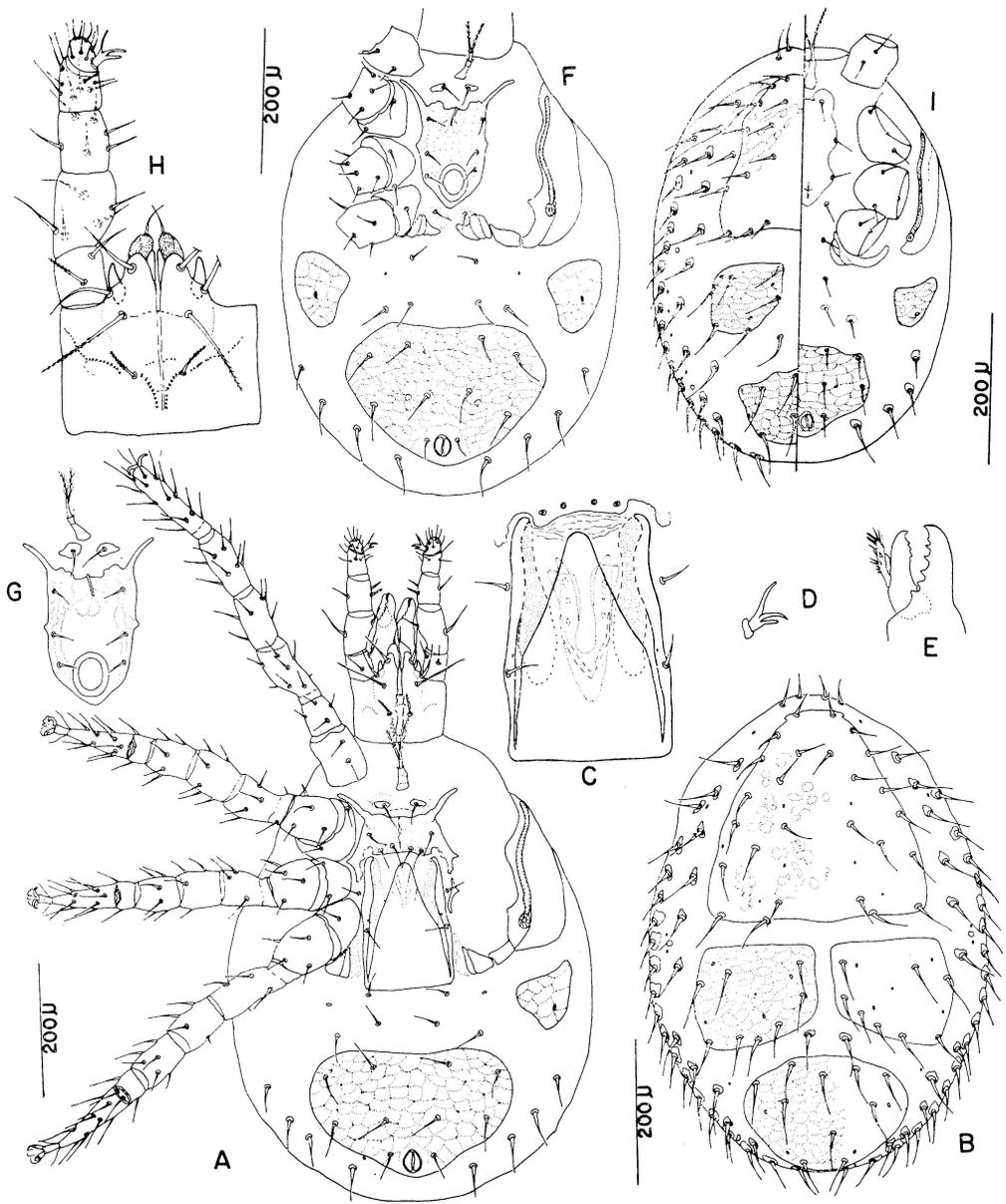


Fig. 2. *Davacarus gressitti* Hunter, n. sp. ♀: A, venter; B, dorsum; C, genital plates; D, apotele; E, chelicera; H, gnathosoma. ♂: F, venter; G, sternogenital plate. Deutonymph: I, dorso-ventral view.

ing V-shaped vaginal sclerites, shape of sclerites as illustrated. Small endopodal plate between coxae III and IV; a seta arising from integument between endopodal and latogynial plates. Peritremal plate large, partially surrounding coxa IV, abutting against 2-3 fused platelets posteromedially of coxa IV, integument semisclerotized medial of fused platelets. Metapodal plate large, triangular, with pore and striation pattern. Ventrianal plate bearing 4 pairs of setae plus 2 anal setae, postanal seta absent; surface of plate covered by striations. Integument between mesogynial and ventrianal plate bearing 3 pairs of setae. (Integument heavily pigmented posterior of coxae IV giving appearance of a single plate covering venter of opisthosoma.) Tritosternum with 2 sparsely spiculed lacinae. *Gnathosoma*: Capitular setae and proximal seta of palpal trochanter strongly pectinated, internal rostral setae weakly pectinated, other setae of gnathosoma simple (see fig. 2H); apotele 3-tined, proximal tine long and extending anteriorly (fig. 2D). Internal malae as illustrated; deutosternum with 3 rows of denticles plus a row around each capitular seta. Chelicera strongly chelate, fixed digit with 6 teeth, movable chela with 3 teeth and a thickened pilose excrescence (fig. 2E). Tectum triangular, serrated. *Legs*: Tarsi II-IV with pretarsus, claws and caruncle, tarsus I without pretarsus and caruncle but with sessile claw. Tarsus IV bearing setae av-4 and pv-4 on small ventral plate, similar plate but without setae on tarsi II and III; all leg setae simple.

♂. *Dorsum*: As in ♀. *Venter*: Fig. 2F. Similar to ♀ except for sternogenital area. Sternal setae st-1 on separate plates; sternogenital plate bearing 3 pairs of setae; genital opening at level between coxae III and IV (fig. 2G); endopodal plates well sclerotized, attached to sternogenital plate which is weakly sclerotized medially; striations indistinct; 1 pair of setae arising from semisclerotized integument between coxae IV. Reticulation pattern of ventrianal plate forming somewhat smaller polygons than in ♀. Integumental pigmentation giving appearance of large ventral opisthosomal plate. *Gnathosoma*. Fig. 2H. As in ♀. *Legs*. Chaetotaxy and tarsal claw arrangement as in ♀.

*Deutonymph*. Fig. 2I. *Dorsum*: Dorsal plates as in ♀ but proportionally smaller; podonotal plate bearing 12 pairs of setae; opisthosomal area bearing 3 plates, paired plates each bearing 6-7 setae, unpaired posterior plate bearing 4 pairs of setae. Reticulations of plates distinct. Integumental setae arising from small platelets as shown. All setae simple. *Venter*. Sternal plate weakly sclerotized, bearing 3 pairs of setae. Podal plates distinct posterior and lateral of coxa IV. Metapodal plate well sclerotized, without seta, bearing a pore. Ventrianal plate well sclerotized, bearing 5 pairs of setae, postanal seta absent. Integument posterior of coxae IV bearing 7 pairs of setae, marginal pairs arising from distinct platelets. Peritremal plate wide lateral of peritreme, not developed medially of peritreme. Peritreme ending at level of coxa II. Tritosternum, gnathosoma, and legs as in ♀. Internal malae as illustrated for adult.

*Protonymph*. Fig. 3A. *Dorsum*: No sclerotized plates present; setae arising from integument or from small platelets as illustrated. Chaetotaxy as shown. *Venter*. Sternal plate absent, 3 pairs of sternal setae; genital setae absent, pore present in area where seta would normally occur (this arrangement was true of all specimens). Metapodal plate absent. Podal plates posterior and lateral of coxa IV as shown. Anal plate without reticulation pattern; bearing 3 setae, postanal seta present. Integument posterior of coxae IV bearing 3 pairs of setae. Peritremal plate developed only around stigmatal area; peritreme extending to level of coxa III. Tritosternum as in adults. Internal malae as in adults.

This species was described from a series of 43 ♀♀, 46 ♂♂, 19 deutonymphs, and 10 protonymphs. Holotype (♀) (BISHOP 8828), Cave Crag, Bird I., South Georgia, 30.IV.1963, H. B. Clagg, coll.; from nest material of the black-browed albatross (*Diomedea melanophris* Temminck). Paratypes were collected from the nest material of *Diomedea chrysostoma* Forster, *D. melanophris* Temminck, *D. exulans* L., *Pachyptila desolata* (Gmelin), *Procellaria aequinoctialis* L., and *Pelecanoides urinatrix* Salvin; from under rocks in *Pygoscelis papua* (Forster) rookery, and from tussock grass. Collection localities included North Valley, Wanderer Valley, Fresh Water Bay, Molly Hill, Pearson Inlet, Macaroni Creek, Cave Crag, and Gentoo Point on Bird I.; Royal Bay, Moltke Harbor. Specimens were collected from January to April, and October and December in 1963. Holotype, 25 ♀, 25 ♂, 10 deutonymph and 6 protonymph paratypes deposited with BISHOP; 8 ♀, 8 ♂, 2 deutonymph paratypes with USNM; remaining paratypes UG.

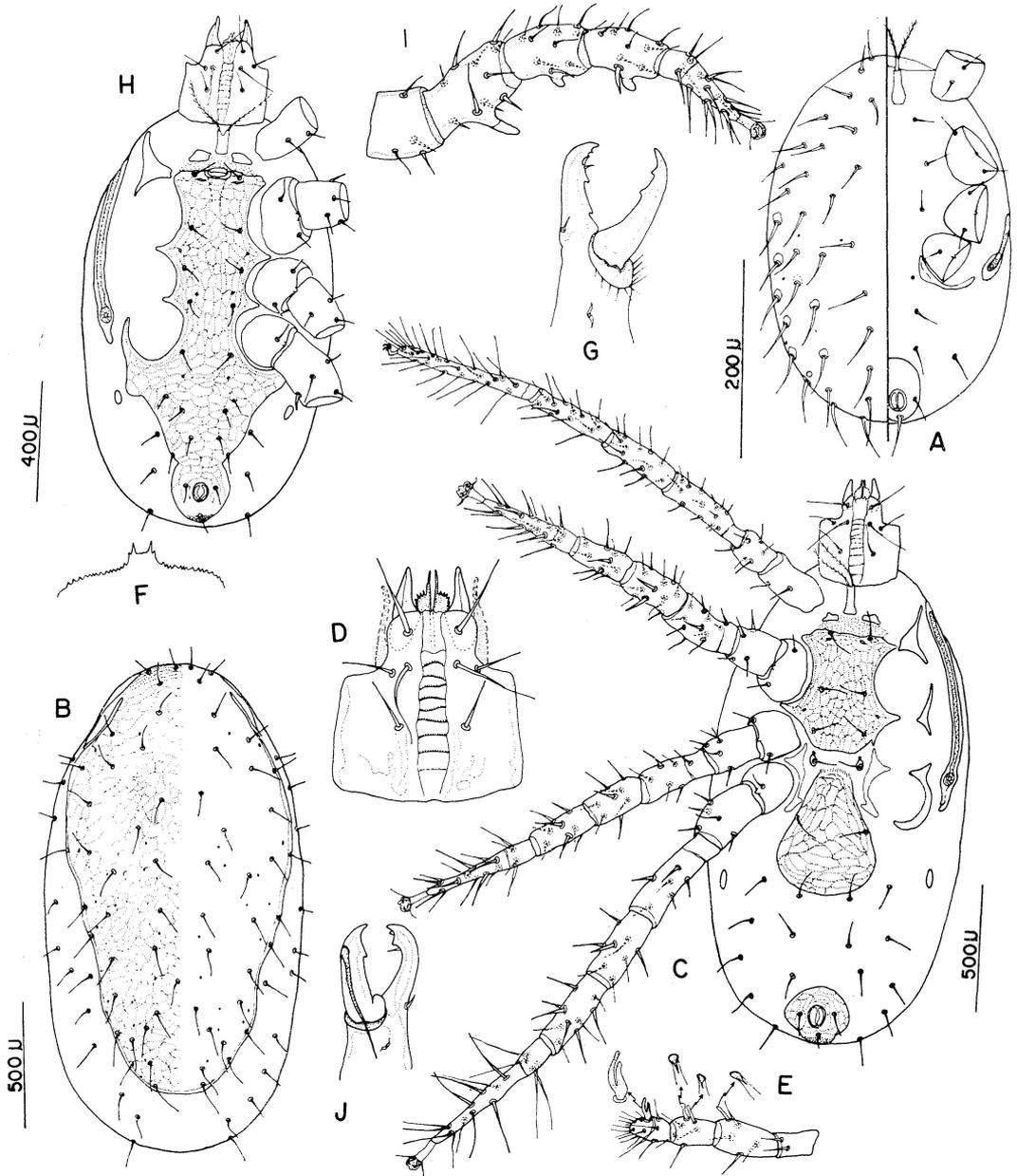


Fig. 3. *Davacarus gressitti* Hunter, n. sp. Protonymph: A, dorsoventral view. *Stevacarus claggi* Hunter, n. sp. ♀: B, dorsum; C, venter; D, gnathosoma; E, palpus; F, tectum; G, chelicera. ♂: H, venter; I, leg II; J, chelicera.

