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NEW SPECIES OF ACARINA FROM THE INTERTIDAL ZONE IN NETHERLANDS NEW GUINEA

by

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The Acarids described in the present paper comprised a small collection made by Dr. L. v. d. Hammen of the Leiden Museum during a visit to Biak Island, Netherlands New Guinea in 1953. The mites were found inhabiting the *Cladophora socialis* and Red Algae on the stones in the intertidal zone near the Royal Netherlands Naval Base on the south coast of the Island, and were sorted out from a large collection of other small arthropods obtained from a large sample of algae by means of a modified Tullgren apparatus. The actual biotope in which they occurred is very fully described in Dr. v. d. Hammen's recent paper ¹⁾ in which he describes a new genus and species of Oribatid mite from a single specimen.

The rest of the Acarids, Dr. v. d. Hammen has very kindly passed on to me for study and I am very grateful for the compliment of being asked to undertake the description of the various species present in the collection.

Besides the small Trombidiid *Platytrombidium maritimum* sp. nov. contained in the collection were three new species of Mesostigmata, *Cyrtolaelaps hammeni* sp. nov., *Leioseius littorale* sp. nov., and *Periseius littorale* gen. et sp. nov., and two specimens of *Hyadesia vietsi* sp. nov. These five species are described herein.

Suborder MESOSTIGMATA G. Canest., 1819

Superfamily PARASITOIDEA Banks, 1915

Family RHODACARIDAE Oudemans, 1902

Rhodacarinae A. C. Oudemans, 1902, Tijdschr. Ent., 45: 48.

Rhodacaridae G. O. Evans, 1957, J. Linn. Soc. London, Zool., 43(29): 221.

¹⁾ *Fortuymia marina* nov. gen., nov. spec., an Oribatid mite from the intertidal zone in Netherlands New Guinea. Zool. Med., 37(1): 1-9, 1960.

Genus **Cyrtolaelaps** Berl., 1887

Cyrtolaelaps A. Berlese, 1887, A.M.S., fasc. 44(5); nec Berl., 1892, A.M.S., Mesostigmata, p. 69.

Type: *Gamasus mucronatus* G. & R. Canestrini, 1881.

Cyrtolaelaps hammeni sp. nov. (fig. 1a-b, 2a-h, 3a-e)

Location of types. Holotype female, allotype male, 5 paratype females and 16 paratype males in the Leiden Museum; 5 paratype females and 15 paratype males in the South Australian Museum.

Description¹). Female holotype. A moderately well sclerotised light brownish-yellow species of oval shape. Length of idiosoma 538, width 351.

Dorsum. Almost completely covered by two shields of subequal length, anterior (notocephalic) 269 long by 326 wide across the shoulders, posterior (notogastric) 254 long and 288 wide; both shields with fine reticulate lines. Chaetotaxy holotrichous, anterior shield with 22 pairs of setae, posterior with 21 pairs; *i*₁, *r*₅, *S*₄, *Z*₅ paddle-shaped, all the rest simple pointed; *i*₁ 24, *r*₅ 24, *r*₁ and *r*₂ 19, *s*₆ 38, *J*₅ 14, *S*₄ 38, *Z*₅ 38, *R* series 29; *i*₁-*i*₅ = 259, *J*₁-*J*₅ = 216, *s*₆-*s*₆ = 259; the *s* series from *s*₄ are close to the *r* series which are marginal and the *S* series are also close to the marginal *R* series; the two shields are separated by a band of soft cuticle 20 wide; pores are inconspicuous except the lyriform pair behind *r*₁.

Venter. Tritosternum normal with elongate conical basal part and paired ciliated laciniae. Pre-endopodal shields are present and triplicated, the median pair the largest, the anterior and posterior lenticular. Sternal shield with some indistinct punctae and a few faint reticulations; length (in median line) 87; anterior margin strongly concave and 192 wide; lateral margins coalesced with endopodal shields of coxae II; posterior margin biconvex but only the convexities are clearly defined, the median portion being indistinct; with three pairs of setae and two pairs of pores; *v*₁-*v*₁ = 46, *v*₂-*v*₂ = 58, *v*₃-*v*₃ = 46, *v*₁-*v*₂ = 49, *v*₂-*v*₃ = 35, *v*₁-*v*₃ = 87, pore I-I = 75, setae 14. Metasternal shields large and at the anterior end not clearly separated from the sternal shield, they carry the usual pore and seta and are slightly punctate, the setae are 14 long and 90 apart. The genital shield is 72 long by 72 wide with truncate base and a single pair of setae 12 long and 64 apart situated near the posterior margin. The ventri-anal shield is large and widely expanded behind acetabula IV; length 250; anterior margin straight, sides rounded; with reticulate striations; the chaetotaxy is *V*₁, 2, 3, 4, 5, 6, 7,

1) The setal nomenclature adopted in this paper is that of Hirschmann 1957 and 1958; the measurements are based on those of Athias-Henriot 1957, 1958, 1959, and all are expressed in micra (μ).

