# Revision of Womersley's Apoloniinae (Acarina, Leeuwenhoekidae) from the Asiatic-Pacific Region*

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G. W. Hooper Foundation, University of California, San Francisco

**Abstract.** Womersley (1954) had tentatively grouped in the subfamily Apoloniinae several species difficult to place. This tentative group was discussed by Audy (1957) and Southcott (1957), but without other materialization or adequate revision.

Three other species, not considered by Womersley, are incorporated in the present revision by reason of opportune association: one of them inaugurating a new subfamily, Polydiscinae. All the revised species are redescribed and taxonomically distributed as follows:

<table>
<thead>
<tr>
<th>Super-Family</th>
<th>Family</th>
<th>Sub-Family</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROSTIGMATA</td>
<td>JOHNSTONIANIDAE</td>
<td>LASSENINAE</td>
<td><em>Nototrombicula deinacridae</em>, <em>Grossia onychia</em></td>
</tr>
<tr>
<td>TROMBIDIIDAE</td>
<td>POLYDISCINAE</td>
<td>TROMBELLINAE</td>
<td><em>Pteridopus pseudannemannia</em>, <em>Polydiscia squamata</em></td>
</tr>
<tr>
<td></td>
<td>NEOTROMBIDIINAE</td>
<td></td>
<td><em>Womersleyia minuta</em>, <em>Audyana thompsoni</em></td>
</tr>
<tr>
<td></td>
<td>HYDRYPHANTAE HYDRYPHANTIDAE</td>
<td>HYDRYPHANTINAE</td>
<td><em>Neotrombidiun tenipes</em> (= <em>Cookingsia tenipes</em>); <em>Hydryphantes globus</em> (= <em>Mackerrasilla globus</em>)</td>
</tr>
</tbody>
</table>

An addendum contains the brief presentation of the results of observations on the numbers of barbed setae on tarsi, tibiae, genu and femurs of the legs. A simple table reports the data of the revised species and also other interesting groups.


Audy (1957) suggested for the above species a different taxonomical position, and the same year, 1957, Southcott raised the same question. Careful study of the material examined originally by Womersley enables us to allocate these species to the groups to which they genuinely pertain. All the species are valid. The three genera *Nototrombicula*, *Grossia* and *Womersleyia* are also valid but belong to families other than Leeuwenhoekidae. As for *Mackerrasilla*, it is a water mite and a synonym of *Hydryphantes*. *Cookingsia* is obviously a synonym of *Neotrombidium*.

In order to complete the work of Womersley, who made an addendum for his new genus *Audyana* — which he placed in the subfamily Trombellinae —, we will also revise the generotype of the latter.

*) This work was supported by Research Grant AI-03793 from the National Institute of Allergy and Infectious Diseases, National Institutes of Health, U.S. Public Health Service.
We also got the opportunity to study the single specimen of *Polydiscia squamata* Methagl, 1928, which Newell reported in his 1957 work as pertaining to the subfamily Lasseninae. The revision of this species will also be presented hereafter, although, in our opinion, it evidently does not belong to the subfamily Lasseninae. Consequently, the subfamily Polydiscinae is hereafter created for it.

**REVISION PLAN**

1. *Nothotrombicula deinacridae* Dumbleton, 1947
4. *Polydiscia squamata* Methagl, 1928

The new notion of “Ordinary barbed leg setae” or L.S.T. has been introduced in this work and is now part of the taxonomical data or bionomics. On page 250 is also an L.S.T. table for a certain number of species, for comparative anatomy.

**Acknowledgements.** Our thanks for assistance in this revision go to Dr. David C. Lee, South Australian Museum, Adelaide (Australia); Dr. Milan Daniel, Institute of Parasitology, Czechoslovak Academy of Sciences, Prague (Czechoslovakia); Dr. Egon Popp, Zoologische Sammlung des Bayerischen Staates, Munich (West Germany); Dr. Rodger D. Mitchell, Faculty of Zoology, Ohio State University, Columbus, Ohio (U.S.A.); Dr. Irwin M. Newell, Division of Life Sciences, University of California, Riverside, California (U.S.A.); Dr. George W. Wharton, Institute of Acarology, Department of Zoology and Entomology, Ohio State University, Columbus, Ohio (U.S.A.); Maj. J. C. Borland, Mather Air Force Base, Sacramento, California (U.S.A.); and Dr. George W. Byers, Snow Entomological Museum, Department of Entomology, University of Kansas, Lawrence, Kansas (U.S.A.). Finally, we are very thankful to Dr. W. Schedl, Institut für Zoologie der Universität Innsbruck, Innsbruck (Austria), for having permitted us to see two rare specimens of *Polydiscia squamata*.

**REVISION**

A — SUPERFAMILY PROSTIGMATA KRAMER, 1877

I — FAMILY JOHNSTONIANIDAE NEWELL, 1957

a — SUBFAMILY LASSENINAE NEWELL, 1957

1 — GENUS *NOHTHOTROMBICULA* COMB. NOV.


Genus type: *Nothotrombicula deinacridae* Dumbleton, 1947.

Distribution: New Zealand.

Resembles very much *Pteridopus*, but possesses only one pair of scutal sensillae (the anterior feathered pair being missing), and the posterior tarsus being as long as the anterior, whereas in *Pteridopus*, it is almost twice as long as the anterior, tapering, and dorsally clothed with about a dozen long, feathered setae (auditory organs?).