Remarks. The inclusion of this species in Parantennulidae necessitates modification of the family characteristics (see Camin & Gorirossi 1955) as follows: chelicera dentate, or edentate; and location of the ♂ genital aperture between the posterior margin of coxae II, or between coxae II and III.

Family LAELAPIDAE

Genus **Ayersacarus** Hunter, 1964

**Ayersacarus tilbrooki** Hntr., 1967, *Antarctic Res. Ser.* **10**: 37.

*Diagnosis.* Dorsal plate entire; setae Z5 and S5 lanceolate at tip, expanded part membranous, other setae on dorsal plate simple; postanal seta and dorsal setae of leg IV lanceolate-membranous. Female with 2 pairs of setae on genitoventral plate (fig. 1A). Male femora II and IV (fig. 1B) each bearing apophysis.

This species was originally described from bird nest material from South Georgia and South Sandwich Islands (Hunter 1967a). The present collection contained over 600 specimens of *A. tilbrooki* from South Georgia. The species was not represented in the Heard I. material. Some specimens were taken from under rocks, and in berlese samples of moss and tussock grass; however, most of the specimens were taken from the nest or nest material of *Diomedea exulans* L., *D. melanophris* Temminck, *D. chrysostoma* Forster, *Macronectes giganteus* (Gmelin), *Pachyptila desolata* (Gmelin), *Procellaria aequinoctialis* L., *Pygoscelis papua* (Forster) and *Larus dominicanus* Licht.

Collection data indicate that this species normally occurs in bird nest material, and specimens taken from other sources were possibly emigrants from bird nests. *A. tilbrooki* was collected from over 12 localities on Bird I., South Georgia, and was taken in every month except June and September.

Genus **Androlaelaps** Berlese, 1903

**Androlaelaps pachyptilae** (Zumpt and Till)

*Haemolaelaps pachyptilae* Zpt. & Till, 1956, *Z. Parasitenk.* **17**: 285.

*Androlaelaps pachyptilae*: Till, 1963, *Bull. Brit. Mus. (Nat. Hist.) Zool.* **10**: 62.—Hunter, 1964, *Pacif. Ins. Monogr.* **7**: 639.

*Diagnosis.* Single dorsal plate covering dorsum; dorsal setae simple, median setae distinctly shorter than marginal setae. Female genitoventral plate bearing 1 pair of setae; pilus dentilis inflated (fig. 1C). Male with holoverventral plate; leg II not armed; chelicera edentate with fingerlike spermadactyl (fig. 1D).

This species was originally collected from the nest of the dove prion, *Pachyptila desolata* (Gmelin), from Heard I. Later the species was reported from Campbell, Macquarie, and Auckland Is. (Hunter 1964a, 1964b) from the nest of the diving petrel, *Pelecanoides urinatrix* Salvin, and the white-headed petrel, *Pterodroma lessoni* (Garnet). The present collection contained a large number of nymphs and adults of *pachyptilae*. On South Georgia *pachyptilae* was taken from the nest or nest material of *Diomedea exulans* L., *D. melanophris* Temminck, *Procellaria aequinoctialis* L., *Pachyptila desolata* (Gmelin), and *Oceanites oceanicus* (Kuhl.). On Heard I. *pachyptilae* was taken from the burrow and nest material of *Pachyptila desolata* (Gmelin).

The original description by Zumpt & Till (1956) included an illustration of the venter of the gnathosoma only. Later, Till (1963) redescribed the ♀ and included illustrations of the dorsum and venter. Hunter (1964a) described the ♂ from a series of specimens from Auckland Island. Based on the South Georgia and Heard I. material and additional material from Auckland Is., I know that the ♂ description was based on a heteromorphic stage in which legs II were thickened and the median dorsal setae equal in length to the marginal dorsal setae. Males from the South Georgia and Heard I. collections did not have leg II thickened and the median dorsal setae were

distinctly shorter than the marginal setae—the condition found in the ♀. All Auckland Is. ♂♂ showed the heteromorphic condition, whereas all South Georgia and Heard I. ♂♂ resemble the ♀. Females and nymphs from the 3 localities were not morphologically distinct.

#### Genus *Stevacarus* Hunter, new genus

Dorsal plate entire, not covering all of dorsum posteriorly; bearing 30–31 pairs of setae, r and R setae arising from integument; unpaired accessory setae may be present between J setae. Pre-endopodal plates present. Deutosternum with 10 denticular rows (Q1 without denticles). Peritremal plate free posteriorly. Apotele 2-tined; chaetotaxy of palpus (exclusive of tibia and tarsus) 2-5-6. Genu of leg III with 8 setae, seta pv absent; all tarsi with paired claws. Tritosternum bipartinate. Tectum capituli with anterior margin denticulate. Female sternal plate longer than wide, bearing 3 pairs of pores; metasternal plate present, bearing a seta (st-4) and pore; genital plate bearing 1 pair of setae, plate well removed from anal plate; anal plate rounded anteriorly, subtriangular, bearing 3 setae; chelicera chelate-dentate, fixed digit bearing setiform pilus dentilis. Male with holovertral plate, bearing 9 pairs of setae plus 3 anal setae; holovertral plates fused with exopodals IV; chelicera chelate, spermadactyl long, arising from anterior 1/2 of movable digit and directed posteriorly, free entire length; femur II with a ventral apophysis, genu and tibia II each with a ventral spur.

Type-species: *Stevacarus claggi* Hunter, n. sp.

This genus shows characteristics of the subgenera placed in the *Hypoaspis* complex by Evans & Till (1966). *Stevacarus* differs from *Hypoaspis* mites in having more than 6 transverse rows of deutosternal denticles, less than 39 pairs of setae on the dorsal plate, genu III with 8 rather than 9 setae, and in the ♂ the spermadactyl process is free and directed posteriorly rather than digit-like and directed anteriorly.

#### *Stevacarus claggi* Hunter, new species Fig. 3B-J; 4A-D.

*Diagnosis:* Terminal setae of tarsi II–IV needlelike; idiosoma approximately 1800  $\mu$  long. Female with 1 pair setae on genitoventral plate; 3 separate exopodal plates. Male without apophysis or spur on femur IV, ventral apophysis on femur II; spermadactyl only slightly longer than movable chela. The shape of the internal malae is distinct for both nymphs and adults of this species.

♀: *Dorsum:* Fig. 3B. Dorsal plate entire, not extending to posterior and posterolateral margins of body; reticulation pattern distinct on posterior 1/2 of plate, weakly developed in area of setae j6 and between z4–z6; 40 pairs of dorsal setae—30 pairs arising from dorsal plate—accessory setae may occur between J rows; r and R setae arising from integument; all dorsal setae simple. *Venter.* Fig. 3C. Sternal plate well sclerotized; bearing 3 pairs of setae (st-1 to st-3) and 2 pairs of pores; reticulation pattern distinct; 2 pre-endopodal plates, integument semi-sclerotized between these and sternal plate. Metasternal plate bearing seta (st-4) and pore. Genital plate drop-shaped, bearing genital setae only; well removed from anal plate; reticulation pattern as shown. Metapodal plates distinct. Endopodals IV free; 3 separate exopodal plates. Peritremal plate only slightly wider than peritreme, extending posterior of stigmata; peritreme ventral, extending to level of coxa I. *Legs.* Chaetotaxy of segments (coxa to tarsus) except tarsus I, as follows: I (2-6-13-13-13); II (2-5-11-11-10-16); III (2-5-6-8-8-16); IV (1-5-6-9\*-10-16); seta pv absent on genu III; tarsi I–IV with simple, slender setae. All tarsi with paired claws. *Gnathosoma.* Deutosternum with 10 denticular rows, Q1 without denticles, Q2–Q9 many denticles/row, Q10 with 5–6 denticles (fig. 3D); internal malae distinct, shape as illustrated; feeding (hypopharyngeal?) styli distinct. Palpus with median seta chisel-like on femur, 2 setae of this type on genu; apotele 2-tined (fig. 3E). Tectum serrated with 2 longer median points (fig. 3F). Chelicera (fig. 3G) chelate-dentate, fixed chela with 4 teeth and setiform pilus dentilis, movable chela bidentate; dorsal seta present.

♂. *Dorsum:* As in ♀. *Venter:* Fig. 3H. Holovertral plate present, demarcation of anterior margin of

\*Illustration (fig. 3C) shows only 8 setae on genu, seta dp 3 inadvertently left off.

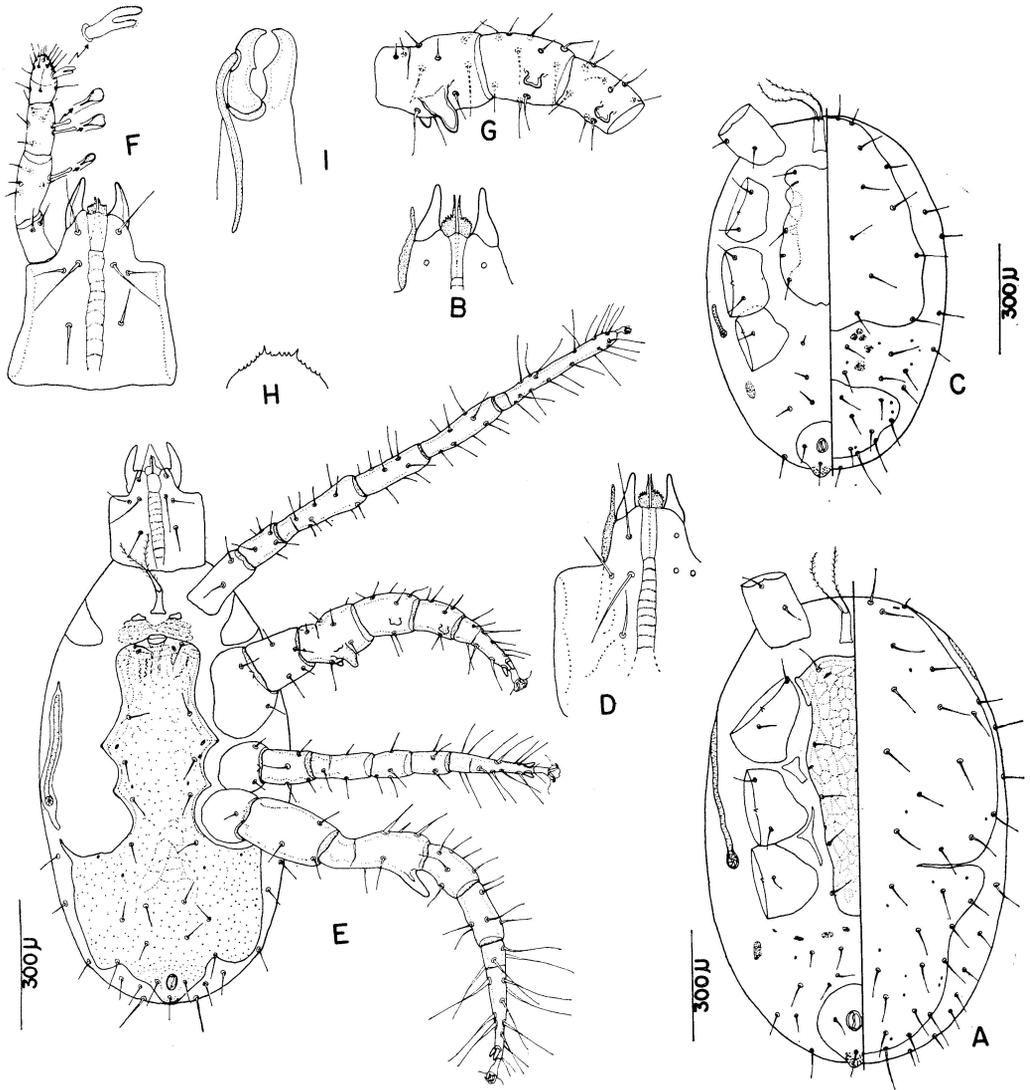


Fig. 4. *Stevacarus claggi* Hunter, n. sp. Deutonymph: A, dorsoventral view; B, gnathosoma. Protonymph: C, dorsoventral view; D, gnathosoma. *S. evansi* (Hunter). ♂: E, venter; F, gnathosoma; G, femur, genu and tibia, leg IV; H, tectum; I, chelicera.

anal plate indicated (specimens show various degrees of separation of anal from ventral plate, few specimens showed complete separation); holoventral plate bearing 9 pairs of setae plus 3 anal setae; reticulations distinct. Presternal area as in ♀. Genital opening at anterior margin of sternal plate. Metapodal and peritremal plates and tritosternum as in ♀. Ventral integument bearing 3 pairs of setae. *Legs*: Legs I, III and IV as in ♀. Leg II armed with ventral apophysis on femur, spur on genu and on tibia (fig. 3I). *Gnathosoma*. Chelicera (fig. 3J) chelate-dentate, fixed chela bearing 2 teeth and setiform pilus dentilis, movable chela unidentate and bearing a pointed, cylindrical, free spermadactyl arising from anterior half of digit; spermadactyl slightly

longer than length of movable chela. Other features of gnathosoma as in ♀.