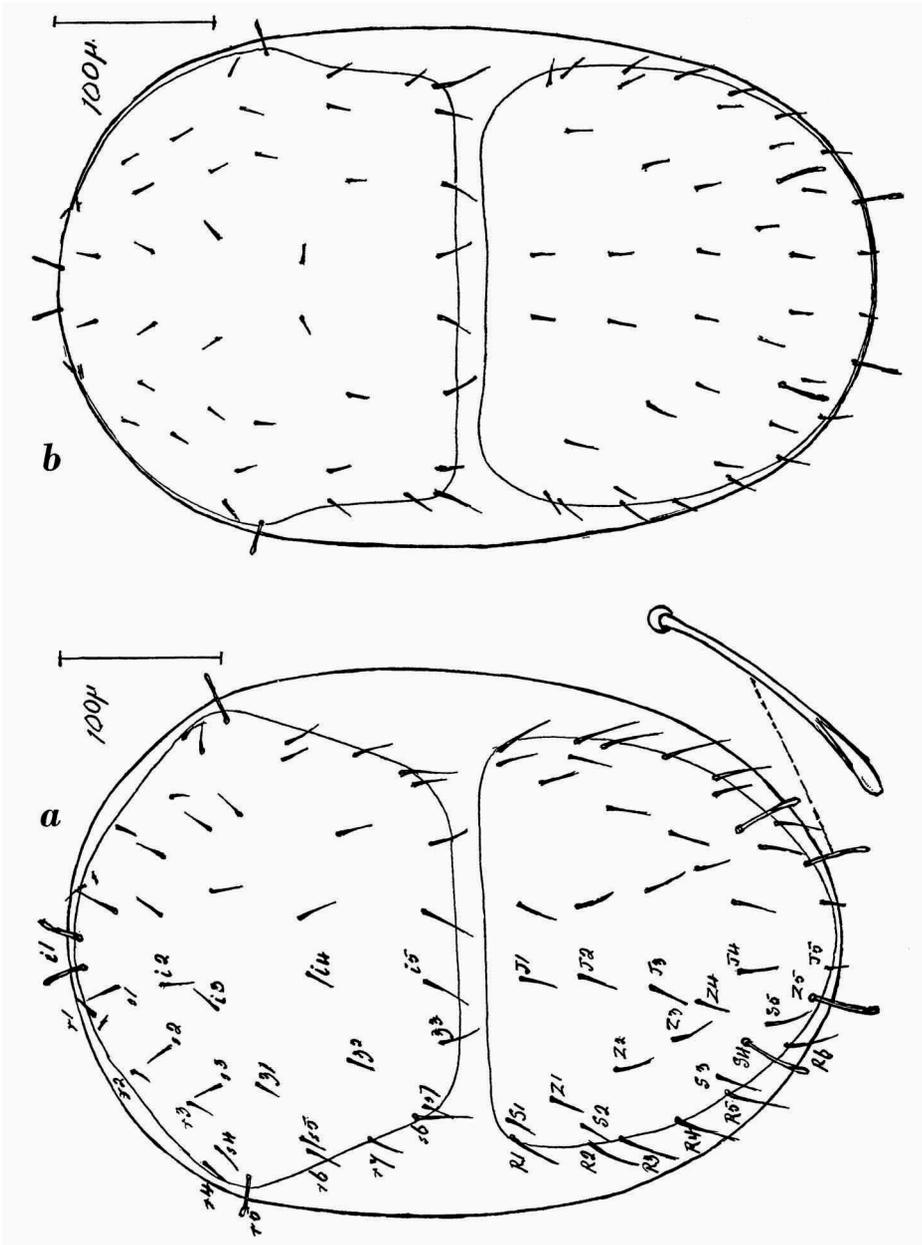


Fig. 1. *Cyrtolaelaps hammeni* sp. nov.; a, dorsum of female; b, dorsum of male.

8 + *U* of which *V*8 is paddle-shaped 35 long, *U* 29, and the rest simple to 20 long, *V*4 (paranal) 14 and 29 apart; the anal orifice is 17 long. The stigma is situated opposite acetabula IV with a thin peritreme running forwards as far as coxae I; the peritremal shield is separated from the exopodal shields,

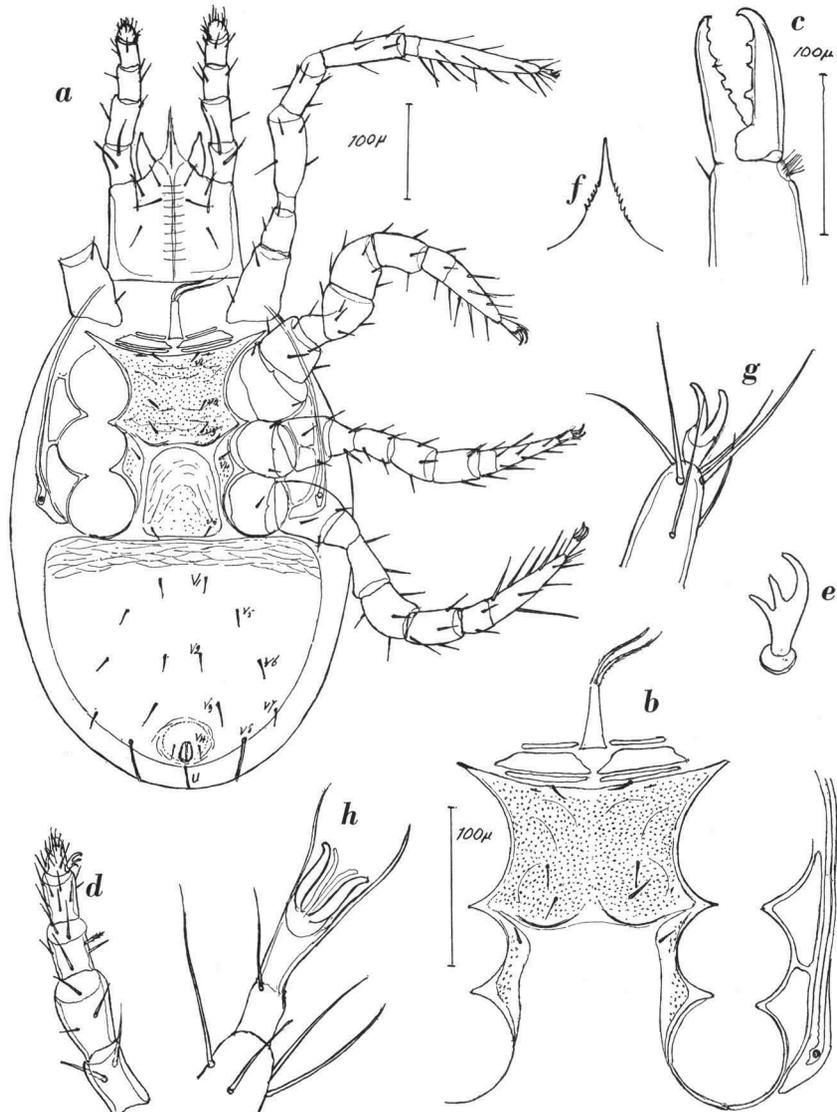


Fig. 2. *Cyrtolaelaps hammeni* sp. nov., female; *a*, ventral view; *b*, tritosternum, pre-endopodal, sternal, metasternal and peritremal shields enlarged; *c*, chelicerae; *d*, palp; *e*, tined seta of palpal tarsus; *f*, tectum; *g*, tip of tarsus I; *h*, tip of tarsus IV.

it extends posteriorly behind the stigma and turns in towards acetabula IV.

Gnathosoma. Ventrally with four pairs of hypostomal setae (C. 1-4 of Hirschmann, 1959), of about equal length 24-28, the hypostomal groove with 10 to 12 finely denticulate transverse lines much as figured by Hirschmann (1959, fig. 51) for *Cyrtolaelaps mucronatus* Canest. Labial cornicles short and stout and widely separated apically. Palpi 5-segmented, first free segment with a pair of strong setae, the anterior of the two inner setae on the genu ciliated, the tined seta on the tarsus with three strong prongs. Chelicerae: movable digit, *Dm*, with three strong teeth; fixed digit, *Df*, with two or more strong teeth proximal of the pilus dentarius, and three smaller teeth distad thereof. Tectum an elongate triangular spike with denticulate lateral margins.

Legs. Generally fairly slender, but II the stoutest; I 526 long (including coxa and ambulacrum), II 490, III 328, IV 444; all tarsi with short caruncle and paired claws, but without pulvillus.

Male allotype. Of the same general facies as the female but smaller. Length of idiosoma 490, width 216.

Dorsum. Shields and chaetotaxy as in the female, but setae somewhat shorter.

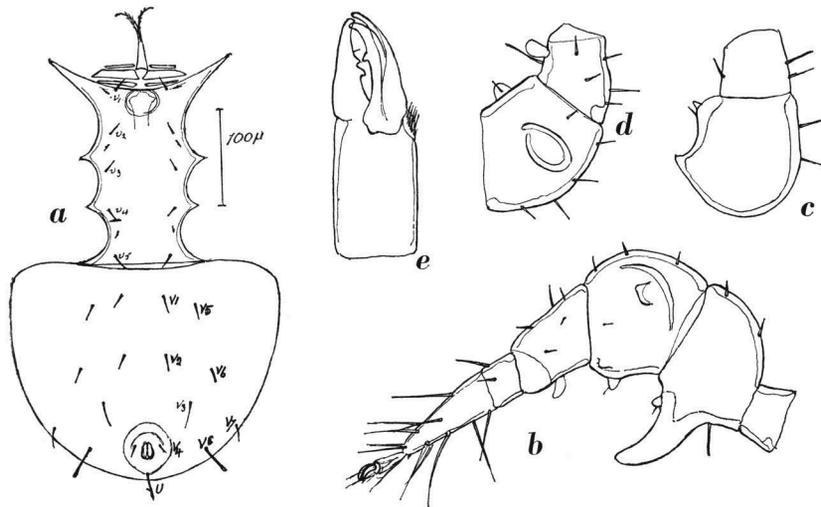


Fig. 3. *Cyrtolaelaps hammeni* sp. nov., male; a, ventral shields; b, leg, II; c and d, different aspects of genu and tibia of leg II; e, chelicerae.