**Diagnosis:** Scutum with rounded anterior shoulders, trapezoidal, densely punctuate, a pointed nasus; four thick, spiculated setae and a pair of long sensillae. Paired eyes on both sides of scutum. Legs all seven-segmented. fsp = 7.7.7; coxal setae, fCx = 2.1.1;
intercoxal (or sternal setae), fSt = 0.2. Urstigma well developed, between the two closely
joined anterior and mid coxae; lassenia organ not visible. Supracoxalae (or supracoxal
setae) spinelike, present on both gnathobase and dorsal edge of anterior coxa.
Gnathobasal setae (or tritrostra) long, nude and tapering. No deutorostral setae.
Chelobase bulbous and strongly sclerotized, its chelostyle (or blade) abundantly
dentate on its edges, as well as on its outer surface (verruceos aspect). Odontus
(or palpotibial claw) powerful and deeply divided into three incisors (Pl. A, Figs. 1 and 2).
Palpotarsus shorter than in Pteridopus but well developed and bearing six feathered
setae and two long, nude tarsaleae (2T); the basal solenidion (S0) slightly pushed
forward; palpotarsal formula, fT = 6B.2T (instead of 7B.2T in Pteridopus).

Special nude setae of legs almost identical in aspect and disposition to those commonly
seen in Trombiculidae. Anterior tarsus with a solenidion (S1), famulus (f1), substernal
(aST), parasubterminala (pST) and pretarsala (PT1); mid tarsus with solenidion (S2),
famulus (f2) and pretarsala (PT2); no special nude setae on posterior tarsus. Anterior
tibia with apical tibiala and microspur, and basal second tibiala; mid tibia with two
tibialae, one apical, the other basal; one basal tibiala on posterior tibia. No genuala
on any leg, but a microspur on anterior and mid genu. Barbed leg setae as tabulated
(L. S. T.). Of the three leg claws, the central — or empodium — is sicklelike, stronger
and longer than the two outer claws, but undivided on its tip; the two outer
claws have a characteristic flattened, leaflike subapex (Plate A, Fig. 8).

Body setae few in number, the dorsal ones inserted on platelets, or sclerotized
discs. Anal pore — or uropore — opening between two kidney-shaped sclerites, each
bearing two relatively short, barbed setae. Index pedibus — or sum of the leg lengths —
around 2240. Synthetic Identification Formula, SIF = 6B.2T-N.3-0001.0000. Parasitic
on acridid.

Nothotrombicula deinacrididae

Womersley, 1954.
a) Ecological data: Parasite on Deinacrida rugosa? (Giant Weta or King Cricket of New Zealand),
collected on Mt. Peel, Nelson (New Zealand).
b) Taxonomical data:

\[
\begin{align*}
f_{Sp} & = \frac{(B) - (B) - (N) - N}{(E) \cdot (E) - (N) - (N)} \\
f_{Cx} & = 2.1.1 \\
p_{ST} & = N (17\mu) \\
& + \begin{cases} 26 \text{ if } 26 > 2240 \\ 2240 \text{ if } 2240 \end{cases} \\
& + \begin{cases} 6.0.6.0.6.2 \text{ if } 6.0.6.0.6.2 \\ 2240 \text{ if } 2240 \end{cases} \\
N_{D} & = 50 \\
\end{align*}
\]

Measurements of the holotype, one paratype and mean of the two (given classically as for trombiculid
larvae):

<table>
<thead>
<tr>
<th>AW</th>
<th>PW</th>
<th>SB</th>
<th>ASB</th>
<th>PSB</th>
<th>SD</th>
<th>AP</th>
<th>AL</th>
<th>PL</th>
<th>S</th>
<th>D</th>
<th>L. S. T.</th>
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</thead>
<tbody>
<tr>
<td>HT</td>
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<td>154</td>
<td>43</td>
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<td>60</td>
<td>76</td>
<td>88</td>
<td>189</td>
<td>104/126</td>
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</tr>
<tr>
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<td>158</td>
<td>45</td>
<td>50</td>
<td>47</td>
<td>97</td>
<td>60</td>
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<td>86</td>
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<td>pa</td>
<td>pm</td>
<td>pp</td>
<td>lp</td>
<td>T1</td>
<td>T2</td>
<td>T3</td>
<td>Nasus</td>
<td>F</td>
<td>7 5 5</td>
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<td>708</td>
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<td>680</td>
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<td>2240</td>
<td>246</td>
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<td>239</td>
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<td>240</td>
<td>210</td>
<td>231</td>
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<td></td>
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</tbody>
</table>

N.B.: T1, T2, and T3 = lengths of the three leg-tarsi.
A. *Nothotrombicula deinacridae*

*Fig. 1.*
c) Diagnosis: According to its index pedibus, Ip = 2240, it is a very large species. Coxal setae peglike, like small "Belgian endives" (25×7μ). The anal pore sclerite measures 64 by 30μ, and bears two setae (40×70μ, posterior seta twice as thick as the anterior). Subterminala thicker and longer (45μ) than parasubterminala (17μ). Solenidia S₁ and S₂ equal in length (33μ), each preceded by its respective famulus (10μ). Apical nude tibialae (anterior and mid legs). 34μ; identical to S₁ and S₂. Next to the apical tibiala of anterior leg is a microspur of 17μ. Basal tibialae of three legs, all 28μ. Microspurs on anterior and mid genu, 16μ. Gnathobasal supracoaxal is a small spine of 5μ; anterior supracoaxal a spine of 10μ. Barbed leg setae as tabulated (L.S.T.).

2 — GENUS GROSSIA COMB. NOV.

Genus type: Grossia onychia Womersley, 1954.
Distribution: South Australia.

This is a close genus to the preceding and to Pteridopus. Its scutum is very like that of Nototrombicula, but does not possess an anteromedian nasus. In addition, the legs are much shorter and the tarsi — all proportions considered — are similar to those of classical trombiculids and definitely unconnected with those of Pteridopus.