*Deutonymph.* Fig. 4A. *Dorsum*: Dorsal plate partially divided; reticulations similar to those of ♀; plate bearing 30 pairs of simple setae, relative lengths as shown. *Venter*: Sternal plate bearing 3 pairs of pores and 4 pairs of setae; genital setae arising from integument between coxae IV. Anal plate as illustrated, surface reticulations similar to ♀. Integument posterior of coxae IV bearing 8 pairs of setae and a transverse row of 8 poorly sclerotized platelets; metapodal plate present, poorly sclerotized. Endopodal plates III and IV free, II fused to sternal plate. Peritreme present, extending to dorsolateral surface above coxa I; peritremal plate absent. *Legs*: As in ♀. *Gnathosoma*: Deutosternum with 10 denticular rows, Q1 without denticles, Q2–Q10 with denticles. Internal malae (fig. 4F) and feeding styli as in adults.

*Protonymph.* Fig. 4C. *Dorsum*: Podonotal plate bearing 11 pairs of simple setae, plate lightly reticulated; pygidial plate bearing 8 pairs of simple setae and 3 pairs of pores. Integument between dorsal plates with 3–4 pairs of pores and 6 pairs of setae; other integumental setae as illustrated. *Venter*: Sternal plate not strongly sclerotized, bearing 2 pairs of pores and 3 pairs of setae. Metapodal plate present, not well sclerotized. Peritreme not extending beyond middle of coxa III, peritremal plate absent. Ventral integument bearing 5 pairs of setae. *Gnathosoma*: Internal malae shape as in adults (fig. 4D). Deutosternum with 10 denticular rows, Q1 and Q10 without distinct denticles, Q2–Q9 with many denticles/row.

The type series contained over 50 ♀♀, 30 ♂♂, 10 deutonymphs and 4 protonymphs of mounted specimens and approximately as many alcohol specimens. Holotype ♀ (BISHOP 8829), Wanderer Valley, Bird I., South Georgia, 4.I.1963, H. B. Clagg, coll., from berlese funnel collection. *S. claggi* was collected from January to April, and in November and December from 1961–1964; however, specimens were not collected each month in each of the four years. Collection localities included Bird I., Right Whale Bay, Hope Valley, Husvik Valley, West Cumberland Bay, Macaroni Creek, Olson Valley, Pearson Inlet, Royal Bay, Welcome Bay, Grytviken Peninsula, Maiviken and Mountain Coulm.

Habitats of paratypes included: moss; under rocks in *Pygoscelis papua* (Forster) rookery; rock crevices and under stones; tussock grass; shore vegetation, from nest or nest material of *Macronectes giganteus* (Gmelin), *Diomedea chrysostoma* Forster, *D. exulans* L., *D. melanophris* Temminck, *Pachyptila desolata* (Gmelin) and *Procellaria aequinoctialis* L. Although the most specimens were taken from bird nests, the species was regularly collected from the other listed habitats. Types deposited as follows: holotype, 30 ♀, 18 ♂, 5 deutonymph, 2 protonymph paratypes BISHOP; 5 ♀, 5 ♂, 2 deutonymph paratypes USNM; remaining paratypes UG.

***Stevacarus evansi* (Hunter), n. comb.**

*Hypoaspis evansi* Hntr., 1964, *Pacif. Ins. Monogr.* 7: 638.

*Diagnosis.* Dorsal plate entire; dorsal setae simple; tarsi II–IV with terminal setae short, thickened and spinelike. ♀ genitoventral plate bearing 1 pair setae; exopodal plates II and III absent. Male with apophysis on femora II and IV; spermadactyl 2 × length of movable chela.

This species was originally described from a single ♀ (Hunter 1964a) taken from Green Gorge, Macquarie I. The South Georgia collection contained 28 ♀ and 5 ♂ of *evansi*. This species is cogeneric with *Stevacarus claggi* and is placed in *Stevacarus*. The ♂, previously unknown, is described below.

♂. *Dorsum*: As in ♀ (see Hunter 1964a, fig. 4). Dorsal plate entire, not extending to posterior and lateral margins of opisthosoma. Chaetotaxic pattern as in *S. claggi* (fig. 3B); 30 pairs of setae on plate, 10 pairs arising from integument; all setae simple. *Venter*: Fig. 4E. Holoventral plate covering opisthogastric area, plate bearing 9 pairs of setae plus 3 anal setae and 5 pairs of pores; reticulation pattern apparent posterior of coxae IV and in area of setae st-1; surface of plate appearing stippled. Exopodals IV fused with holoventral plate; large exopodal plate between coxa I and II. Metapodal plate absent. Peritreme ventral, extending only to level of coxa II; peritremal plate narrow. Pre-endopodal plates present, integument semi-sclerotized between these plates and anterior margin of sternal plate. Integument of opisthogastric area bearing 3 pairs

of setae lateral of and 3 pairs posterior of holovenral plate (lateral setae appearing as ventral marginal setae in illustration). *Legs*. Chaetotaxic formulae as in *S. claggi*. Tarsi II–IV with the terminal ventral setae modified as heavy short spines; all tarsi with paired claws. Leg II armed (fig. 4G); femur bearing a ventral apophysis and spur; genu and tibia each bearing an anterolateral boss. Femur IV with a large ventral apophysis. *Gnathosoma*. Fig. 4F. Deutosternum with 10 denticular rows, Q1 without denticles, Q2–Q9 with many denticles/row; shape of internal malae as shown (internal malae of ♀ same shape as ♂) medial seta of palpal femur and genu chisel-like; apotele 2-tined. Tectum margin serrated (fig. 4H). Chelicera (fig. 4I) chelate-dentate, each chela unidentate; spermadactyl free, cylindrical, directed posteriorly, about  $2 \times$  length of movable chela.

Male specimen series consisted of 5 specimens all collected by H. B. Clagg from Bird I., South Georgia. Two specimens were collected at Wanderer Ridge, 21.III.1963, from shoemaker (*Procellaria aequinoctialis* L.) nest; 2 specimens at Main Bay, 28.X.1963, from under rock on beach; 1 specimen from shoemaker nest material, no date given. Specimens deposited as follows: 3 specimens BISHOP; 2 specimens UG.

Females of this species were collected in III, IV, X. and XI, 1963, by H. B. Clagg all on Bird I. Habitat data included nest of *Procellaria aequinoctialis* L., under rock and under rotting kelp on beach. Collection localities included Main Bay, Wanderer Ridge, Iceberg Point, and Landing Beach. Two specimens were collected from Enten Bay, Busen Peninsula, from under rocks on beach and 1 specimen was taken from Ocean Harbor Beach, Barff Peninsula, from rotting kelp and rocks on beach.

#### Family EVIPHIDIDAE

##### Genus *Thinoseius* Halbert, 1920

In his excellent review of *Thinoseius*, Hirschmann (1966a) gave distinguishing characteristics for the 8 species in this genus, and placed *Thinoseius* in the subfamily Thinoseiinae, family Laelaptidae. *Thinoseius* had previously been placed in the family Eviphididae, the familial classification followed here.

##### *Thinoseius hirschmanni* Hunter, new species Fig. 5A-G; 6A-C.

*Diagnosis*. This species is readily separated from other species in the genus by the following characteristics. ♀. dorsal setae simple; sternal setae st-1 on a single plate which is not fused to endopodals, setae st-2 to st-4 arising from integument. ♂. setae in Z row over  $3 \times$  length of J setae; postanal seta over  $2 \times$  length of paranal.

♀. *Dorsum*: Fig. 5B. Single dorsal plate, not extending to body margins; plate bearing 13 pairs of setae, 17 pairs of dorsal setae arising from integument surrounding plate and 4 pairs arising from posterolateral margin of body; all dorsal setae simple; reticulation pattern distinct; integument around plate striated. *Venter*. Fig. 5C. Sternal plate sclerotized only in area of setae st-1, setae st-2 to st-4 arising from integument, st-3 arising medial of st-2 and st-4. Pre-endopodal plates absent; endopodal II, III and IV free. Genital widest anterior of genital setae; without distinct reticulation pattern; genital setae arising from integument at margin of genital plate. Anal plate well sclerotized, reticulation pattern distinct. Small, rounded metapodal plates present. Ventral integument bearing 6 pairs of opisthogastric setae plus 4 pairs of marginal setae, all setae simple; 4 small platelets posterior to genital plate. Peritreme extending to dorsum; peritremal plate well developed and free of peritreme posterior of stigmata. Exopodal plates absent. Tritosternum bipartate, lacinae pilose. *Gnathosoma*. Internal malae fringed, with medially longer fingerlike projection. Deutosternum with 5 rows of denticles, many denticles/row (fig. 5D). Palpal chaetotaxy typical for genus (see Evans 1963b); setae of trochanter arising from raised area, median seta short and thick; apotele 2-tined. Chelicera (fig. 5F) chelate-bidentate, fixed chela grooved at tip to receive movable chela. Tectum with fingerlike processes, median process longest and minutely spined (fig. 5E). *Legs*. Coxae I with 2 porelike areas. Chaetotaxy of segments (coxa to tarsus), except tarsi I, as follows: I (2-5-12-11-11-); II (2-5-10-10-9-18); III (2-5-7-7-18); IV (1-5-6-7-7-18). All leg setae simple, distinctly shorter than in ♂ (see fig. 6A).