Venter. Tritosternum and pre-endopodal shields as in the female. The other ventral shields consist of a coalesced sternal, metasternal, and genital shield, with truncate posterior margin in a line between the posterior margins of acetabula IV, and narrowly separated from the anterior margin of the

large expanded ventri-anal shield. The sternal-metasternal-genital shield carries 5 pairs of setae, *v*₁₋₅ of Hirschmann, and three pairs of pores; the setae are 20 long, and the length of the shield in the median line 192; it is ornamented as in the corresponding shields of the female. The ventri-anal shield is similar to that of the female; 210 long by 375 wide, with 5 pairs of setae besides the postanal sets, i.e. *V*₁₋₈ + *U*, of which *V*₈ and *U* are paddle-shaped; *V*₈ 44, *U*₂₉, the other setae are 20, and the paranals 14.

Gnathosoma as in the female. Chelicerae: *Dm* with a single strong tooth and a stout spermatophore carrier which follows the curve of the digit and just over reaches it; *Df* with two strong closely adjacent teeth just proximal of the pilus dentarius.

Legs. I 490 long, II 365, III 336, IV 440; all as in the female except II which is much stouter, the femur with a strongly curved apophysis with a small tubercle in the internal angle, genu and tibia also with a small inner tubercle, and the genu dorsally with a very pronounced swelling which may appear rounded or angular according to the angle of observation.

Remarks. The following five species described from Australia as belonging to the genus *Digamasellus* are now placed in *Cyrtolaelaps* Berl., 1887, from all of which *Cyrtolaelaps hammeni* sp. nov. can be separated as in the key that is given below.

Cyrtolaelaps concinnus (Wom., 1942) n. comb.

?*Digamasellus concinnus* Wom., 1942 (sic, *concinna*), Trans. Roy. Soc. S. Austr., 66 (2): 159; 1956, J. Linn. Soc. London, Zool., 42 (288): 537.

Cyrtolaelaps punctatus (Wom., 1942) n. comb.

?*Digamasellus punctatus* Wom., 1942, Trans. Roy. Soc. S. Austr., 66 (2): 160.

Cyrtolaelaps trögårdhi (Wom., 1942) comb. nov.

Digamasellus trögårdhi Wom., 1942, Trans. Roy. Soc. S. Austr. 66(2): 161; 1956, J. Linn. Soc. London, Zool., 42 (288): 537.

Cyrtolaelaps semipunctatus (Wom., 1942) comb. nov.

Digamasellus semipunctatus Wom., 1942, Trans. Roy. Soc. S. Austr., 66(2): 163; 1956, J. Linn. Soc., London, Zool., 42 (288): 538 (fig. ♂ only).

Cyrtolaelaps tasmanicus (Wom., 1942) comb. nov.

Digamasellus tasmanicus Wom. 1956, J. Linn. Soc. London, Zool., 42 (288): 538.

The two specimens recorded in 1956 (loc. cit.), from Kangaroo Island, South Australia, as *trögårdhi* are now seen not to be conspecific with the type material from the mainland but to be a new species *Cyrtolaelaps cooperi* sp. nov. which can be separated from the above species in the following key.

KEY TO THE SPECIES OF CYRTOLAEELAPS FROM AUSTRALIA
AND BIAK ISLAND

1. All setae on dorsal shields penicillate, posterior shield narrower than anterior with only the *J.*, *Z.* and *S.* series of setae. Pre-endopodal shields a single pair 2.
— Not all the dorsal setae penicillate or paddle-shaped 3.
2. Both anterior and posterior dorsal shields strongly punctate; anterior with 22 pairs of setae, posterior with 17 pairs. *C. punctatus* (Wom., 1942)
— Only the anterior shield punctate or rugose, posterior with lines; anterior with 20 pairs of setae, posterior with 15 pairs. *C. semipunctatus* (Wom., 1942)
3. With the pre-endopodal shield in two pairs 4.
— With the pre-endopodal shields in three pairs 6.
4. A larger species to 980 idiosoma length. The anterior pre-endopodal shields very narrow and transversely lenticular. Tectum trispinous. Spermatophore carrier slender and well over reaching the tips of the chelicerae. Dorsal setae long, strong and curved, all simple except *i1, i3, r5, J4, Z5, S6*, which are penicillate; anterior shield with 22 pairs of setae, posterior 27 pairs. *C. tasmanicus* (Wom., 1956)
— Smaller species, idiosoma length not exceeding 700. Tectum quinquispinous 5.
5. The posterior pair of pre-endopodal shields thin and lenticular. Dorsal setae short with *i1, i3, r5, Z3, Z5, Z6* penicillate, the others short and strongly curved; anterior shield with 20 pairs of setae, posterior with 17 pairs. Chelicerae with many small denticles anterior of second subapical tooth. Tectum quinquispinous with long median mucro with the first pair of lateral teeth small and subapical.
C. concinnus (Wom., 1942)
— The posterior pair of pre-endopodal shields broad and triangular, much broader than the anterior. Dorsal setae much straighter and narrowly sword-like, setae *i1, s2, r4, J4, J5, Z5, S4*, penicillate, anterior shield with 20 pairs, posterior with 17 pairs. Chelicerae without denticles. Tectum a triangular cone, with lateral points evenly spaced. *C. cooperi* sp. nov.
6. Tectum quinquispinous. Dorsal setae mainly long, strong and narrowly sword-like, setae *i1, i3, r4, J3, J4, J5, Z5, S3, S4*, penicillate, i.e. 6 penicillate setae on posterior shield; anterior shield with 21 pairs, posterior with 17 pairs of setae
C. trögårdhi (Wom., 1942)
— Tectum a single spike with lateral denticles. Dorsal setae mainly short pointed setae; *i1, r5, S4, Z5* paddle-shaped, non-ciliate; anterior shield with 22 pairs, posterior with 21 pairs of setae *C. hammeni* sp. nov.

Family ACEOSEJIDAE Baker & Wharton, 1952

Subfamily ACEOSEJINAE Evans, 1956

Genus *Leioseius* Berl., 1916.

Leioseius A. Berlese, 1916, Redia, 12: 45.

Arctoseiodes C. Willmann, 1949, Abh. Natur. Ver., Bremen, 32: 357.

Type: *Ameroseius minusculus* Berl., 1905.

***Leioseius littorale* sp. nov. (fig. 4a-h)**

Location of types. The holotype female and three paratype females in the Leiden Museum; three other paratypes in the South Australian Museum.

Description. Female holotype. A lightly sclerotised species. Length of idiosoma 526, width 350.

Dorsum. With entire shield which covers almost the whole of the dorsum, with lateral incisions between the notocephale and the notogaster. Chaetotaxy holotrichous; anterior portion with 22 pairs of rather long simple tapering setae, the *r* series being submarginal, *i*₁ and *r*₁ to 29 long, the others to 38 except *s*₇ which reaches 48; the posterior portion with 15 pairs of setae, the *R* series represented by 3 setae off the shield; *J*₅ are fine to 33, *Z*₃₋₄ are very thick basally and then rapidly and finely tapering to 96, *S*₄ and *Z*₅ are similar to but somewhat shorter, *S*₅ is 58 without the long taper, the other setae are up to 38 long.