Diagnosis: Scutum trapezoidal, densely punctate without nasus, but with rounded anterior shoulders, four barbed setae and two sensillae bearing almost inconspicuous but numerous ciliae. Paired eyes on a sclerite on each side of the scutum. Legs all seven-segmented, fsp = 7.7; coxal setae, fCx = 2.1:1; intercoxal, or sternal setae, fSt = 0.2. Urostigma well developed between the contiguous anterior and mid coxae. Lassenia organ not visible. Chelebase bulbous, strongly sclerotized; chelestyle abundantly dentate on its edges, as well as on its outer surface (verrucose aspect). Gnathobasal and anterior leg supracoaxala spinelike. Galeala (=protrostral) present. Deutorostral (velum seta) also present and spiniform (Plate B, Fig. 1). Triorostral (or gnathobasal setae) nude and tapering. Odontus (or palp-tibial claw) very powerful and deeply divided into three big and sharply tapering claws. Palp-tarsus contorted, with a strong clawlike seta emerging from its dorsum (C); five slender feathered setae and two apical nude/ tapering terminalia; the solenidion is basal. Palp-tarsal formula, fT = 5B.C.2T (instead of 6B.2T in Nototrombicula and 7B.2T in Pteridopus).

Special nude and barbed setation of legs similar to those of Nototrombicula, in number and disposition. Here also, the lack of classical leg genualae — as in Nototrombicula — is remarkable and definitely separates the two genera from Pteridopus where there is always one genuula on each leg. Barbed leg setae as tabulated (L.S.T.).

Body setae few in number, inserted on round or oval platelets. Uropore between two sclerites, each bearing a pair of barbed setae. Synthetic Identification Formula, SIF = 5B.C.2T-B-3-0001.0000. Parasitic on arthropods.

Grossia onychia

(Plate B, Figs. 1—6)


a) Ecological data: Found parásitizing another mite, an adult of the Trombellinae subfamily. Chyzeria australiensis Hirst, 1928, collected by G. F. Gross from Ottway Ranges, Victoria (South Australia).

b) Taxonomical data:

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
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<tr>
<td>SIF</td>
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<tr>
<td>fPp</td>
<td>(B)-(B)-(N).N.N</td>
</tr>
<tr>
<td>fCx</td>
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<tr>
<td>Gr</td>
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<tr>
<td>Ch</td>
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</tr>
<tr>
<td>fV</td>
<td>4.4.2u4.2.2 = 18</td>
</tr>
<tr>
<td>Gr</td>
<td>37μ</td>
</tr>
<tr>
<td>Ch</td>
<td>37μ</td>
</tr>
<tr>
<td>fV</td>
<td>4.4.2u4.2.2 = 18</td>
</tr>
<tr>
<td>St</td>
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</tr>
<tr>
<td>Pt²</td>
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<tr>
<td>Pt²</td>
<td>N (28μ)</td>
</tr>
</tbody>
</table>
B. Grossia onychia

Fig. 2.
Measurements of the holotype (given classically as for trombiculid larvae):

<table>
<thead>
<tr>
<th>AW</th>
<th>PW</th>
<th>SB</th>
<th>ASB</th>
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<th>SD</th>
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<td>lp</td>
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<td>T2</td>
<td>T3</td>
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<td>128</td>
<td>140</td>
<td></td>
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</tbody>
</table>

**c) Diagnosis:** According to its Ip = 1648, it is a large species. Coxal setae short and thick, carrot-shaped (41 x 3μ). Uroporal sclerites (60 x 18μ), bearing two setae (40 and 65μ, the posterior being twice as thick as the anterior). Subterminala much thicker and longer (52μ) than the paranabotala (22μ). Solenidion, S1 = 56μ, much longer than S2 = 24μ; microspurs or famuli in front of the solenidion (8μ long). Anterior and mid leg tibialae, apical, 29μ, basal, 27μ. Anterior microtibiala, 12μ. Posterior leg tibiala basal, 36μ. Anterior and mid microgenualae, 21μ. In addition to the galeala, or ciliated protorostral (37μ), and the long, tapering tritoriostral, or gnathobasal seta (64μ), there is a pair of spiniform deutorostral, or velum setae (8μ). Odontus (palpotibial claw) deeply divided into three sharply pointed and big claws. Palpotarsus with its dorsal sub-basal seta modified in a thick, clawlike process (68μ x 5μ at its base). Palpotarsal solenidion, S8 = 15μ and the two terminalae, 20 and 24μ. Gnathobasal supracoxal, 10μ and anterior leg supracoxal, 8μ, both spiniform. Ordinary leg setae as tabulated (L. S. T.).

**3 — GENUS PTERIDOPUS**


**Distribution:** Africa (Rhodesia, Angola).

For comparison with the two preceding genera, it is useful to have here a short revision of *Pteridopus*. This remarkable genus was created for two species. Their scutum possesses a "nasus" and two pairs of sensillae, in addition to two pairs of thick lateral setae. They also have considerable elongated and tapering posterior tarsi, on the dorsum of which, like a crest, is a row of 14 very long, feathered setae (250μ).

**Diagnosis:** Scutum trapezoidal, densely punctate, with a pointed or round nasus, and rounded anterior shoulders, four thick spiculated setae, and two pairs of ciliated sensillae. On both sides of the scutum are paired corneae on kidney-shaped sclerites. Legs all seven-segmented, fUp = 7.7.7; coxal setae, fCx = 2.1.1; intercoxal, or sternal setae, fSt = 0.2. Well-developed urstigma between the contiguous anterior and mid coxae. Lassenia visible on *P. auditor*; not recorded on *P. pseudhammeusia*. One supracoxal each on gnathobase and anterior coxa. Galeala (protorostral), nude or ciliated. Gnathobasal seta (tritoriostral) present. No deutorostral visible. Chelobase only half as long as wide; chelostyle, or blade, abundantly dentate on its edges, as well as on its outer surface (verrucose aspect). Bifid odontus. Palpotarsus very elongated, with seven feathered, long and more or less tapering setae; two nude tarsalae (2T) and a solenidion inserted ventrally and separated from the base by two branched setae; palpotarsal formula, fT = 7B 2T. Special nude setae of legs similar to those of the two preceding genera in aspect as well as in disposition; although one nude genua is present on each leg (none in *Nothotrombicula* and *Grossia*, as seen above.).