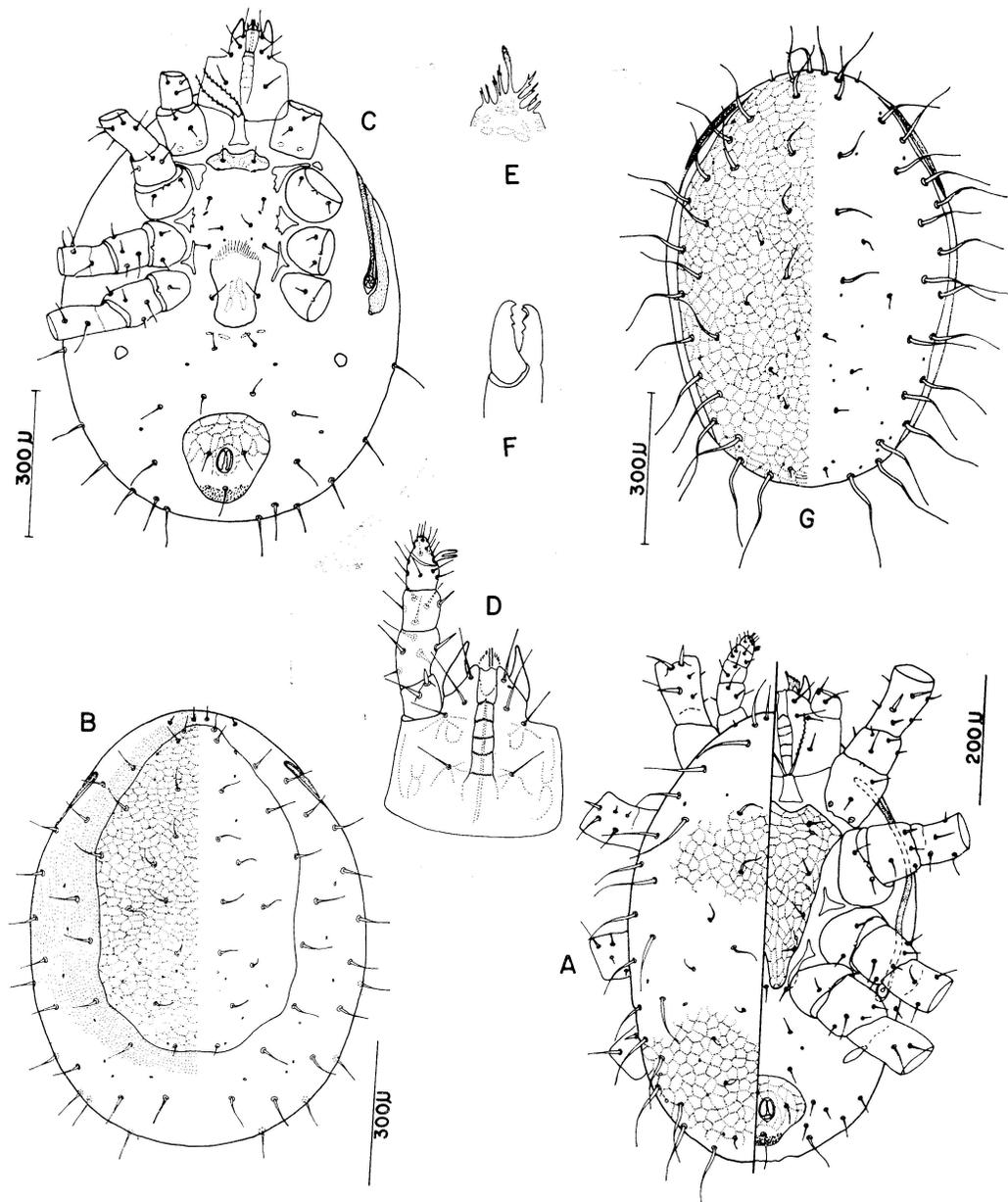


Fig. 5. *Thinoiseius hirschmanni* Hunter, n. sp. Deutonymph: A, dorsoventral view. ♀: B, dorsum; C, venter; D, gnathosoma; E, tectum; F, chelicera. ♂: G, dorsum.

♂. *Dorsum*: Fig. 5G. Covered by well developed plate, reticulations over entire surface; bearing 30 pairs of setae; setae J2-J5, z5, z6, and s1 all short (J1 absent), remaining setae thickened at base and attenuated distally, setae j3-j6 shorter than other attenuated setae. *Venter*. Fig. 6A. Sternogenital plate well developed, fused with endopodals II, III and anterior tip of IV; bearing 4 pairs of setae and 3 pairs of pores; distinct reticulation pattern; genital opening anterior to sternals st-1. Genital setae arising from integument between coxae IV. Integument of opisthogaster bearing 4 pairs simple setae and 3 pairs of attenuated setae; 4 platelets forming transverse line posterior of coxae IV. Metapodal plate elongate in shape. Anal plate with reticulation pattern; postanal seta attenuated, approximately  $2 \times$  length of para-anal seta. Peritreme extending dorsally to area above coxa I, plate only slightly wider than peritreme. *Gnathosoma*. Internal malae fringed, a lateral fingerlike projection not present in ♀. Deutosternum with 6 denticular rows, Q1 without denticles. Chelicera chelate-unidentate (fig. 6B); spermadactyl with median groove; spermadactyl arising from outer surface of movable chela and extending anteriorly; fixed chela with tip strongly grooved medially to receive movable chela (fig. 6C). *Legs*. Coxae I with 2 porelike areas. Chaetotaxy as in ♀; most setae of attenuate type; femur I with 3 spinelike ventral setae; av seta of tibia and genu II not as thick as pv seta of those segments; setae ad-2 and ad-3 of femur II much shorter than other dorsal setae of that segment (this was also true in the ♀).

*Deutonymph*. Fig. 5A. *Dorsum*: Completely covered by single plate, bearing 30 pairs of setae; chaetotaxic pattern and setal types as in ♂; seta z1 minute, setae z5, z6 and J2-J5 short, other setae attenuated distally; reticulation pattern distinct over entire plate. *Venter*: Sternal plate heavily sclerotized; bearing 4 pairs of setae and 3 pairs of pores. Endopodals III and IV free, II fused with sternal plate. Integument of opisthogaster bearing 9 pairs of simple setae, most posterior pair (Jv-5) over  $2 \times$  length of Jv-3 or Jv-4. Anal plate heavily sclerotized, shape similar to that of ♀; postanal seta approximately  $2 \times$  length of para-anal seta. Metapodal plate elongate, similar to ♂. Peritreme ventral, extending to level of coxae I; peritremal plate poorly developed. Tritosternum as in female. *Legs*. Setae of coxa, trochanter and femur as shown. Chaetotaxic pattern as in adults; relative lengths of setae similar to ♀, not attenuated. Coxa I with 2 large porelike areas. *Gnathosoma*. Palpal trochanter setae needlelike; other general facies as in ♀. Protonymph and larva unknown.

This species is described from a series of 31 females, 19 males and 45 deutonymphs. All specimens were collected by H. B. Clagg from South Georgia. Holotype ♀ (BISHOP 8830) Ocean Harbor Beach, Barff Peninsula, South Georgia 16.I.1964, H. B. Clagg, coll., from rotting kelp and rocks on beach, hand net sweeps. Habitat data for ♀ paratypes: 1 specimen same as holotype; remaining specimens from Main Bay, Bird I., 3.IV.1963, under rocks on beach. Habitat of ♂ paratypes: Busen Bay; Bird I., 7.IV.1963, under rocks on beach; and Landing Beach, Bird I. 3.IV.1963, under rocks on beach. Deutonymphs were taken with all of the above collections.

Types deposited as follows: holotype, 15 ♀, 10 ♂ and 25 deutonymph paratypes BISHOP; 5 ♀, 4 ♂ and 8 deutonymph paratypes USNM; remaining paratypes UG.

Remarks. The deutonymph shows characteristics of the ♀ in the length of and type of leg setae and internal malae, and of the ♂ in the complete dorsal plate, type of dorsal setae and length of postanal seta compared to para-anals. Collection data indicate that this species probably occurs in moist coastal habitats. This type of habitat is similar to that reported for other species of *Thinoseius* (Evans 1963).

***Thinoseius katherinae* Hunter, new species** Fig. 6D-I.

*Diagnosis*. Known only from the deutonymph which is distinct in the following combination of characters: no attenuated dorsal or ventral setae; para-anal seta equal in length to postanal seta; no spinelike setae on dorsum of femur II.

*Deutonymph*. Fig. 6D. *Dorsum*. All dorsal setae simple; seta J3 equal in length to J5, z5 and z6 equal to J4; relative lengths of other setae as shown. Dorsal plate entire, heavily sclerotized, covering all of dorsum; reticulation pattern distinct over entire plate. *Venter*. Sternal plate well sclerotized, bearing 4 pairs of setae and 3 pairs of pores; reticulation pattern distinct over entire plate. Endopodals III and IV free, II fused to sternal plate. Anal plate as shown. Metapodal plate distinct. Integument of opisthogaster bearing 5 pairs of

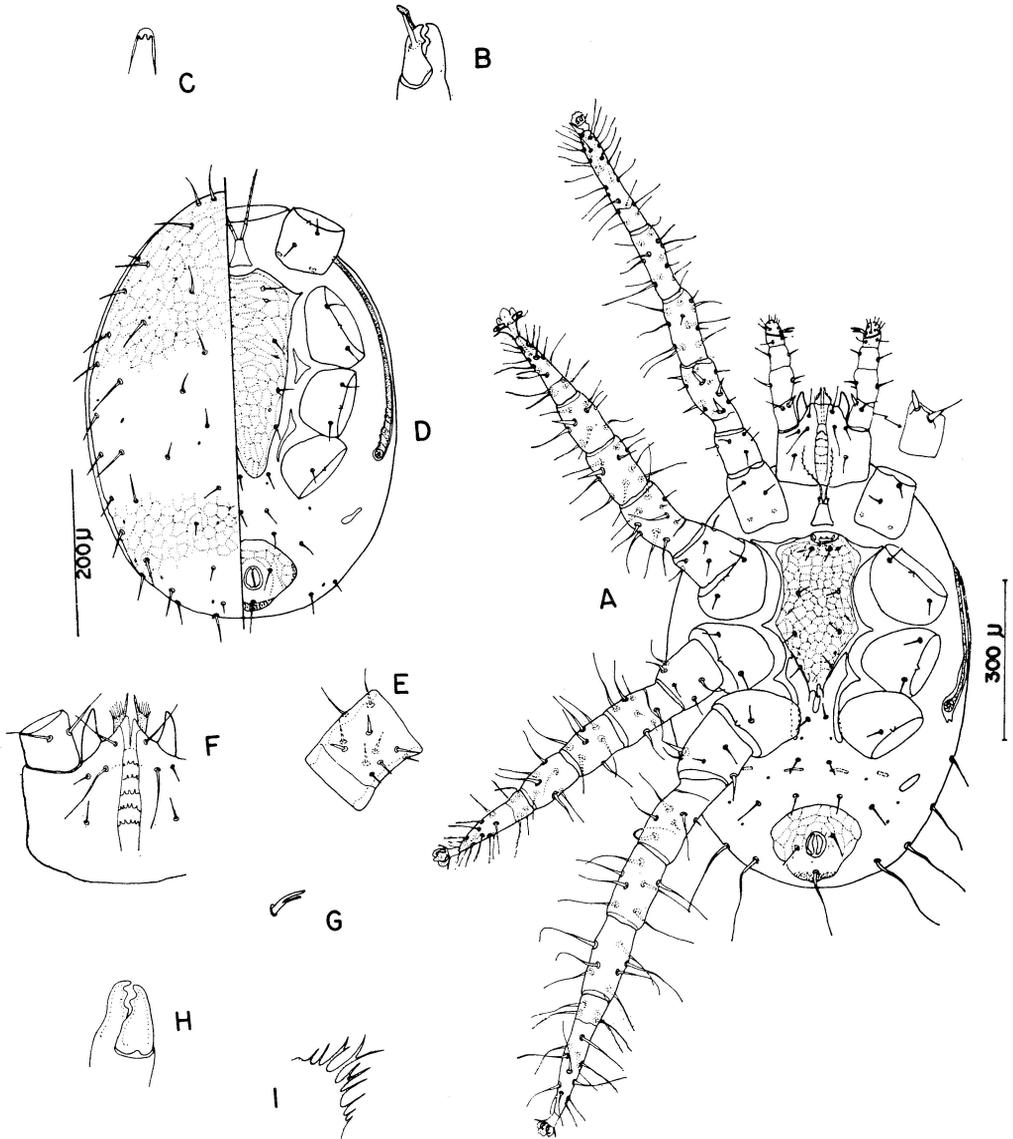


Fig. 6. *Thinoiseius hirschmanni* Hunter, n. sp. ♂: A, venter; B, chelicera; C, medial view of chela. *Thinoiseius katherinae* Hunter, n. sp. Deutonymph: D, dorsoventral view; E, dorsum, femur II; F, gnathosoma; G, apotele; H, chelicera; I, tectum.

setae and 2 pairs of pores. Peritreme ventral, extending to level of coxae I; appearing segmented lateral of coxae III. Peritremal plate apparent only around stigmata. Tritosternum with base and 2 flattened lacinae, each lacina with minute barbs. *Legs*. Coxa with 2 porelike areas. Chaetotaxic pattern as in *Thinoiseius hirschmanni*; all setae short; seta ad-1 and pd-1 on femur I and ad-1 on femur II (fig. 6E) not spinelike. All tarsi with paired claws. *Gnathosoma*. Fig. 6F. Deutosternal rows with denticles as follows: Q1-none; Q2-4; Q3 and Q4-3 to 4; Q5 and Q6-5 to 6. Internal malae as illustrated. Chelicera (fig. 6H) heavily sclerotized, fixed

chela with 2 teeth, movable chela with 1 tooth. Tectum (fig. 6I) with 7-8 projections, middle projection forked, often 1-2 other projections spined or weakly forked.