Venter. No jugular or pre-endopodal shields present. Tritosternum of normal form. Sternal shield wider than long, reaching to the middle of coxae III; with three pairs of setae 32 long, and two pairs of pores; *v*₁-*v*₁ = 57, pores *I*-*I* = 67, *v*₂-*v*₂ = 82, *v*₃-*v*₃ = 67, *v*₁-*v*₂ = 48, *v*₂-*v*₃ = 38, *v*₁-*v*₃ = 86, length of shield in median line 96, anterior 160 with faint reticulations. Metasternal shields absent, setae free, 83 apart. Genital shield truncate or lightly convex basally; setae 81 apart and 33 from base. Endopodal shields III and IV free. Ventri-anal shield moderately large, 197 wide by 193 long; with anterior margin transverse with a small squarish anterior projection on each side with their inner corners 87 apart; the side rounded, with 6 pairs of setae, *V*₂-*V*₄ and *V*₆-*V*₈, besides the postanal (*U*); *V*₁ and *V*₅ are short 29 long and situated in front of the anterior margin of the shield, *V*₁ on the inside of the projections and *V*₅ on the outside; *V*₂₋₃ and *V*₆₋₇ are tapering to 33-43 long; *V*₄ and *V*₈ are longer to 58, and *U* is 67 long and on a distinct papilla; the three pairs of cuticular setae are 33 long. Between the genital and ventri-anal shields with a row of four transversely lenticular shieldlets: metapodal shieldlets two on each side, the anterior much smaller than the posterior. Stigma opposite coxae IV with the peritreme reaching coxae I; peritremal shield narrow but wider near the stigma and curving posteriorly around acetabula IV.

Gnathosoma as in the genus. Chelicerae with two strong teeth on each digit and two smaller teeth on the fixed digit distad of the pilus dentarius. Palpi normal, the tined seta of the tarsus 2-pronged. Tectum with three denticulate prominences.

Legs. All with ambulacrum of fairly long caruncle, paired claws and pad-like pulvillus; I 468 long, II 387, III 352, IV 432, from coxa to ambulacrum.

Male allotype 1). Length of idiosoma 384, width 245.

1) The preparation of the unique male has unfortunately been mislaid since the drawings and description were made. If and when found it will be deposited in the Leiden Museum.

Dorsum. Shield and its chaetotaxy as in the female, except that the posterior shield has 16 pairs of setae and there are only two in the *R* series, *R2* and *R4* being on the shield; the structure of the setae as in the female but their lengths are somewhat shorter.

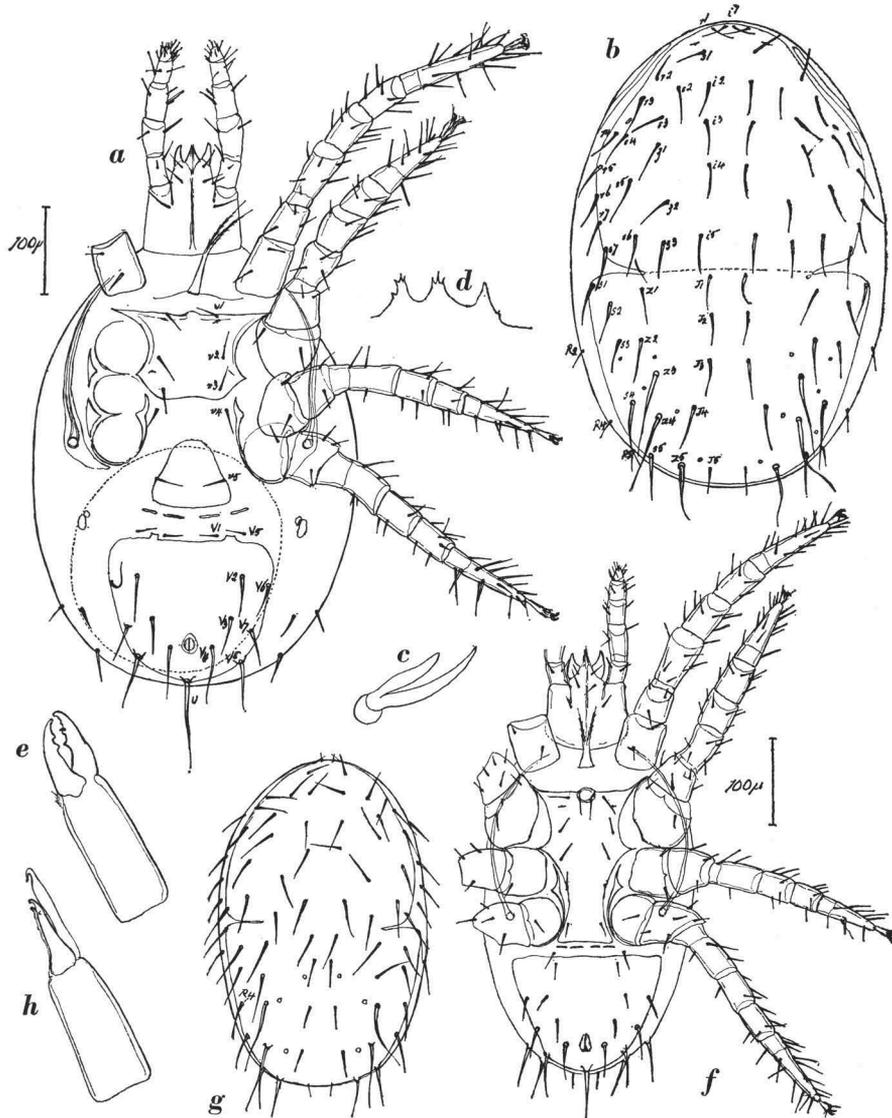


Fig. 4. *Leioseius littorale* sp. nov.; a-e, female; a, ventral view; b, dorsum; c, tined seta of palp; d, tectum; e, mandible; f-h, male; f, ventral view; g, dorsum; h, mandible.

Venter. No jugular or pre-endopodal shields. Sternal, metasternal, and genital shields coalesced. The combined shield with truncate posterior margin, with five pairs of setae and three pairs of pores; length 171, anterior width 131, posterior width 64. Endopodal shields of coxae III-IV free. Ventri-anal shield much as in the female, 171 wide by 135 long; with 7 pairs of setae, *V*₁-*V*₄ and *V*₆-*V*₈, besides the postanal (U); only one pair, *V*₅, anterior of the anterior margin; the setae are similar to, but shorter than those in the female. Between the genital and ventri-anal shields is a row of four transversely lenticular shieldlets as in the female; no metapodal shields present.

Gnathosoma as in the female. Chelicerae: movable digit, *Dm*, with a thick straight spermatophore carrier over-reaching the tip of the digits and apically recurved.

Legs as in the female; I 408, II 316, III 316, IV 359.

Family NEOPARASITIDAE Oudemans, 1939

Neoparasitidae A. C. Oudemans, 1939, Zool. Anz., 126: 21.

Genus **Periseius** nov.

Neoparasitidae with 3 pronged tined seta on the palpal tarsus. Deutonymph with entire dorsal shield covering the whole dorsum, with 42 pairs of setae, posteriorly with a pair of conspicuous cornicles; sternal shield not coalesced with the endopodal shields, tapering to level of middle of acetabula IV, with 4 pairs of setae; tectum with median mucro and lateral denticles; chelicerae long and dentate; tarsi with caruncle, paired claws, and an indistinct pulvillus. Type: *Periseius littorale* sp. nov.

Periseius littorale sp. nov. (fig. 5a-j.)

Location of types. The holotype deutonymph and three paratype deutonymphs in the Leiden Museum; three other paratype deutonymphs in the South Australian Museum.

Description. Deutonymph holotype. An oval lightly sclerotised form. Length of idiosoma 470, width 207.