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Leg tarsi considerably elongated and, at their basal third, they suddenly narrow and continue to taper and curve on their apical two-thirds. The posterior tarsus is particularly long (over 1000μ) and possesses a dorsal row of 14 long, feathered setae, 240—260μ long). The base of these setae shows a weak ring of interrupted actinatin constituting a "zone of fracture."(*) The leg claws are similar to those of the two preceding genera, although the apex of the empodium also flattened and divided. Synthetic Identification Formula, SIF - 7B.2T-B-2-1111.0000. Parasitic on acridids.

Pteridopus pseudannahemania

(Plate C, Figs. 1—8)


a) Ecological data: Found free, dwelling in forest soil in Furi, Dundo (Angola). One specimen collected by Dr. Barros Machado in January 1948.

b) Taxonomical data:

\[ \text{SIF} = 7B.2T-B-2-1111.0000 \]
\[ \text{fPp} = (B)-(B)-(B).B.B \]
\[ \text{fPp} = 7/7/7 \]
\[ \text{fCx} = 2.1.1 \]
\[ \text{fSt} = 0.2 \]
\[ \text{pST} = N (14μ) \]
\[ \text{PT}^2 = N (14μ) \]
\[ \text{fSe = AL} = 2456 \]
\[ \text{fV} = 4.4.4.4n8.8.4 = 36 \]
\[ \text{DP} = 6.6.6.4.4.2 = 28 \]

Comparative measurents of the single specimen (P,p) with those of Nototrembicula deinacridae (N.d.), Grossia amyrba (G.o.) and Polydisca squamata (P.s.):

<table>
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<th>P</th>
<th>SB</th>
<th>ASB</th>
<th>PSB</th>
<th>SD</th>
<th>SP</th>
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<tr>
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<td>29/42</td>
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<td>156</td>
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<td>176</td>
<td>58</td>
<td>92/156</td>
<td>106/110</td>
<td>a m p</td>
</tr>
</tbody>
</table>
| N.d.  | 102| 158| 45   | 50   | 47  | 97 | 60 | 78 | 86 | 187  | 93/126 | T 57 51 \%
| G.o.  | 37 | 149| 65   | 14   | 42  | 12 | 42 | 84 | 50 | 110  | 88  | 162  | 102/174 | t 8 8 8 |
| P.s.  | 39 | 40 | 14/15| 27   | 40  | 67 | 33 | 38 | 50 | 54/66| 44/49| G 4 4 4 |

P V pa pm pp Ip T1 T2 T Nasus

<table>
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<td>G.o.</td>
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</tr>
<tr>
<td>P.s.</td>
<td>30</td>
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</tbody>
</table>

C) Diagnosis: According to its Ip = 2456, it is a gigantic species. Palpotarsurs rather long (48μ) and narrow (11μ near base). On its outer side one can see two very elongated, slender and feathered setae (52μ), one nude subterminal tarsala (18μ), and the usual solenidion (18μ) separated from the base by two feathered setae (56μ); on its inner side are three bushy setae (24—36μ) and a nude tarsala (15μ) inserted not far from the base; fT = 7B.2T. Chelostyle typical, with its external surface verrucose. Galeala sparsely ciliated. Ga = 59μ. Triternostrals long (88μ) and feathered. Palpal pilous formula, fPp = (B)-(B)-(B).B.B: the barbed femorala being thicker and stiff, while the others are more or less ciliated or feathered. Uropore opening between two

*) In their extensive revision of Whartonia glenni (1965), Vecammene-Grandjean, Watkins and Beck noticed the analogy of the weakened area in the flexure of the mastitarsala of that chigger with that of Pteridopus. They suggest the possibility of the wreckage of the useless seta, once the mite has reached its host and parasitoe, possibly by sympathetic vibration and rupture of the zone of fragility.
sclerites (36 $\times$ 14 $\mu$), bearing paired setae (42 and 38 $\mu$). Body setae on round platelets (17 to 30 $\mu$ diameter). Anterior leg supracoaxal spine, 11 $\mu$; the gnathobasal one could not be seen, although it more than likely exists. Subterminala twice as thick and long (26 $\mu$) as parasubterminala (13 $\mu$). Solenidia, $S_1 = 36$ $\mu$, with its famulus spine (5 $\mu$) located 14 $\mu$ anterior to it; solenidon $S_2 = 38$ $\mu$, its 4 $\mu$ famulus inserted 26 $\mu$ distal to it. Anterior and mid leg tibia with dorso-apical tibiala = 24 $\mu$ and basal tibiala = 27 $\mu$. Dorso-apical microspur of anterior tibia and of anterior and mid genu, 12 $\mu$ each. Posterior tibia, 36 $\mu$. The three leg genu, each with one genuinala (28 $\mu$). Near the small pretarsus on anterior and mid tarsus is one nude pretarsala 30 $\mu$ long. Apex of the empodium flattened and divided into two beaks; the two lateral claws being foliate at their extremities, as is the preceding species (Fig. 7). The two anterior coxal setae almost subequal (90—100 $\mu$), longer than that on the mid coxa (74 $\mu$), and twice as long as that on the posterior coxa (46 $\mu$); all four densely barbed. The 16 long, feathered setae on tarsus and tibia of posterior leg are obviously autotomized and their aspect is unknown; they can only be estimated by analogy and contemplation of that of P. auditor. See leg tabulation (L. S. T.).

b — SUBFAMILY POLYDISCINAE NOV.