This species was described from 12 specimens. Holotype, deutonymph (BISHOP 8831) Fortuna Bay, South Georgia 8.I.1964, H. B. Clagg, coll., from tussock grass. All paratypes with same data. Types deposited as follows: holotype and 6 paratypes BISHOP; remaining paratypes UG.

The description of a species from an immature stage often presents problems in adult-immature associations. This species was described because of the difficulty and unlikelyhood of repeated collection from the Antarctic islands. The deutonymph of *T. katherinae* differs from *T. hirschmanni* in, among other characters, being smaller, having no attenuated dorsal setae, seta ad-1 of femur II and ad-1 and pd-1 of femur I not spinelike, and fewer denticles in the deutosternal rows.

#### Family DIGAMASELLIDAE

#### Genus *Digamasellus* Berlese, 1905

The validity of the name *Digamasellus* versus *Dendrolaelaps* has been reviewed by Hurlbutt (1967).

#### *Digamasellus templei* Hunter, new species Fig. 7A-I.

*Diagnosis.* Adults with terminal 4 setae of tarsi II-IV peglike; dorsal seta Z5 paddlelike at tip, seta S5 flagellumlike at tip and  $2 \times$  length of Z5. Female ventrianal plate bearing 4 pairs of setae plus 3 anal setae. Male genital setae arising from small separate plates; femur II bearing a ventral apophysis.

♀. *Dorsum*: Fig. 7A. Covered by 2 plates, podonotal plate shorter than opisthotal plate. Podosoma bearing 22 pairs of setae, 20 on podonotal plate and 2 pairs of r setae on dorsal portion of peritremal plate; plate surface rugose, without distinct pattern medially. Opisthosomal plate bearing 19 pairs of setae; surface of anterior 3/4 of plate with striation pattern, posterior 1/4 with small circular markings. Seta Z5 ending in a hyalinelike tip which is spatulate or paddlelike, seta S5 thick and flagellumlike at tip, approximately  $2 \times$  length of Z5; other dorsal setae short, simple. *Venter*: Fig. 7B. Sternal plate semi-sclerotized anterior of sternal pores I; setae st-1 arising from semi-sclerotized area; sclerotized portion of plate bearing 3 pairs of setae (st-2 to st-4) and 3 pairs of pores; st-3 medial in relation to other sternal setae, st-4 arising on a line slightly lateral of st-1 and st-2. Genital plate bearing genital setae. Spermatheca between coxae III and IV, shape as illustrated, fig. 7J. Ventrianal plate with anterior margin usually concave; bearing 4 pairs of setae plus 3 anal setae, para-anal setae longer than postanal seta; striation pattern distinct on anterior 1/2 of plate, posterior 1/2 bearing many small circular markings. Integument between genital and ventrianal plates bearing 2 pairs of setae (Jv-1 and Zv-1), Jv-1 longest (in some specimens one or both Jv-1 setae arise from ventrianal plate); no platelets in integument between genital and ventrianal plates. Metapodal plates well developed, bearing anterior fingerlike extension. Exopodal plates III and IV free; endopodal plate IV free and abuts against exopodal IV. Peritremal plate wide, usually extending to posterior level of coxae IV (shape and length of plate posterior of stigmata varies), joining dorsal plate anteriorly; peritreme extending to dorsal surface above coxae I. Lacinae of tritosternum pilose. *Legs*: All tarsi with claws. Tarsi II-IV with 18 setae; setae ad-1 and pd-1 membranous; av-1, pv-1, al-1, pl-1, and md all very short, peglike (fig. 7C). *Gnathosoma*: Deutosternum with 6 denticular rows, Q1 without denticles, Q2-Q5 with 18 to 21 denticles/row, Q6 much wider than other rows and bearing 24-26 denticles (fig. 7D). Palpal femur and genu with medial setae membranous at tip. Apotele 2-tined. Chelicera chelate-dentate (fig. 7E), movable chela with 6, fixed chela with 5 teeth. Tectum as in fig. 7F. Internal mala with fingerlike fringe.

♂. *Dorsum*: Podonotal plate extending ventrally and fused with peritremal plate. Opisthotal plate fused to ventrianal plate. Striation pattern and chaetotaxy as in ♀. *Venter*: Fig. 7G. Sternal setae st-1 arising from semisclerotized area, 3 pairs of pores and 3 pairs of setae (st-2 to st-4) arising from sclerotized part of sternogenital plate; genital setae arising from separate plates at posterior margin of sternogenital plate. Endopodal IV free except at anterior tip which is fused to sternogenital plate; endopodal II and III fused to sternogenital plate. Exopodal plates similar to those of ♀. *Legs*: Tarsi II-IV with peglike terminal setae as

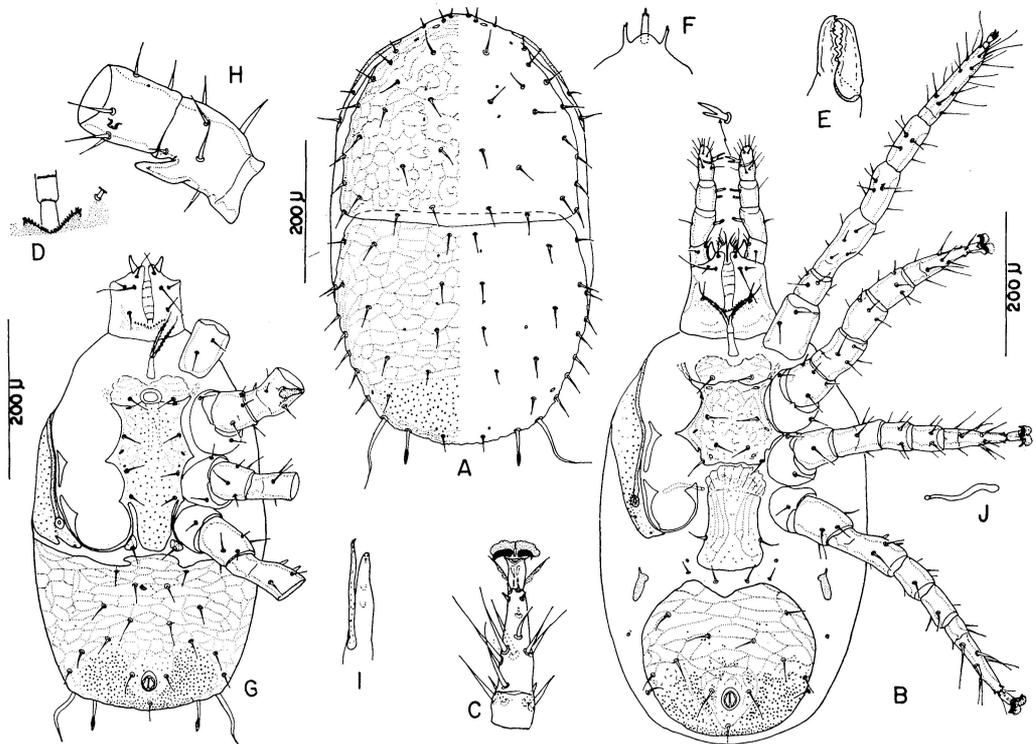


Fig. 7. *Digamasellus templei* Hunter, n. sp. ♀: A, dorsum; B, venter; C, tarsus II; D, deutosternal groove; E, chelicera; F, tectum; J, spermatheca. ♂: G, venter; H, femur and genu, leg II; I, medial view, movable chela.

in ♀; femur IV with 2 dorsal spinelike setae; femur II with ventral apophysis (fig. 7H), genu and tibia each with small ventrolateral boss; other leg chaetotaxy as in ♀. *Gnathosoma*: As in ♀ except for chelicera, movable digit bearing a slender spermadactyl and 2 teeth (fig. 7I).

This species was described from a series of 47 ♀♀ and 6 ♂♂. Holotype ♀ (CSIRO), Poly Gully, Heard I., 6.II.1965, P. Temple, coll., from burrow of *Pachyptila desolata* (Gmelin). All ♀ and ♂ paratypes were collected in II. 1965, other collection data same as holotype. Types deposited as follows: holotype, 4 ♀ paratypes, CSIRO, Canberra; 20 ♀ and 3 ♂ paratypes Визмор; 6 ♀, 1 ♂ paratypes USNM; remaining paratypes UG.

*Remarks.* This species resembles *Dendrolaelaps schusteri* Hirschmann described from ♀ collected from grass on Macquarie I. (Hirschmann, 1966b). Based on the illustration and description of *schusteri*, ♀♀ of the 2 species may be separated by the following characteristics of *schusteri* which are not true of *templei*: seta Z5 (J5 of Hirschmann) not spatulate; 3 pairs of platelets in integument between genital and ventrianal plates; seta V8 of Hirschmann arising from ventrianal plate rather than from integument; fewer deutosternal denticles in Q2-Q6 rows; chelicera with one less tooth/chela. Comparison of material may show *templei* to be a variation (subspecies?) of *schusteri*.

#### Family RHODACARIDAE

#### Genus **Gamasellus** Berlese, 1892

*Gamasellus*, generally regarded as a separate genus, was considered as a subgenus of *Cyrtolaelaps*

by Ryke (1962). This subgeneric classification was followed by me in 2 earlier papers (Hunter 1967a, 1967b) on mesostigmatic mites from the Antarctic area. While these papers were in press, Lee (1966) published a paper listing *Gamasellus* as a separate genus, and Hirschmann (1966c) also considered *Gamasellus* as a genus. Although the changes in generic status may result in some initial confusion to the non-acarologist working on Antarctic acarina, the use of *Gamasellus* as a separate genus is consistent with recent publications in this mite group and is followed here.

***Gamasellus rykei* (Hunter)**

*Cyrtolaelaps (Gamasellus) rykei* Hntr., 1967, *Brit. Antarct. Surv. Bull.* **13**: 34.

*Diagnosis.* Adults are distinct in the following characteristics: 2 subequal dorsal plates covering all of dorsum; anterior dorsal plate with 20 pairs of setae, posterior plate with 31 pairs of setae; dorsal setae short, slightly curved and barbed on convex margin (fig. 1E); ventrianal plate bearing 8 pairs of setae plus anal setae. Femur II of male bearing a ventral apophysis and small spine.

*G. rykei* was described from specimens collected on Candlemas and South Sandwich Is. from *Polytrichum alpinum* mat (Hunter 1967b). *G. rykei* is well represented in the South Georgia material. Specimens were taken from Right Whale Bay, Bay of Isles, Kelpbugten, Hestesletten, Wanderer Valley, Maiviken, Leith and Stromness, Moltke Harbor, North Valley, Landing Beach, Fresh Water Bay, Long Ridge, Grytviken Peninsula, Stromness Peninsula, and Mt. Coulm. Habitats included moss, moss and lichens, berlese funnel samples, tussock grass, under moss and rocks, and from the nest material of *Diomedea exulans* L., *D. melanophris* Temminck, and *Larus dominicanus* Licht.

***Gamasellus racovitzai* (Trouessart)**

*Gamasus racovitzai* Trsrt., 1903, *Result. Voy. Belg. Zool.*, p. 8.

*Gamasellus racovitzai*: Trägårdh, 1908, *Wiss. Ergeb. Schwed. Südpolar-Exped.* **5**: 7.

*Cyrtolaelaps (Gamasellus) racovitzai*: Ryke, 1962, *Mem. Ent. Soc. S. Afr.* **7**: 50.

*Diagnosis.* Dorsal plate divided above coxae IV, dorsal setae simple. Female with 2 spurs on trochanter IV—anterior spur about 2 × length of posterior spur—and an apophysis on femur IV (fig. 1F). Male with a large ventral apophysis on femur II and a dorsal projection on tarsus II near base of segment; spermadactyl long and slender, extending well beyond chela and curving around chela (fig. 1G). Peritremes in adults not extending beyond coxae III.