Dorsum. Completely covered by an entire dorsal shield with 42 pairs of setae. Anterior portion (notocephale) with 21 pairs, i.e., *i*₁-*i*₅, *z*₁-*z*₃, *s*₁-*s*₆, and *r*₁-*r*₇, *i*₁ and *r*₅ blunt tipped, the others thick basally but tapering to a fine point, *i*₁ 17 long, *r*₁-*r*₄ 10, rest to 7. Posterior portion (notogaster) with 22 pairs of setae, of which *J*₅ are very short 10, *Z*₅ is 52 long and tapering, *Z*₆ 46 and paddle-shaped, *S*₄, *S*₅, and *R*₆ short, thick and spine-like, *J*₃, *J*₄, *Z*₄, are short, the remainder 17 long, setae *Z*₅ are on distinct cornicles 12 long.

Venter. Tritosternum with conical base and paired ciliated laciniae. No pre-endopodal shields. Sternal shield 83 wide anteriorly, contracting to middle of coxae III, than tapering more rapidly to a rounded apex about level with

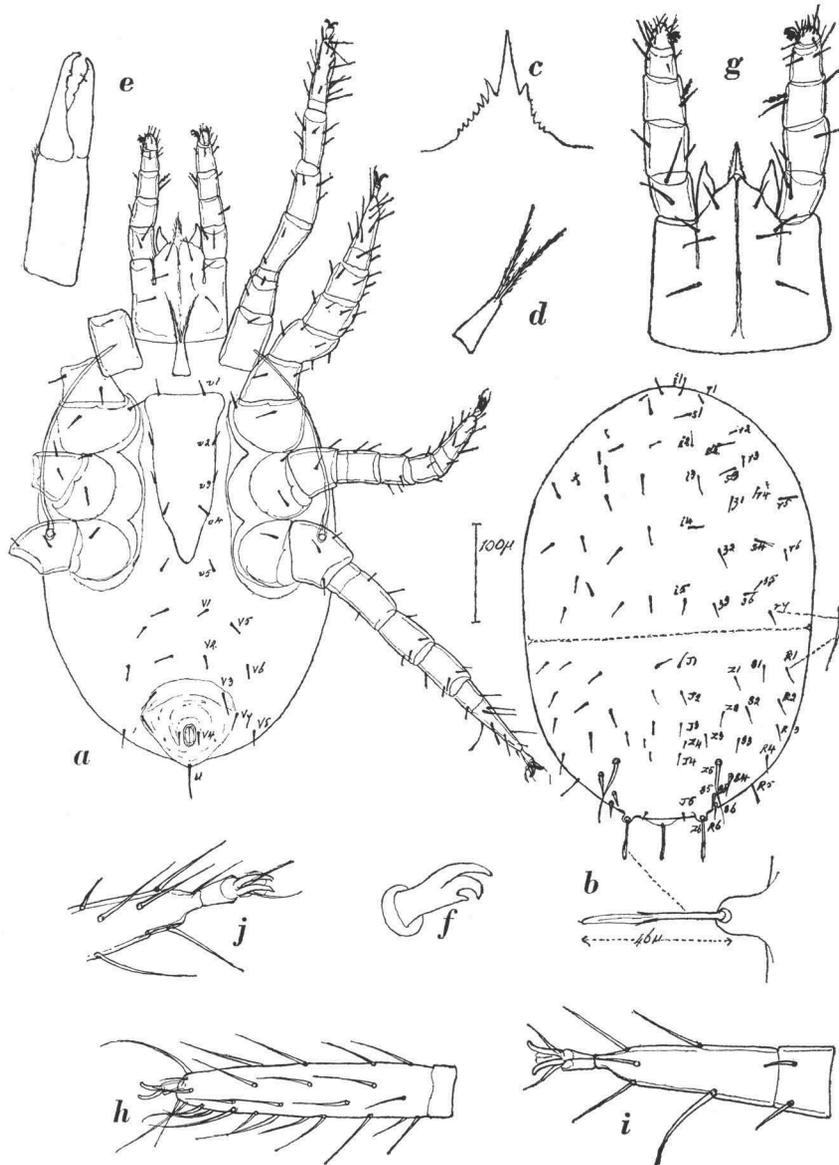


Fig. 5. *Periseius littorale* sp. nov., nymph; a, ventral view; b, dorsum; c, tectum; d, tritosternum; e, chelicerae; f, tined seta of palp; g, gnathosoma from below; h, tip of tarsus I; i, tarsus IV; j, tip of tarsus IV, another aspect.

middle of acetabula IV; with four pairs of short setae, v_1 , v_2 , v_3 , and v_4 , v_5 is off the shield and slightly posterior of apex. Ventri-anal shield small, rounded, with two pairs of preanal setae V_3 , V_4 , as well as the paranal setae V_5 and postanal seta U ; the paranal setae are to 10 long and close to the anal orifice, U is 18 long and slightly paddle-shaped or thickened to the tip; the other setae on the cuticle V_1 , V_2 , V_6 , V_7 , and V_8 are simple and to 14 long. The endopodal shields are free. The stigma is between coxae III and IV, with a thin peritreme to coxae I and a narrow shield not produced posterior of the stigma.

Gnathosoma. Ventrally with four pairs of hypostomal setae of approximately equal length. Labial cornicles short and stout and widely separated apically. Palpi 5-segmented; first free segment with a pair of moderately strong setae; the anterior of the inner pair of specialised setae on the genu ciliated; tined seta on palpal tarsus with three strong curved prongs. Chelicerae rather slender with about three small teeth on each digit and a short pilus dentarius on the fixed digit.

Legs moderately well sclerotised with II the stoutest, I 438 long, II 334, III 264, IV 398; tarsi with short caruncle, paired claws, and an indistinct pulvillus shorter than the claws; tarsi IV with a longer and stronger seta dorsally.

Remarks. As only deutonymphs were found this genus and species is with some hesitation ascribed to the family Neoparasitidae on the 3-tined seta of the palpal tarsus. The posterior dorsal cornicles bearing the paddle-shaped setae Z_6 and the spine-like S_4 , S_5 and R_6 would appear to justify the erection of a new genus and species pending the discovery of the adult stages. The specimens cannot be correlated with the adults of either of the other two species of Mesostigmata described here and collected together.

Suborder PROSTIGMATA Kramer, 1877

Superfamily TROMBIDOIDEA Baker, Camin et al., 1958

Family TROMBIDIIDAE W. C. Leach, 1915

Trombidiidae W. C. Leach, Tr. Linn. Soc. London, 11: 387, 395.

Genus **Platytrombidium** Sig Thor, 1936

Platytrombidium Sig Thor, 1935, Zool. Anz., 114 (1-2): 29-32.

Type: *Trombidium vagabundum* Berl. 1903.

Platytrombidium maritimum sp. nov. (fig. 6a-i)

Location of material. Holotype female, allotype male, morphotype nymph, three paratype females, four paratype males in the Leiden Museum; four

paratype females, five paratype males in the South Australian Museum collection.

Description. A small red species of cordate form with a close pilage of short uniform fusiform setae.

Female. Length of idiosoma, holotype 1053 (mean 1037, range 1002-1072). Dorsum and venter covered with uniform fusiform setae to 20 long with long setules as figured; on the shoulders and near the crista, and anteriorly on the venter they are somewhat longer to 26 (fig. 6g). Crista 288 long with sensillary setae 116 long and fine with sparse distal ciliations, a short spur posterior of sensillary area. Eyes two on each side, sessile, on distinct shields, posterior the smaller.