The study of two specimens showed that Newell's claim for Polydiscia as a genus to be placed among the Johnstonianidae is well-founded, although, in our opinion and from what can be seen in the diagnosis given hereafter, the genus Polydiscia should be placed in a subfamily close to, but different from Lasseninidae regarding the three following, unusual features:

1. The palpotibial claw is limited in size and resembles the closest dorsal and nude palpotibial seta, leaving the place for the palpotarsus as a real terminal segment, conical and important in size.

2. The mid leg tarsus, like the anterior, possesses a subterminala and a parasubterminala.

3. The tabulation of leg setae is very much like that of certain water mites (see p. 250, P. squamata, and compare with Piersigia limophila, Thyasinae and other Hydryphantinae).

Those characters seem to imply a high ancestry to this genus, as does the peculiar shape and ornamentation of its scutum, which interestingly links the Lassenininae to the Hydryphantidae.

Subfamily type: Polydiscio squamata Methlgl, 1928.

Distribution: Europe.

Diagnosis: Scutum punctate, with two pairs of sensillae and two pairs of lateral branched setae, and shaped like that of certain members of the Lassenininae subfamily and also like several members of the superfamily Hydryphantae (Hydranidae). Paired eyes on large platelets. Large and conical palpotarsus situated terminally on the palpotibia, the tibial claw being like a thick, nude seta (Plate D, Fig. 1).

Special nude and barbed setae of legs very similar to those of the other Lassenininae described here, but with extra subterminala and parasubterminala on mid leg tarsus. Two genuinala on anterior leg, one on each mid and posterior leg. Leg empodia sicklelike and thin, the two lateral claws being divided into two foliate appendages (Fig. 4). Large urstigma between the contiguous anterior and mid leg coxae. Uropore opening in a platelet bearing a pair of barbed setae (Fig. 5). Few by body setae, all inserted in large platelets. Palpal pilous number, NPp = 1.1.3 (not 1.2.3 as in water mites).
4 — GENUS POLYDISCIA COMB. NOV.


Genus type: Polydiscia squamata Methagl. 1928.

Distribution: Europe

Diagnosis: Scutum roughly trapezoidal, densely punctate with no nasus, with lateral margins deeply concave, anterior and posterior margins slightly convex in the middle; four barbed setae and two pairs of sensillae. Paired eyes on an oval sclerite. Legs all seven-segmented, fsp = 7.7.7. The two pairs of sternal setae are incorporated on their respective neighboring coxae, fSt = 0.0 and fCx = 2.1.2. Anterior and mid leg tarsi identical in possessing soleidion, famulus, subterminala, parasubterminala and pretarsala. Posterior tarsus without nude setae. Nude genitalia present. Lassenia organ absent. Two supraocular spines on gnathobase. Protorostrals present. Deutorostrals present. No tritorostrals. Palpobium bearing two thick spiniform dorsal setae, and two nude, thin and short ventrals; the most apical of the two dorsal spines is to be considered as the palpal claw. Npp = 1.1.3. Synthetic Identification Formula, \( SIF = 5B.2T-N.1-2111.0000 \). Ordinary leg setae (L. S. T.).

Polydiscia squamata

(Plate D, Figs. 1—5)


a) Ecological data: Collected free-living in vacant lot, near Vienna (Austria). Two specimens were studied, of which one is declared “lectotype”, the other paratype (PT).

b) Taxonomical data:

- \( SIF = 5B.2T-N.1-2111.0000 \)
- \( fPp = (B)-(B)-(N).N.N \)
- \( fCx = 2.1.2 \)
- \( fSt = 0.0 \)
- \( ST_1 = N (34\mu) \)
- \( ST_2 = 30\mu \)
- \( pST_1 = 15\mu \)
- \( pST_2 = 14\mu \)
- \( PT_1 = 18\mu \)
- \( PT_2 = 18\mu \)
- \( fSc = PL > AL \)
- \( Gr = 24\mu \)
- \( Ch = 12\mu \)
- \( Ga = 14\mu \)
- \( fD = 4.4.4.4.2 = 18 \)
- \( fV = 2.2.5.2 = 8 \)
- NDV = 26

Measurements of paratype and lectotype:

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c) Diagnosis: According to its Ip = 742—800, this is a medium-sized larva. Conical palpatarsus well-developed (18\mu long; diameter at the base, 9\mu) with six barbed setae, a long, thick and nude tarsala at the apex (25\mu) and a smaller subterminala (16\mu), the basal soleidion, \( S_0 = 15 \mu \). The deutorostral is a short and thick seta (10\mu). Femur and genu of palpus each with one dorsal branched seta; palpal pilous formula, \( fPp = (B)-(B)-(N).N.N \). Strong, oblong chelobase bearing a small, sharply curved chelostyle (12\mu). Anterior leg tarsus with a soleidion, \( S_1 = 27 \mu \), a famulus, \( f_1 = 5 \mu \).
D. Polydiscia squamata

Fig. 4.
a subterminala, ST₁ = 34μ, and a parasubterminala, pST₁ = 15μ. Mid leg tarsus with S₁ = 20μ, f₂ = 4μ, ST₂ = 30μ and pST₂ = 14μ. Anterior leg tibia with two tibialae (20μ) and a microspur (5μ); mid tibia with two tibialae (20μ). Genualae, 2 ga = 21μ plus a microspur (5μ), 1 gm = 24μ plus a microspur (5μ), and 1 gp = 18μ. On the coxae all the setae are nude and tapering. Body setae few in number (about 26), all arising from large platelets (diam. 22 to 34μ). Uropore in the middle of a sclerotized shield (40×36μ) with two anterolateral, long, tapering and sparsely barbed setae (42μ). All the sclerotized shields and platelets coarsely porose. Gnathobase more or less rectangular in shape, as in Notothrombicula and Grossia; bearing a pair of supracoxal spines. Leg tabulation (L. S. T.).