This species was listed as *Cyrtolaelaps (Gamasellus) racovitzai* in previous papers (Hunter 1967a, 1967b). Comments on the generic change are given above. *G. racovitzai* has been reported in the literature primarily from moss and lichens, with a few also from grass, from the following localities: Antarctic Peninsula: Argentine I., Torgersen I., Graham Coast, Anvers I. James Ross I., Green I. and Danco Coast; South Shetland Is.: Livingston I., Deception I. and Yankee Harbor (Hunter 1967a); from Wienke I. (Ewing 1922); Gerlache Strait (Trouessart 1903); and Signy I. (Hunter 1967b).

In the present collection *G. racovitzai* was represented only in the South Georgia & Bird I. material. Mites were collected from the following habitats: under rocks (Royal Bay), moss on dryer (Maiviken), moss and lichens from moss dryer (Bay of Isles), crevices on beach (Moltke Harbor) and gull's nest (Kelpbugten). *G. racovitzai* is apparently a free-living species. Gressitt (1967) reported this mite to be primarily a predator, commonly of springtails, based on observation on South Shetland Is. From berlese samples, Gressitt found this species to be most abundant in the following ecological habitats (given in decreasing order of numbers of individuals collected) rocks, moss, grass, algae, lichens, nests and herb.

***Gamasellus (Hydrogamasellus) antarcticus* (Trägårdh)**

*Hydrogamasus antarcticus* Trgdh., 1908, *Wiss. Ergeb. Schwed. Südpolar Exped.* **5**: 12. (The dates 1907 and 1908 are both used for this species, *Zool. Rec.* gives 1908).—Hunter, 1967, *Antarc Res. Ser.* **10**: 35.

*Gamasellus (Hydrogamasellus) antarcticus*: Hirschmann, 1966, *Acarologie* 9: 28.

*Diagnosis*: Adults may be recognized by the following: single dorsal plate; apotele 3-tined; large ventrianal plate contiguous with genital plate. ♀ trochanter of leg III with an apical posterodorsal tooth (fig. 1H), trochanter IV without teeth. ♂. Leg II—femur with large ventral apophysis, genu and tibia each with a spur, tarsus with dorsal process; spermadactyl not extending beyond movable chela (fig. 1I).

The generic position of this species is uncertain at this time. Based on a preliminary study, Lee (1966) felt the *Hydrogamasus* species of South America and Australia were closer allied to the genus *Parasitiphis* than to the type species of *Hydrogamasus (Hydrogamasus) salinus* Laboulbène, 1851). Hirschmann (1966c) also considered *H. antarcticus* to be morphologically similar to the *Hydrogamasus* species Womersley (1956) described from Australia and that these species were incorrectly placed. Hirschmann made *H. antarcticus* the type species of a new subgenus, *Hydrogamasellus*, of the genus *Gamasellus* and included Womersley's species in this subgenus.

The placement of *H. antarcticus* in *Gamasellus* raises some questions. *H. antarcticus* has minutely pectinate Z5 setae (Hunter 1967b) and 1 or more setae in the row with 1–3 minute barbs; however, these setae would probably not be considered obviously pilose or paddlelike, the condition normally found in *Gamasellus* (see Lee, 1966). A single as opposed to a divided dorsal plate is inconsistent with most *Gamasellus* species. The generic placement suggested by Lee (*Parasitiphis*) would seem more likely than *Gamasellus*; however, until comparative studies can be made, the classification of Hirschmann is followed here to avoid additional confusion. Watson (1967) lists *Gamasellus* under the family Digamasellidae rather than Rhodacaridae.

This species was originally reported from Paulet I. moss (Trägårdh, 1908). The species has also been reported from Macquarie I. by Watson (1967) who gave the following habitat data: “*Stilbocarpa polaris* litter. Also in *Poa hamiltoni* litter, *Puccinellia macquariensis*, mosses, cave lichens and nest material of *Diomedea exulans*.” The South Georgia (Bird I.) collection contained specimens from moss, tussock grass, under rocks and rock crevices and from the nest or nest material of *Diomedea exulans* L., *D. melanophris* Temminck, *D. cirrysostoma* Forster, *Macronectes giganteus* (Gmelin), *Phoebetria palpebrata* (Forster), *Procellaria aequinoctialis* L., *Larus dominicanus* Licht. and *Pygoscelis papua* (Forster) rookery.

#### **Hydrogamasus (Austrohydrogamasus) watsoni** Hirschmann

*Hydrogamasus (Austrohydrogamasus) watsoni* Hrsch., 1966, *Acarologie* 9: 27.

*Diagnosis*: Adults of this species may be recognized by: dorsum covered by a single plate; setae Z5 and Z3 long and approximately 4 × length of Z4 (fig. 1J); deutosternal row Q7 divided medially to form 2 separate series of teeth (fig. 1K); tectum with a single point; ventrianal plate not extending laterally of coxae IV, bearing 6 pairs of setae plus anal setae. ♂: leg II—femur with ventral apophysis, spur on genu and tibia; tarsus with a bulbous ventral seta (fig. 1L); trochanter IV with large ventral apophysis.

Hirschmann (1966c) made *H. watsoni* the type species of a new subgenus, *Austrohydrogamasus*, in the genus *Hydrogamasus*. The larva, protonymph, deutonymph and both adult sexes were described by Hirschmann from Macquarie Island material. Hirschmann placed this species in the family Neoparasitidae.

*H. watsoni* is represented in the South Georgia & Bird I. material from Royal Bay, Stinker Cape and Moltke Harbor, and from Barff Peninsula. The species was collected in January, February, March, October and November. All specimens were collected from under small stones and rocks particularly at intertidal zones.

Watson (1967) reported this species as occurring throughout the year on Macquarie I. and gave the following habitat data: “Particularly common in *Porphyra umbilicalis* found growing on sea-sprayed rocks; also in *Rhizocolonium* sp., *Colobanthus muscoides*, *Puccinellia macquariensis*, *Poa annua*,

mud and rocks in penguin rookeries, and sometimes under stones on sandy beaches. Also nests of *Pachyptila desolata*."

**Gamasellus gressitti** Hunter, new species Fig. 8A-M.

*Diagnosis.* Podonotal plate with 3 and opisthonotal plate with 2 pairs of thicker, pilose setae. Female with 3 heavy ventral spurs on femur IV, 2 similar spurs on femur III. Male with ventral apophysis and spine on femur II, boss and spine on genu II; femur III with 1 spur of type on femur III of ♀; chelicera with hood-like structure on fixed chela, anteriorly curving spermadactyl on movable chela. Shape of internal malae of immatures as in ♀.

♀. *Dorsum:* Fig. 8A. Two dorsal plates, podonotal plate bearing 21 pairs of setae, opisthonotal plate 14 pairs of setae; setae j4, z5, r4, Z3 and Z5 longer and pilose, other dorsal plate setae flattened and with 2-4 minute spines; 6 pairs of simple setae (1 podosomal, 5 opisthosomal) arising from integument lateral of dorsal plates. *Venter:* Fig. 8B. Pre-endopodal plates present. Sternal plate bearing setae st-1, st-2 and st-3; often 1 or more holes (position variable) in plate or in margin of plate. Metasternal plate not as heavily sclerotized as sternal plate, bearing seta st-4 and a pore. Genital plate with arrow-head shaped membranous anterior flap; genital setae on plate, paragenital pores in integument removed from plate. Ventrianal plate bearing 6 pairs of setae plus 3 anal setae; outline of anal plate apparent; often 1 or more holes (position variable) in ventrianal plate; striation pattern distinct. Four pairs of weakly sclerotized platelets forming a transverse row in integument between genital and ventrianal plates. Metapodal plates distinct. Integument lateral of ventrianal plate bearing 4 pairs of pores and 3 pairs of setae, posterior pair longest and weakly pilose. Peritreme extending to level of coxae II. Peritremal plate fused to exopodal IV; fusing with podonotal plate in area of seta r1. Lacinae of tritosternum delicately pilose. *Gnathosoma.* Fig. 8C. Deutosternum with 8 denticular rows; Q6 with 18 denticles, Q8 without denticles, denticles of row Q7 larger than those of other rows; apotele 3-tined, proximal tine very small; internal malae with 11-12 finger like projections. Chelicera chelate-dentate; fixed chela with 5, movable chela with 3 teeth (fig. 8D). Tectum triramous (fig. 8E). *Legs.* Femur I with setae ad-1, pd-1 and pd-2 spinelike, other setae of leg I needlelike; setae of leg II simple; femur IV bearing 6 setae (ad-1 and ad-2 spinelike) plus 3 heavy ventral spurs (fig. 8F). Femur III bearing 6 setae (pd-2 spinelike) plus 2 heavy ventral spurs (fig. 8G); setae of tarsi II-IV longer and heavier than other simple leg setae. Number of setae on legs I-IV (trochanter, femur, genu and tibia) as follows: I (6-13-13-14); II (5-11-11-10); III (5-6-9-8); IV (5-6-10-10). Setae of coxae I-III bearing 2-4 minute spines, coxal seta IV smooth. All tarsi with paired claws.

♂. *Dorsum:* As in ♀. *Venter:* Pre-endopodal plates present, sternogenital separate from ventrianal plate (fig. 8H). Sternogenital plate bearing 5 pairs of simple setae; endopodals IV free posteriorly, anteriorly fused with sternogenital plate; endopodals II and III fused with sternogenital plate. Ventrianal plate bearing 8 pairs of setae plus 3 anal setae, setae Jv-5 and postanal weakly pilose. Outline of anal plate apparent, 1 pair of pores at level of anterior margin of anal opening. Metapodal plates fused with ventrianal. Peritreme, peritremal plate and tritosternum as in ♀. *Gnathosoma.* Internal malae as in fig. 8I. Chelicera chelate-dentate; movable chela unidentate, bearing medially grooved spermadactyl which is chelalike in shape and free along distal 1/2 of chela, extending well anterior of chelicera; fixed chela unidentate and bearing a hoodlike structure distally (fig. 8K). Other features of gnathosoma as in ♀. *Legs:* Coxal setae as in ♀. Leg II with ventral apophysis and spine on femur, genu with spine and lateral boss, tibia with lateral boss (fig. 8J). Femur III with 1 ventral spur of type on femur III and IV of ♀; leg IV without spurs. Legs with spinelike dorsal setae on femora I, III, and IV as in ♀. All tarsi with paired claws.

*Deutonymph.* Fig. 8L. *Dorsum:* Chaetotaxy and shape of dorsal plates as in ♀. Striation pattern indistinct in area of setae j5 to z6. Peritremal plate not connected to podonotal plate. *Venter:* Endopodal plates free of sternal plate; pre-endopodal plate fused to sternal plate; sternal plate bearing 3 pairs of pores and 4 pairs of setae. Anal plate rounded, bearing 1 pair of pores and 3 setae, postanal seta weakly pilose. Metapodal plate present; opisthogaster bearing 8 pairs of setae, Jv-5 weakly pilose. Peritreme extending dorsally. Tritosternum as in ♀. *Gnathosoma.* As in ♀, internal malae as in ♀ but with fewer fringe projections. *Legs.* Femur III and IV without ventral spurs; other features as in ♀.