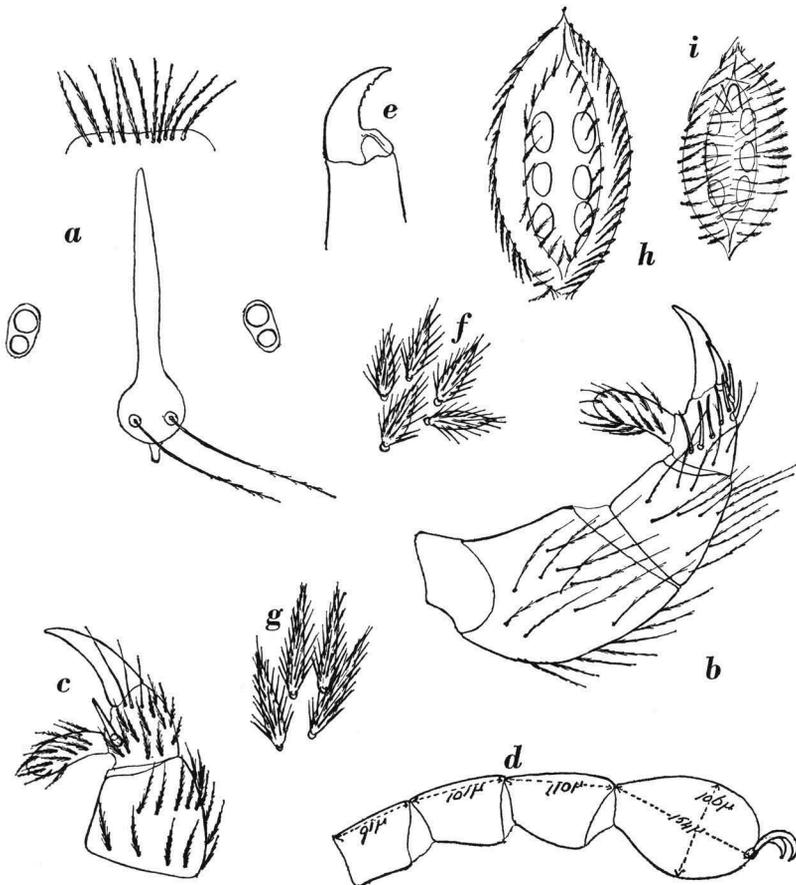


Fig. 6. *Platytrombidium maritimum* sp. nov.; a, crista and eyes; b, palp from outside; c, genu, tibia, and tarsus of palp from inside; d, leg I; e, chelicerae; f, dorsal setae; g, setae from near crista and shoulder; h, genitalia of female; i, ditto of male.

Palpi. Tibia with a strong claw as long as its dorsal edge, on the inner side with an accessory claw half the length of the principal claw; on the inner side the tibia is furnished with an oblique comb-like series of five thick, nude, blunt setae, and on the dorsal edge proximal to the base of the accessory claw is a pair of stouter spines; basad of the comb are two long and fine sparsely ciliated setae; on the outer side of the tibia and near the base of the tarsus is a strong stout spine reaching past the base of the principal claw; behind and close to the base of the claw are three long nude setae of which the inner reaches nearly to the tip of the claw and the other two are progressively shorter; the other setae on this surface of the tibia are shorter and strongly ciliated. The tarsus is elongate, slightly clavate and almost as long as the claw; the genu and femur on the inner surface are furnished with long fine slender setae with sparse short ciliations, on the outer surface the setae are shorter, thicker and strongly ciliated.

The chelicerae are 72 long, the dorsal edge finely denticulate as figured.

Legs all shorter than the body and arranged in two groups. Leg I of holotype 722 long (mean 757, range 714-772); tarsus short and oval, 149 long (mean 158, range 149-163) by 101 high (mean 106, range 96-115), ratio of length to height based on means = 1.5; tibia 110 long (mean 115, range 110-121); ratio of length of tarsus to tibia based on mean = 1.4. Leg II 562 (mean 650, range 526-561). Leg III 563 (mean 561, range 526-582). Leg IV 760 (mean 760, range 585-819). All tarsi are furnished with a pair of strong subequal claws. The coxae and all other leg segments with long non-fusiform ciliated setae, except tarsus and tibia of leg I where setae are similar but shorter. Genitalia as figured, with three pairs of discs, and setae on both valves ciliated.

Male. Length of idiosoma, allotype 936 (mean 924, range 819-936); width of idiosoma 702 (mean 690, range 643-760). Setation of dorsum as in female.

Palpi, chelicerae and crista as in female.

Legs. I 679 long (mean 691, range, 678-760); tarsus 153 long (mean 154, range 134-173) by 110 high (mean 106, range 96-134); ratio of length to height (means) 1.45; tibia 115 long (mean 106, range 96-120); ratio length of tarsus to length of tibia = 1.4. Leg II 562 long (mean 514, range 491-562). Leg III 595 (mean 562, range 503-585). Leg IV 737 (mean 760, range 585-819).

Genital orifice smaller than in female with setae on the inner valves simple; penis a simple cone.

Nymph. As in the female but smaller, and genitalia with only two pairs of discs. Length of idiosoma 526, width 409. Legs: I 468 long, II 351, III 351,

IV 445; tarsi of leg I 105 long by 77 high, ratio of length to height 1.4; tibia of leg I 72 long; ratio of length of tarsus to length of tibia = 1.45.

Remarks. This species as suggested by Dr. v. d. Hammen is close to *P. littorale* (Mich.) described from the littoral of the Panama Zone. It is, however, a much smaller species and differs in the shape and dimensions of tarsi I as well as in small details of the dorsal setae. I have been able through the kindness of Dr. E. W. Baker of the U. S. National Museum to compare the Biak specimens with the paratypes of *littorale* (Mich.). The following key to the known species of *Platytrombidium* is given:

KEY TO THE KNOWN SPECIES OF PLATYTROMBIDIUM

1. With only a single spine on the outer face of the palpal tibia arising near base of tarsus 4
— With two or more such spines 2
2. With two such spines. Tarsi I ca. 3 times as long as high, 310 by 110. Dorsal setae cone-like, pointed, to 30 long with short ciliations. Inner face of palpal tibia with a transverse comb of 6 spine-like setae, ending on dorsal edge behind accessory claw in a comb of 3 spines. Large species to 2400 long. *P. vagabundum* (Berl., 1903)
With three or four such spines 3
3. With three such spines. Tarsi I ca. twice as long as high, 410 by 210. Dorsal setae as in preceding species, to 30 long. Palpal tibia on the dorsal edge behind accessory claw with a strong comb of 10-11 spines. Large species 2100 long
P. irispinum (Berl., 1910)
- With four such spines. Tarsi I ca. thrice as long as high, 320 by 110. Dorsal setae more elongate, cone-like, pointed, with short ciliations, to 50 long. Palpal tibia on the inner face with a transverse comb of 6 spines, and behind accessory claw with a short dorsal comb of 3 spines. Length to 1750.
P. insulanum (Ouds., 1901) (= *quadrispinum* (Berl., 1912))
4. Tarsi ca. 1.5 times as long as high 5
— Tarsi more than 1.7 times as long as high 8
5. Dorsal setae rod-like, to 50 long, with short ciliations. Tarsi I oval, 170 long by 120 high. Palpal tibia on the inner face or dorsal edge without combs. Length to 1000.
P. platyochirus (Berl., 1912) ¹⁾
- Dorsal setae not rod-like, more or less conical and shorter. 6
6. Tarsi highest at about the proximal third, 134 long by 96 high. Dorsal setae only slightly widened with fairly long ciliations, to 12 long on disc, to 20 long on sides and posterior. Palpal tibia on dorsal edge with two combs of 3 to 4 spines. Length to 720. *P. fusiforme* Wom., 1954
— Tarsi I more ovoid with the greatest height in the mid-length 7
7. Larger species, tarsi with the upper margin fairly flat, 346 long by 193 high in ♀, 234 long by 148 high in the ♂. Dorsal setae to 14, conical and wider than in *fusiforme* with moderately long ciliations. Palpal tibia on the inner face near dorsal margin with two strong combs of 6 setae. Length to 1500 ♀.
P. paranum (Hirst., 1928)
- A smaller species, tarsi I with both upper and lower margins well curved, 154 long by 106 high. Dorsal setae to 20 long, conical, pointed, with long ciliations. Inner