II — FAMILY TROMBIDIIDAE LEACH, 1815

a — SUBFAMILY TROMBELLINAE THOR, 1935

There is a great deal of resemblance between the larvae of certain Trombellinae and those of Neotrombidinae (see p. 244). Larvae pertaining to the genera Durenia Vercammen-Grandjean, 1955 and Womersleyia Radford, 1946 (Trombellinae) possess in common several characters that are also shared by larvae of the genera Monunquis and Neotrombidium (Neotrombidinae); for instance: 1 — Scutal shape, ornamentation, and eyes. 2 — Rostrum with squared gnathobase, bifid palpobital claws and recurved chelostyles. 3 — More or less tapering leg tarsi, without subterminalae and parasubterminalae, but with solenidia, S₁ and S₂, and their respective famulus. 4 — Tibialae: anterior leg, two nude + microspur; mid leg, two nude; posterior leg, one nude or a solenidion. 5 — Genualae: two or more nude setae on anterior leg, one or more on mid and one or more on posterior leg. 6 — Femoralae: two or more on each leg. 7 — Leg segmentation: 7.6.6, or 6.6.6. 8 — Pulpotarsal formulae, fT = 7B, 6B.2T, or 5B.3T.

The main differences are:

Neotrombidinae

1. a single claw on each leg.
2. one dorso-apical microspur on each anterior and mid genu.
3. almond-shaped urstigma between contiguous anterior and mid coxae.
4. mosaic-screening on coxae corner.

Trombellinae

1. a single but trifurcate claw on each anterior and mid leg, two claws on posterior leg tarsus.
2. no microspurs on anterior and mid genu.
3. round urstigma between contiguous anterior and mid coxae.
4. uniform porosity on coxae.

5 — GENUS WOMERSLEYIA COMB. NOV.

Genus type: Womersleyia minuta Radford, 1946.
Distribution: Maldivs Islands (India).

Womersleyia minuta definitely belongs to the subfamily Trombellinae, near Durenia Vercammen-Grandjean, 1955, from which it differs only by its distinctive scutal shape and the presence of an extraordinary elongate solenidion on the posterior leg tibia, in the place of the usual nude tibiala (tp).

Diagnosis: Scutum with anterior shoulders — noticeably different from the hasteate scutum of Durenia — with a protruded anteromedian nasus, more or less globose,
bearing two setae; plus two anterolateral and two posterolateral barbed setae and a pair of sensillae. Paired eyes. Strong palpi with terminal bifid palpital claw. Palpotarsus conical, fT = 7B. Protorostral setae (galealae) and tritorostral setae present; no deutoorostrals. Curved chelostyle stronger than in Durenia. Gnathobase squared. All legs six-segmented, fsp = 6.6.6; the anterior and median subequal, the posterior the longest. Medium-sized, round urstigma between noncontiguous anterior and mid coxae. Leg tarsi characteristically pyriform (as in Durenia); with a short, nude and ventro-apical pretarsus on each anterior and mid tarsi, and single, terminal claw with trifurcate apex on the same two tarsi; the posterior tarsus possessing a pair of subequal, sickle-shaped claws. Anterior tarsus without subterminala and parastub, terminala: one solenidion, S1, and its famulus; mid tarsus also with one solenidion, S2, and a famulus. No nude setae on posterior-leg tarsus. Anterior and mid tibiae with a pair of nude tibialae and one dorso-apical microspur on the anterior one. In the place usually taken by the nude tibialae on the posterior leg (in Durenia), there is a long solenidion. No dorso-apical microspurs on the genua but at least one nude genua on each. Also, at least one pair of nude femorala on the dorsum of each femur. Anterosternal seta on the base of the anterior coxa; posterosternal seta free; fC = 2.2.1 and fSt = 0.2. Synthetic Identification Formula,

SIF = 7B-B-2.6111.0002. Parasitic on acridids.

**Womersleyia minuta**


**a) Ecological data:** Under the wings of Acrididae, Tettigidae and Tettigoniidae (grasshoppers), but originally collected on 20 December 1944 from mud in a pandanus swamp on Gan Island, Addu Atoll, in the Maldive Islands.

**b) Taxonomical data:**

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**Measurements of one paratype:**

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<td>54</td>
<td>63</td>
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**c) Diagnosis:** According to its Ip = 560, this is a small species. Scutum punctate with shoulders and a small, globose nasus (1 = 14μ, w = 12μ); bearing six barbed setae, stout but pointed, the AL thicker than the AM, which is thicker than the PL. Sensillae with basal 18μ nude and apical 20μ bearing about 16 branches (Fig. 2). Paired eyes (diam. 8μ) on eight-shaped sclerite. Body setae thick and pointed, strongly barbed (Fig. 6). Rostrum with curved chelostyle (16μ) on a bulbous chelobase (32×20μ);
E. Womersleyia minuta

Fig. 5.
galeala (protorostral) with few barbs. All palpal setae branched. Palpotsarsus formula, fT = 7B, basal solenidia, 9 μ. Bifid palpobasal claw, prongs subequal. Solenia, S1 - S2 = 13 μ. Anterior and mid nude leg tibialae, 15 μ, posterior tibia on both anterior and mid leg (12 μ). Microspur (6 μ) on tibia of anterior leg. Posterior leg tibiala, long, slender solenidion with a posterior process, like the counterbalance of a clock wire, solenidion 42 to 50 μ long, process 9 to 19 μ, sometimes missing (Fig. 5). Anterior genu with six nude genualae (12 μ); mid and posterior genu each with one genualae. There is no dorso-apical microspur on any genu. Anterior femur with four nude femoralae (14 μ); mid and posterior, each with two femoralae (18 — 14 μ). The leg setation as tabulated (L. S. T.).