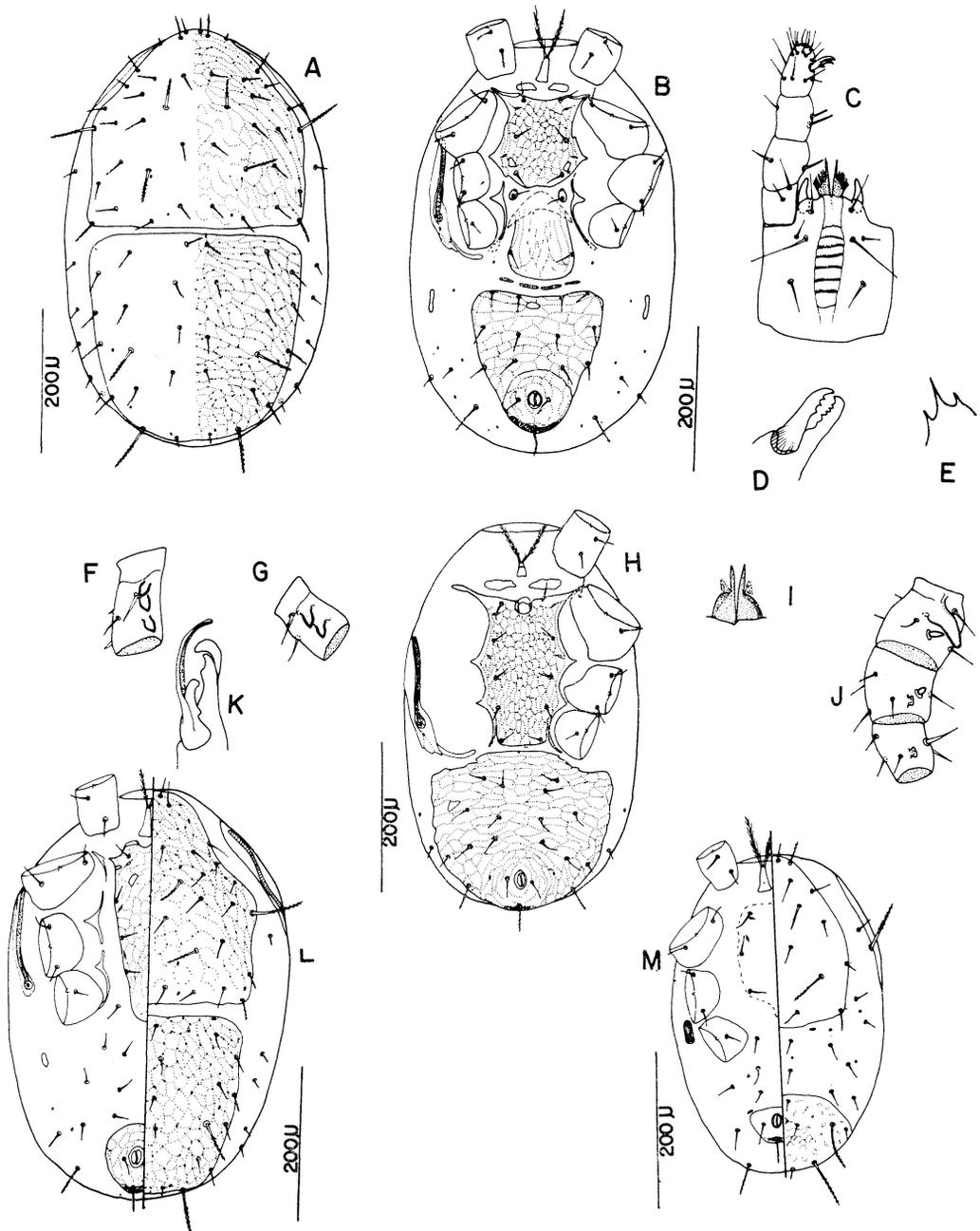


Fig. 8. *Gamasellus gressitti* Hunter, n. sp. ♀: A, dorsum; B, venter; C, gnathosoma; D, chelicera; E, tectum; F, venter, femur IV; G, venter, femur III. ♂: H, venter; I, internal malae; J, femur, genu and tibia, leg II; K, chelicera. Deutonymph: L, dorsoventral view. Protonymph: M, dorsoventral view.

*Protonymph.* Fig. 8M. *Dorsum*: Podonotal plate bearing 11 pairs of setae, r setae off plate, pilose setae as illustrated. Pygidial plate bearing 6 pairs of setae, 2 pairs distinctly pilose, other setae small and smooth. Integument between and lateral of plates bearing setae as shown; 1-2 pairs of mesonotal scutella. *Venter*: Sternal plate weakly sclerotized, margins difficult to distinguish; bearing 2 pairs of pores and 3 pairs of setae. Anal plate bearing 3 setae, pores off plate. Opisthogastric setae as illustrated. Peritreme not extending anterior to middle of coxae III. Tritosternum as in adults. Internal malae with fewer fingerlike projections, otherwise as in ♀. Deutosternal denticular pattern as in ♀ except Q1 has 10-12 minute denticles. Legs without spurs.

This species is described from a series of 37 ♀, 9 ♂, 22 deutonymphs and 16 protonymphs. Holotype ♀ (BISHOP 8832), Fresh Water Bay, Bird I., South Georgia, 7.IV.1963, H. B. Clagg, coll., from dove prion (*Pachyptila desolata* (Gmelin)). Paratype specimens were collected in III, IV and XII in 1963 and in I, 1964. Bird I., collection localities included: Bandersnatch, Macaroni Creek, Long Ridge, Fresh Water Bay, Wanderer Ridge, Cave Crag, Molly Hill and Pearson Inlet. Other collection localities were Ocean Harbor Beach, Barff Peninsula and Stromness Peninsula. Specimens were collected from nest material of *Oceanites oceanicus* (Kuhl.), *Pachyptila desolata* (Gmelin), *Procellaria aequinoctialis* L., *Pelecanoides urinatrix* Salvin, *Macronectes giganteus* (Gmelin), *Diomedea chrysostoma* Forster, *D. exulans* L. and *D. melanophris* Temminck. Specimens were also collected from moss, rotting kelp and rocks. Types deposited as follows: holotype, 18 ♀, 5 ♂, 11 deutonymph and 8 protonymph paratypes BISHOP; 5 ♀, 1 ♂, 5 deutonymph and 5 protonymph USNM; remaining paratypes UG.

#### Family VEIGAIIDAE

#### Genus *Cyrthrolaelaps* Berlese, 1904

Hirschmann (1966d) recently described 4 species of *Cyrthrolaelaps* bringing the total number of species in the genus to 6. He also gave characteristics for separating the species.

#### *Cyrthrolaelaps watsoni* Hirschmann

*Cyrthrolaelaps watsoni* Hrsch., 1966, *Acarologie* 9: 42.

*Diagnosis.* ♀: 2 dorsal plates, podonotal plate approximately  $2 \times$  length of opisthotal plate; metasternal setae arising from integument, genitoventral plate with 6 pairs (3 short) of setae (fig. 1N); internal malae fringed (fig. 1M). ♂: 2 dorsal plates, posterior plate covering all of opisthotal area; ventral plate bearing 5 (3 small) pairs of setae; internal malae not fringed; spermadactyl with 2-3 leaflike structures (fig. 1P). Internal malae of nymphs as in ♀.

Hirschmann (1966d) described the ♀, ♂ and deutonymph of this species from Macquarie I. material. The South Georgia Is. collection contained ♀♀, ♂♂, deutonymphs and protonymphs of *C. watsoni*. Specimens were collected by H. B. Clagg in I, III, IV, VII, VIII and X. Collection localities were: Bird I.—Iceberg Point, Landing Beach, Main Bay, Stinker Cape, Fresh Water Bay, Royal Bay and Bay of Swains, and from Barff Peninsula. Habitats were under rocks, under rocks on beach, and under rotting kelp. Watson (1967) reported this species from *Stilbocarpa polaris* litter and moss on Macquarie I.

#### Genus *Veigaia* Oudemans, 1905

#### *Veigaia claggi* Hunter, new species Fig. 9A-L.

*Diagnosis.* ♀ dorsal plate with lateral incision; dorsum bearing 7 pairs of heavy, pectinate setae, 5 of which are on dorsal plate; sternal plate deeply notched posteriorly; tritosternum bipartite, each part ending in 2-3 simple filaments; terminal setae of tarsi II-IV minute.

♀. *Dorsum.* Fig. 9A. Dorsal plate with deep lateral incision, plate covering up to 3/4 of dorsum; 7 pairs of long, thickened finely pectinate setae arising from dorsum—4 pairs arising from podonotal region of plate,

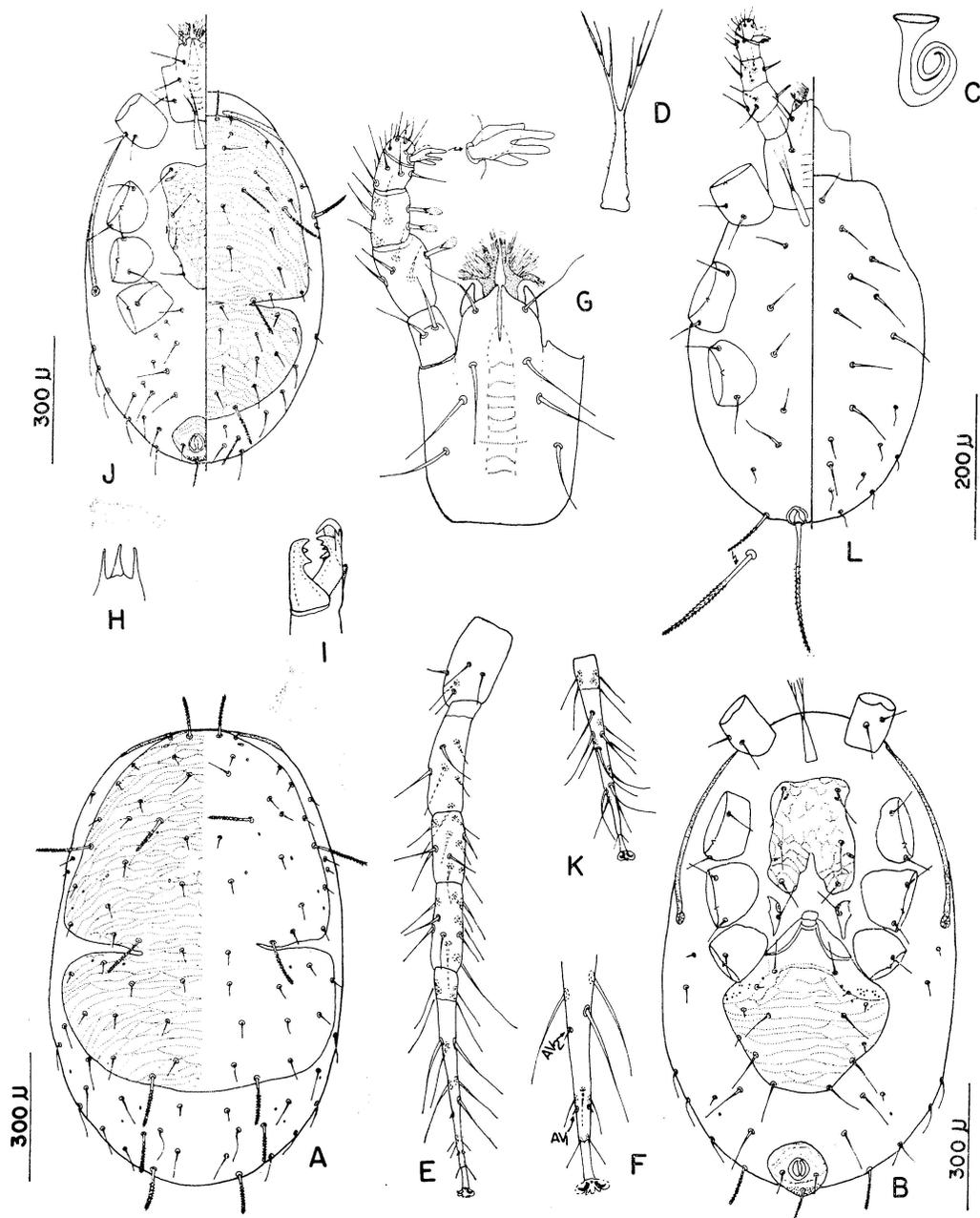


Fig. 9. *Veigaia claggi* Hunter, n. sp. ♀: A, dorsum; B, venter; C, spermatheca; D, tritosternum; E, leg IV; F, tarsus IV; G, gnathosoma; H, tectum; I, chelicera. Deutonymph: J, dorsoventral view; K, tarsus IV. Larva: L, dorsoventral view.