1) Because of the rod-like dorsal setae it is doubtful whether *P. platyochirus* (Berl.) should be placed in the genus *Platytrombidium* as was done by Sig Thor (1935) and Sig Thor and Willmann (1947).

surface of palpal tibia with a transverse comb of five spines and on the dorsal edge behind accessory claw two stronger spines; on the outer face and close to the base of the claw are three long tapering nude setae of which the anterior nearly reaches tip of claw, the others progressively shorter. Length to 1065 ♀, 936 ♂ . . .

P. maritimum sp. nov.

8. Length of tarsus I twice or more than twice the height 9
 — Length of tarsus I less than twice the height 10
9. Dorsal setae spindle-like, apically pointed with short ciliations to 27 long. Tarsus I 2-3 times as long as high, 370 by 160, elongate oval. Palpal tibia on the inner face with 26 long thin spines, a dorsal comb of 8 spines and two oblique combs of 15 and 3. Length to 2000. . . . *P. sylvaticum* (Koch. 1835) (= *simulans* (Berl., 1910))
 — Dorsal setae almond shaped, thickly ciliated, length? Tarsus I 2.1 times as long as high, 210 by 100. Palpal tibia with a transverse comb of 3 spines. Length to 1650.
P. heterocomum (Berl., 1918)
10. Dorsal setae spindle-like, apically pointed 12
 — Dorsal setae short and apically rounded 11
11. Dorsal setae to 20 long, with moderately long ciliations, only slightly longer than wide. Tarsus I 1.8 times as long as high, 346 by 192 ♀; 197 by 90 ♂. Palpal tibia on inner face with transverse comb of rather pointed spines and dorsal comb of 3 to 5 blunter and shorter spines. Length to 1540 ♀, 1350 ♂.
P. pritchardi Wom., 1936
 — Dorsal setae shorter, 15-20, with shorter ciliations, apically rounded. Tarsi I 190 long by 110 high. Palpal tibia on the inner side with dorsal comb of about 5 spines. Length 1300. *P. fusicomum* (Berl., 1910)
12. Tarsus I smaller, 158 long by 82 high, cylindrical. Palpal tibia on inner face with two transverse combs of 5-6 spines each, no dorsal comb. Length to 1100.
P. littorale (Mich., 1946)
 — Tarsus I larger, 220 long by 125 high, shortly oval. Palpal tibia without inner comb, with a dorsal comb of 7 spines. Length 1400. . . . *P. homocomum* (Berl., 1918)

Suborder CRYPTOSTIGMATA Berlese, 1896

Superfamily ACARIDIAE Latreille, 1802

Family HYADESIDAE Halbert, 1915

Hyadesidae J. N. Halbert, *Acarinida II — Terrestrial and Marine Acarina*, Clare Is. Survey, 1915, Proc. Roy. Irish Acad., (39, ii): 108-109.

Genus **Hyadesia** Mégnin, 1889

Hyadesia, P. Mégnin, 1889, Miss. Sci. Cap. Horn., 6(3): 51 (type *Hyadesia uncinifer*).
 = *Lentungula* Michael, 1893, Proc. Zool. Soc. London, pp. 262-267. pl. XVIII (type *L. algivorans*).

Hyadesia vietsi sp. nov. (fig. 7 a-c, 8 a-d)

Location of types. The holotype in the collection of the Natural History Museum, Leiden; the paratype in the South Australian Museum collection.

Description. Female holotype. A plump rounded species, heavily pigmented with deep blue-black. Length of idiosoma (as mounted) 560, width 385; with a distinct suture between propodosoma and hysterosoma.

Dorsum with 10 pairs of simple nude setae. On the propodosoma with vertical pair to 144 long; a transverse row of four (of which the inner pair

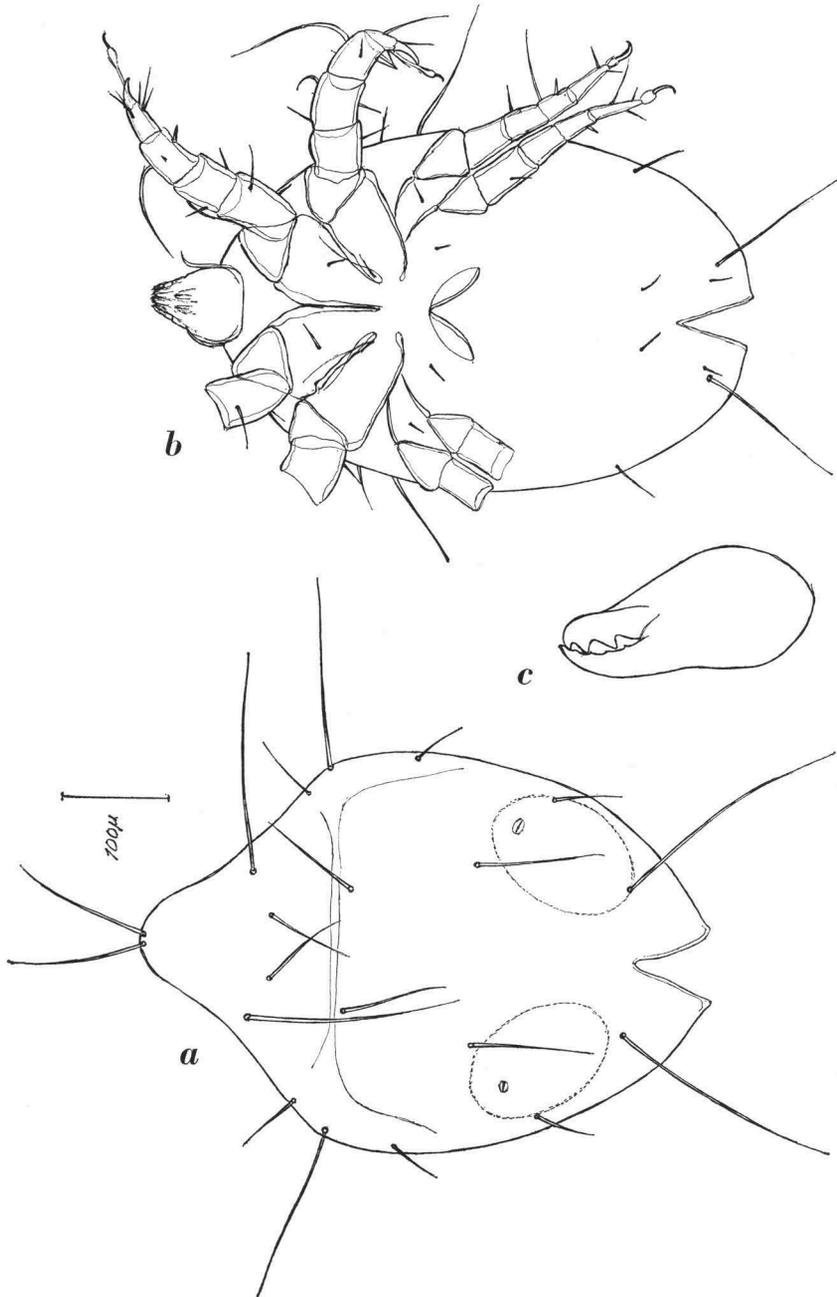


Fig. 7. *Hyadesia vietsi* sp. nov.; a, dorsum; b, ventral view; c, mandible.

are only about one third the length of the outer: inner pair 86, outer pair 264 long). The external humeral setae are 178 long, and the internal humerals (anterior of the externals) 48. On the hysterosoma there is only a longitudinal dorsal series of three pairs lengthening posteriorly from 96 to 216, and two pairs of lateral setae 48 long.