6 — GENUS AUDYANA

Distribution: Malaysia.

The morphology of the generic type species of this genus is much different from that of Durisia and Womersleya, so much so that it appears doubtful that they pertain to the same subfamily. The scutum is tremendously different and differently adorned; the rostrum is unusual, and the legs are armed with claws which do not correspond to those of the other members of the family. The femur on the anterior leg is divided into tело- and basifemur, neither of which bears any dorsal, nude femoralae; but, instead, there are two tibialae on the posterior leg. The anterior and mid genu are provided dorsally with microspurs and, on tarsus I, there is a parasubterminala (absent in Durisia and Womersleya).

Nevertheless, until more is known about the larval stages of the Trombellinae this genus will be left under its present status.

Diagnosis: Scutum shaped like that of certain Leeuwenhoekidae and Trombiculidae, with six pairs of setae and two sensillae. Palpi small by comparison with the large chelobase bearing a rather long chelostyle (Pl. F. Fig. 1). Palpotsarsus with seven branched setae, fT = 7B. Palpal claw with four short prongs. Leg segmentation, fsp = = 7.6.6. Anterior sternal setae both on the base of the anterior coxae, fCx = 2.1.1 and fSt = 0.2. Small urstigma attached to the anterior coxa, noncontiguous with the mid. The small pretarsal of each leg bears a strong falciform empodium and the outer claw — the inner being missing — with a foliate apex resembling very much that of the four Lasseniniae studied above (Figs. 3 — 5). On anterior leg tarsus is a strong subterminal (24 μ), no parasubterminala. Solenidia S1 and S2 present, with their respective famulus. Two tibialae on each leg; anterior tibia with a dorso-apical microspur. Anterior and mid genu each with a dorso-apical microspur. Genualae, respectively, 2.1.1 in number. Few body setae. Index pedibus (Ip) corresponding to a medium-sized animal. SIF = 7B-8-4-2192.0000. Parasitic on arthropods.

Audyana thompsoni (Plate F, Figs. 1 — 6)


a) Ecological data: Found on the venter of the common giant black scorpion, Heterometrus longimanus, collected by J. R. Audy, near Pahang Road, Ulu Bombak Forest Reserve, Selangor Malaysia, on 14 April 1948.
F. Audyana thompsoni

Fig. 6.
b) Taxonomical data:

\[
\begin{align*}
\text{SIP} &= 7 \text{H-B-4-2112,0000} \\
\text{fPp} &= -(C)-(B)-(B).B.B^* \\
\text{fST} &= 2.1.1 \\
\text{ST} &= N (24\mu) \\
\text{fST} &= 0.2 \\
\text{ST} &= N (24\mu) \\
\text{PT1} &= N (13\mu) \\
\text{PT2} &= N (13\mu) \\
\text{fSc} &= -(P) >> AM = AL \\
\text{Gr} &= 10\mu \\
\text{Ch} &= 28\mu \\
\text{Ga} &= 19\mu \\
\text{fV} &= 4.4u4.2 = 14 \\
\text{NDV} &= 38 \\
\text{fD} &= 2H + 6.6.4.4.2 = 24 \\
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\text{s} &= 6 \\
\text{G} &= 4 \\
\text{u} &= 4 \\
\text{F} &= 6 \\
\text{H} &= 6 \\
\end{align*}
\]

N.B.: In the formula fPp, the (C) on femorala stands for "cauliform". There are in fact six pairs of such buds — shaped like "Brussels sprouts" — dispersed on the body of A. thompsoni: the AM and AL on scutum, the palpofoemoral seta, the gnathobasal setae (for tritrostral) and the coxalae, mid and posterior (see Figs. 1, 2, 4, and 5).

Measurements of one paratype, 4245:

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c) Diagnosis: According to its Ip = 743, this species is of medium size. The uniformly porous scutum shaped like that of some Whartonia and Leptotrombidium. The paired AM are cauliform and so are the two AL, which are located near the two pseudostigmae; the PL is almost ten times as long as AM and AL, and so are the two swollen and barbed sensillae. There are no cornear or eye pigmentation around the scutum. The palpi are short and their setae all barbed, fPp = (C)-(B)-(B).B.B and fT = 7B; its basa solenidion measuring 10\mu, and the terminal seta being thick, rootlike and densely spiculated. Short palpotibial claw provided with four small prongs. Chelabases proportionally voluminous (50\mu long x 28\mu diam.) bearing elongated chelostyle (28\mu) with a dorso-subapical hook. Galeala (or protorosorial seta) with few, thick ciliae. Cauliform tritrostral. Legs as described under the genus diagnosis; in addition, the subterminala is 24\mu long and the solenidion, S1 = 28\mu, almost twice as long as S2 = 16\mu. The famuli, f1 and f2, both 4\mu; f1, far distal to S1, f2 distal but near S2. Dorso-apical micropurs on anterior tibia and genu and on mid genu. Two nude tibiae on each leg (12—21\mu). Two genualae (19\mu) in anterior leg and one on each mid (19\mu) and posterior (21\mu) leg. The ventro-proximal seta of each femur is nude. Barbed setae as shown in the table (L. S. T.). Body setae rather long and thick (Fig. 6).

b — SUBFAMILY NEOTROMBIDINAE FEIDER, 1955

7 — GENUS NEOTROMBIDIUM

Trombidiun Berlese, 1888.


Genus type: Neotrombidium furcigerum Leonardi, 1901.

Distribution: Worldwide.

In a preceding study, Vercammen-Grandjean and Lindquist (1971) restored a second genus, Monunquis Wharton, 1938, which was taken out of synonymy with
Neotrombidium. In addition, the subfamily Neotrombidinae Feider, 1955 was revised. Concerning the genus Neotrombidium itself, the number of known larvae in that same study was increased from five to eight species. Neotrombidium tenuiipes was considered, although, to make the present paper complete we find it opportune to redescribe it.