1 pair from opisthonotal region and 2 pairs from integument posterior of plate; other dorsal setae simple; podonotal region of dorsal plate bearing 19 and opisthonotal region 11 pairs of setae; reticulation of plate consisting primarily of transverse lines. *Venter*. Fig. 9B. Posterior margin of sternal plate with deep notch extending to level of sternal setae st-2; plate bearing 3 pairs of simple setae and 2 pairs of pores. Each metasternal-endopodal plate bearing a seta (st-4) and pore. Genitoventral plate bearing 7 pairs (3 pairs very short) of setae; without distinct line of fusion between genital and ventral plates. Punctiform organ with 10 pores. Spermatheca at level of coxae IV; shape as in fig. 9C. Anal plate bearing 3 simple setae, postanal seta finely pectinate; 1 pair of pectinate setae arising from integument lateral of anal plate. Peritreme extending dorsally to anterior margin of podonotal plate; peritreme without distinct plate. Tritosternum base minutely spined, each lacina divided into 2-3 filamentous parts (fig. 9D). *Legs*. Tarsi II-IV with setae av-1 and pv-1 minute, peglike; setae ad-1, pd-1, ad-2 and md very short, needlelike (fig. 9F). Seta av-2 minute, peglike on tarsi III and IV, equal in size to pv-2 on tarsus II. Other leg setae simple (fig. 9E). All tarsi with paired claws. *Gnathosoma*. Fig. 9G. Internal malae with 3 fingerlike processes and setiform fringe; deutosternum with 9 denticular rows, Q7 wider than other rows, Q9 without denticles. Palpal trochanter with setae arising from raised area; medial setae of femur and genu widened and serrated distally, serrated area not as heavily sclerotized as proximal part of seta; apotele 3-tined, with a distinct hyaline appendage. Tectum as in fig. 9H. Chelicera very long and slender; movable digit bearing 3 teeth; fixed digit bearing 4 teeth and a membranous cap (fig. 9I).

*Deutonymph*. Fig. 9J. *Dorsum*: Dorsal plate with lateral incision; chaetotaxic pattern and relative lengths of dorsal setae as shown. *Venter*: Tritosternum as in ♀. Sternal plate bearing 4 pairs of setae and 1 pair of pores, 2nd and 3rd pairs of pores in integument at margin of plate. Integument posterior of coxae IV bearing 4 pairs of minute setae, length of other setae as shown. *Legs*. Tarsi II-IV with ad-1 and pd-1 setae very fine, delicate, other setae of about equal length and thickness (fig. 9K). *Gnathosoma*. As in ♀.

*Larva*. Fig. 9L. *Dorsum*. Dorsal plate absent, dorsum bearing 18 pairs of setae—11 pairs straight and needlelike, 7 pairs small and wavy. *Venter*. No ventral plates; 7 pairs of setae (6 pairs needlelike, 1 pair thickened and finely pectinate) arising from integument. Postanal seta thickened and finely pectinate. *Gnathosoma* with 8 denticular rows; apotele and internal malae as in ♀.

♂ and protonymph unknown.

This species was described from a series of 3 ♀, 13 deutonymphs and 7 larvae. Holotype ♀ (BISHOP 8833), Bird I., South Georgia, 10.IV.1963, H. B. Clagg, coll., from shoemaker (*Procellaria aequinoctialis* L.) nest. Female paratypes with same data as holotype. Deutonymphs and larvae with same collection data except dates of collection which were 7, 10, and 21.IV.1963. Holotype, 1 ♀, 8 deutonymph and 4 larva paratypes deposited with BISHOP, remaining material UG.

#### Genus *Gamasolaelaps* Berlese, 1903

Evans (1959) gave generic synonyms and a description for *Gamasolaelaps*. The material from South Georgia Is. contained 1 species, previously undescribed, of *Gamasolaelaps* and represents the 1st record of this genus from the Antarctic area.

#### *Gamasolaelaps arenosus* Hunter, new species Fig. 10A-K.

*Diagnosis*. Adults: dorsal plate divided; apotele 4-tined, with 2 hyaline appendages; tarsi II-IV with terminal setae minute; posterior rostral setae of gnathosoma forming a transverse row between rostral and capitular setae; palpal trochanter bearing an anteromedial spur.

♀. Fig. 10A. *Dorsum*. Bearing 2 plates; podonotal plate with 18 pairs of setae (r3 off plate in some specimens), with heavy striation line paralleling margin of plate, other reticulations as shown; opisthonotal plate covering approximately 1/2 of opisthonotal area, plate bearing 10 pairs of setae; small area of integument immediately posterior of J setae semisclerotized; setae arising from integument as shown. All dorsal setae simple. *Venter*: Fig. 10B. Sternal plate bearing 2 pairs of pores and 2 pairs of setae; setae st-3 arising from separate, poorly sclerotized plates, integument between these plates semisclerotized. Compound metasternal-endopodal plate bearing pore and seta st-4. Genital and ventral plates fused, genital portion not well sclerotized.

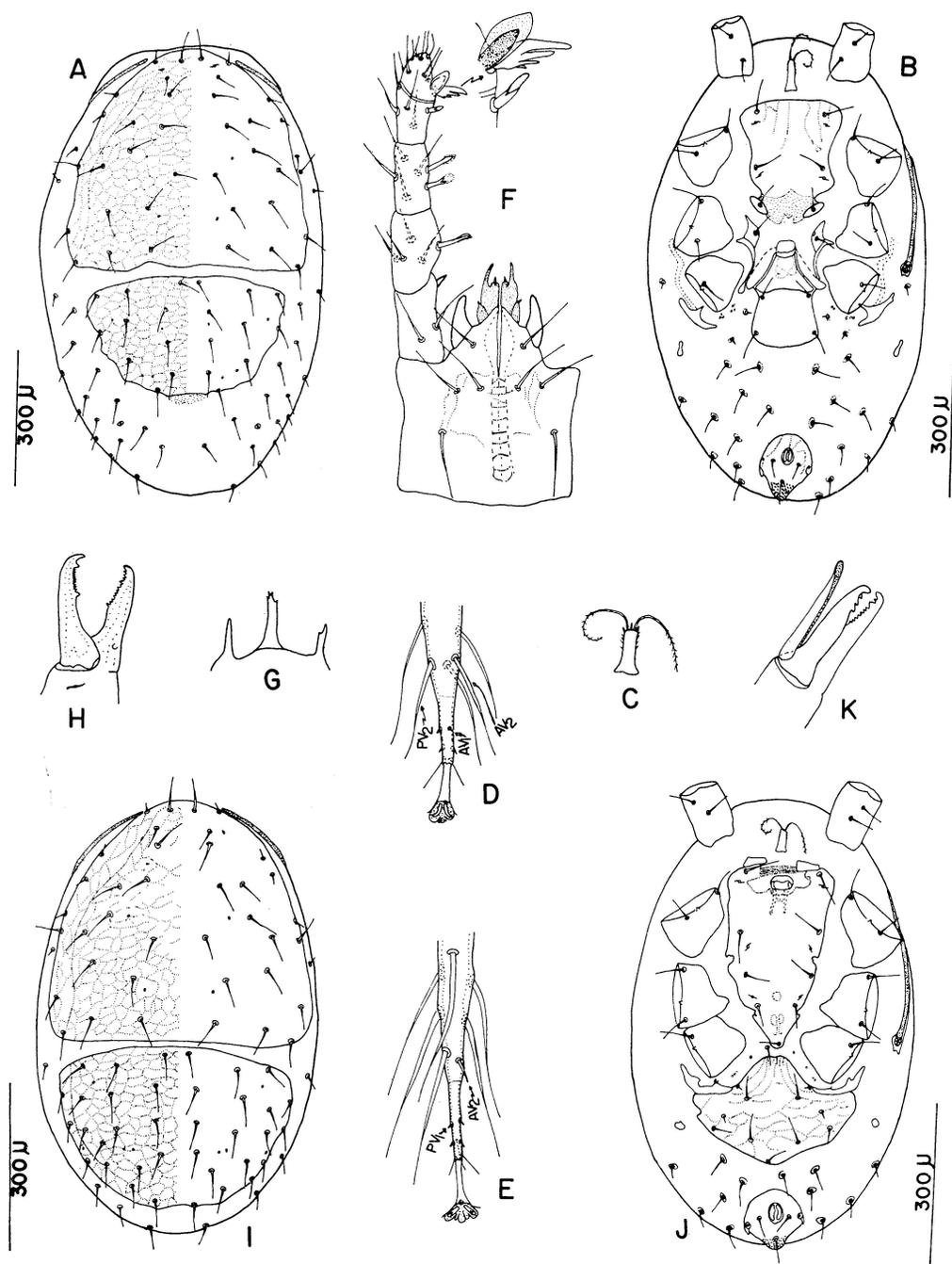


Fig. 10. *Gamasolaelaps arenosus* Hunter, n. sp. ♀: A, dorsum; B, venter; C, tritosternum; D, tarsus II; E, tarsus IV; F, gnathosoma; G, tectum; H, chelicera. ♂: I, dorsum; J, venter; K, chelicera.

ed, ventral part distinct and bearing 2 pairs of setae, posterior pair longest. Punctiform organ with 5–6 pores. Anal plate bearing 3 setae and 1 pair of pores. Metapodal plate distinct, rodlike. Exopodal IV well sclerotized; semisclerotized rodlike plate (exopodal?) lateral of coxae III and IV. Opisthogastric setae arising from small platelets in integument. Peritreme extending dorsally to area above coxa I; peritremal plate developed around stigmatal area only. Tritosternum with pectinate base, and 2 pectinate lacinae (fig. 10C). *Legs*: Tarsi II–IV (fig. 10D, E) with setae ad-1, pd-1, al-1, pl-1, av-1, pv-1 and md minute. Tarsi III and IV with seta av-2 minute (fig. 10E), tarsus II with seta av-2 equal in size to pv-2 (fig. 10D). All tarsi with paired claws. *Gnathosoma*. Fig. 10F. Each internal mala terminating in 3 projections, medial and lateral projections setiform at tip. Deutosternum with 10 rows of denticles, Q11 present but without denticles. Posterior rostral setae forming a transverse row between rostral and capitular setae. Palpal trochanter with anteromedial spur; medial seta of femur, genu and tibia terminating in a membranous tip; apotele 4-tined, posterior tine small, 2 hyaline appendages. Tectum with 3 projections, medial projection arising slightly ventral of lateral projection (fig. 10G). Chelicera chelate-dentate, well sclerotized; movable chela with 2 large teeth between which are 9 smaller teeth (fig. 10H), fixed chela with 10 small teeth and 2 larger teeth.

♂. *Dorsum*: Fig. 10I. Bearing 2 plates, podonotal plate largest, with 19 pairs of setae; opisthonotal plate with 18 pairs of setae; all setae simple; podonotal plate with heavy striation line paralleling margin of plate; reticulation pattern weak in area of setae j1–j3. *Venter*: Fig. 10J. Pre-endopodal plates apparent, partially fused with sternal plate, integument between plates semisclerotized. Sternogenital plate bearing 5 pairs of setae (1 of the genital setae may arise from integument) and 3 pairs of pores; reticulations indistinct; genital opening posterior of setae st-1. Ventral plate fused to exopodals IV; reticulation pattern indistinct; plate bearing 5 pairs (2 pairs minute) of setae (some specimens with an unpaired seta between setae Jv-3). Punctiform organ with 6 pores. Metapodal plates small, rounded. Anal plate bearing 3 setae and 1 pair of pores; without distinct reticulations. Integumental setae arising from small platelets. Tritosternum as in female. *Legs*: As in ♀; leg II unarmed. *Gnathosoma*. Chelicera (fig. 10K) well sclerotized; spermadactyl fingerlike, grooved medially, free, slightly longer than chela; movable chela with 3 teeth, fixed chela with 1 large tooth and proximal of this tooth 7 small teeth. Other features of gnathosoma as in ♀.

This species is described from a mounted series of 60 ♀ and 5 ♂. Holotype ♀ (BISHOP 8834), Fortuna Bay, South Georgia, 7.XI.1963, H. B. Clagg, coll., from tussock grass in gentoo penguin (*Pygoscelis papua* (Forster)) rookery. Paratypes were collected by H. B. Clagg in I, II, III, IV, X, XI and XII. Collections were made in 1961, 1962, 1963 and 1964; however, specimens were not collected in all of the above months each year. Collection sites were Busen Peninsula, Fortuna Bay, Stromness Peninsula, Grytviken Peninsula, Leith and Stromness, and Royal Bay. Habitats included: tussock grass in *Pygoscelis papua* (Forster) rookery; nest of *Larus dominicanus* Licht. and *Phoebetria palpebrata* (Forster); under rocks; moss drier; under board; and under rocks near stream at sea level. Holotype, 40 ♀ and 3 ♂ paratypes BISHOP; 5 ♀ paratypes USNM; remaining material UG.

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