Venter. Epimera of leg I united medially to form a narrow sternum; epimera of leg II ending free in a line with the tip of the sternum; epimera of leg III also ending free; epimeral plates of leg I-III each with a single seta. Genital opening lying between coxae IV with a seta laterad on each side, but without the genital suckers. Anus terminal, long, and capable of forming a V-shaped opening; anterior of the anus a pair of short setae, and on each side another short seta and a long seta; laterally, in a line with the pre-anal pair of setae, is another seta, on each side 48 long.

Gnathosoma small and cone shaped, overlapped dorsally by the vertex of the dorsum, and flanked by a pair of slender stylets (?salivary); the palpi are ca. 30 long; the chelicerae are stout, ca. 30 long, the movable digit with three strong teeth, the fixed digit with only small teeth.

Legs fairly stout, more so I and II; I is 216 long (excluding the epimeral plate and the elongate caruncle), II 230, III 250. The proportions of the leg segments measured dorsally in micra are as follows:

	Trochanter	Femur	Genu	Tibia	Tarsus
I	—	64	52	49	32 without 55 with 84 with pedunculate claw. } large claw.
II	—	68	43	49	32 without 68 with 90 with pedunculate claw. } large claw.
III	—	58	55	41	43 without 87 with } large claw.
IV	—	58	41	43	58 without 93 with } large claw.

The ventral spine on tibia of leg I is 15 long, of leg II 24, of leg III 15, absent on leg IV. On leg I the large claw is 20 long, peduncle 49, and the smaller claw 9; on leg II the lengths are 38, 64, and 9 respectively; while on III the swollen pulvillus is 17 long and the claw 40 long; on leg IV these are 20 and 43 respectively. Tarsi of leg I-IV with three somewhat smaller teeth-like spines; genu and tibia of all legs dorsally with a very long seta, except genu II where the corresponding seta is very much shorter.

Remarks. Hitherto seven species of *Hyadesia* have been described, viz. *H. uncinifer* Mégnin, 1889; *H. fusca* (Lohmann, 1896); *H. algivorans*

(Michael, 1893); *H. kerguelensis* Lohm., 1907; *H. chelopus* Trouess. (André, 1931); *H. curassaviensis* Viets, 1936; and *H. sellai* Viets 1937. These species have been discussed and keyed by Viets 1937.

H. vietsi sp. nov. differs from all the known species in the presence of a strong spine on the ventral side of tibia of leg III, which, although not as strong as that on leg II, is almost as strong as that on leg I. It may be separated from all the known species as follows:

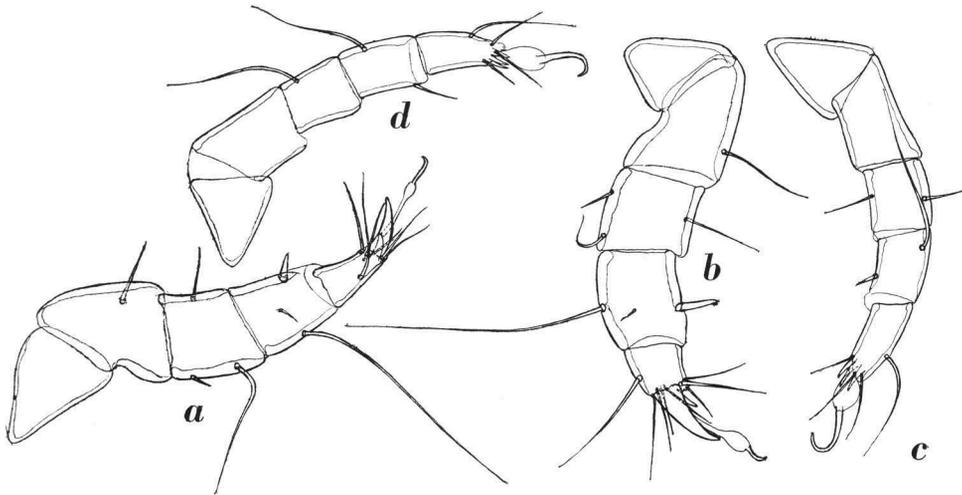


Fig. 8. *Hyadesia vietsi* sp. nov.; a, leg I; b, leg II; c, leg III; d, leg IV.

KEY TO THE SPECIES OF HYADESIA

- 1. Pedunculate claw of leg I at least two-thirds length of large tarsal claw . . . 2
- Pedunculate claw of leg I very much smaller than the large claw of the tarsus . . . 4
- 2. Claw of leg III and IV (as long as tarsus) with basal tooth. Ventral tooth or spine on tibia of leg I short and in medial position. Peduncle of leg I only one-third as long again as tarsal claw Lohm, 1907 (Kerguelen)
- Claw of leg IV without basal tooth 3
- 3. All legs ventrally on tibia with a short strong spine. Peduncle of leg I almost twice as long as tarsal claw *uncinifer* Mégnin, 1889 (S. America)
- Only tibiae of legs I and II with a strong spine. Peduncle of leg I more than twice as long as tarsal claw *fusca* (Lohm., 1893) (Europe)
- Only tibiae of legs I and II with a strong spine ventrally 5
- Tibiae of leg I, II, and III with a strong ventral spine. Pedunculate claw of legs I less than half the length of tarsal claw. *vietsi* sp. nov. (Netherlands New Guinea)
- 5. Tibia of leg I dorsally quite as long as tarsus + peduncle and small claw *chelopus* (Trouess.) André, 1931 (Indian Ocean)
- Tibia of leg I dorsally not more than two-thirds length of tarsus + peduncle and small claw 6
- 6. Tibia of leg II disto-ventrally with slender spine, tarsal claw of leg II longer than tarsus *algiworans* (Mich., 1893) (England, Ireland)
- Tibia of leg II disto-ventrally with strong and thick spine 7

7. Ventral spine of tibia I and II (♀) distal on the angle, longer than the proximal height of the tarsus and three-fourths the height of the tibia; tarsal claw of II longer than the segment; femur of leg I with 3 feathered setae
 *sellai* Viets, 1937 (Adriatic)
- Ventral spine of tibia I and II (♀) placed near middle of segment, shorter than the proximal length of tarsus and one third the height of the tarsus, tarsal claw of leg II shorter than the tarsus. Genu of leg I without feathered setae
 *curassaviensis* Viets, 1936 (Curaçao)

SYNOPSIS

Three new species of Mesostigmata, *Cyrtolaelaps hammeni* sp. nov., *Leioseius littorale* sp. nov., and *Periseius littorale* gen. et sp. nov., as well as *Platytrombidium maritimum* sp. nov. and *Hyadesia vietsi* sp. nov., are described from the littoral zone on Biak Is., Netherlands New Guinea. Keys to the Australasian species of *Cyrtolaelaps* (including a new species *C. cooperi* sp. nov. from South Australia), and to the known species of *Platytrombidium* and *Hyadesia* are given.

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