**Diagnosis:** Scutum punctate with very prominent rounded nasus bearing two anteromedian setae, AM, in addition to paired AL and PL, and two long nude or ciliate sensillae. Paired eyes each side of the scutum. Palpotarsal formulae, fT = 7B or 6B.2T. Few body setae (22 to 32). Two femoralae on each leg. Almond-shaped urstigma between the contiguous anterior and mid coxae. Leg segmentation, fsp = 7.6.6. Single apical claw at each leg tarsus. Mosaic-screening in corner of leg coxae. Strong palpi with bifid palpotibial claw. Pointed chelostyles sometimes with subapical hooks on the dorsal edge. Galeala (= protorostral seta) present; more or less long and branched deutorostoal; no tritorostal. Anterosternal seta sometimes attached to the extreme basal point of the anterior coxa, posterostral free, fSt = 0.2 or 2.2; coxal formula, fCx = 2.1.1 or 1.1.1. Only one nude pretarsala, on anterior tarsus, PT² = 0.

Synthetic Identification Formula, SIF = 7B or 6B.2T.N-2.3111.0002.

**Neotrombidium tenuiipes**

(Plate G, Figs. 1—7)


**a) Ecological data:** Collected by Dr. J. R. Audy from the wing of a giant longicorn beetle in Sungei Buloh, Selangor (Malaysia), 17 August 1948.

**b) Taxonomical data:**

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**Measurements of one paratype:**

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<td>70</td>
<td>66</td>
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c) **Diagnosis:** According to its lp = 823, this species is considered of medium size. Rounded nasus rather narrow by comparison with that of the other species (l = 18 μ, w = 16 μ). Front view of palpotibial claw looks like a “deer hoof” ("pied de biche" in French). Solenidia, S₁ and S₂, subequal (16 μ). Dorso-apical tibiala on anterior and mid leg and dorso-basal tibiala on the three legs almost equal in length (13—15 μ).

*) It is to be noted that the genera Durenia and Womersleyia also possess the not-so-common feature of nude femoralae on their three pairs of legs.
G. Neotrombidiunm tenuipes

Fig. 7.
Dorso-apical microspur on tibia and genu of anterior leg and on genu of mid leg. Three genualae on anterior leg (20 µ); one each on mid (18 µ) and posterior (28 µ) legs. Paired femorale on each leg (30 to 40 µ). Uropore in the middle of a little shield (26 × 17 µ), bearing two short barbed setae (25 µ). Body setae rather thick and spicate, arising from small platelets (Fig. 6). Barbed setae as seen in table (L.S.T.).

B—SUPERFAMILY HYDRYPHANTAE VIETS, 1931
FAMILY HYDRYPHANTIDAE Thor, 1900
SUBFAMILY HYDRYPHANTINAE Piersig, 1896

8—GENUS HYDRYPHANTES


*Hydrachnna*, Salensky, 1869.


Piersig, 1892, Oudemans, 1898, Wolcott, 1905.

*Dioplodon*, [in part.], Krendowskij, 1885.

*Metahydrphantes* Thor, 1929.

Genus type: *Hydraphantes hilaris* Koch, 1941.

Distribution: Europe, Africa, Asia and Australia.*

In the illustration of the palpus of his *Mackerrasiehula globus*, Womersley indicated only one seta on the palpogenu (Fig. E, p. 113). In reality, there are two, and this is one of the diagnostic features of the larval Hydrachnellae, the palpoetal number being 1.2.3, instead of the 1.1.3 in a great deal of larval Trombidiformes.

**Diagnosis:** Scutum trapezoidal, incompletely sclerotized and presenting five sclerites or patches: a pair of anterior bearing the anterolateral (AL) and the first pseudostigma, a pair of posterior involving the posterolateral (PL), and the posterior pseudostigma — this one being reduced as is its sensilla —, finally, a central platelet bearing the scutal eye, or "scutocellus". In addition, two pairs of lateral eyes are on individual sclerites. Chelobase considerably developed with longitudinally corrugated surface and a basal apodeme characteristically sulciform (Plate E, Fig. 1). Chelostyle of moderate size, sharply curved. Deeply fringed hypostomal membrane. Protrostral (galeala) and deutostral (velum seta) present: no tritostral. Odontus (palpobital claw) bifid. Palpotarsal formula, fT = 7B.T. Solenidion S9 situated distally to two basal barbed setae (Plate E, Fig. 1), and a nude tarsala. Legs all seven-segmented, fsp = 7.7.7. Coxa setae, fCx = 2.1.1, intercoxal setae or sternals, fSt = 0.0. Urstigma between the contiguous anterior and mid coxae.

Special nude and barbed setae of legs like those of leuwenhockids, except for the subterminala (ST) and parasubterminala (pST) of anterior leg tarsus, which are generally absent from the hydraphantids. Dorso-apical microspurs on anterior tibia

*) Only one species is known from Australia: *Hydraphantes*(*Polyhydrphantes*) microphallus Lundblad, 1941. The following, *Hydraphantes globus*, could be the larval form of that species known only from its adult and nymphal stages. Until further correlation, the specific name of *globus* Womersley will be maintained.

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and genu and on mid genu, sometimes considerably developed; almost as long as the tibiae and genua (Plate II, Fig. 3). Pretarsal setae present on famuli. On the three legs the dorsal nude tibiae are situated backward near the base of the tibiae. One nude genua on each leg. On each leg, the small pretarsus bears a strong, sickle-shaped empodial claw, and — as in numerous Hydrachnellae — the two lateral claws are modified into flexible and nude setae.

Body setae few in number. Uropore opening in a pyriform selerite bearing two setae. Palpal pilous number, 1.2.3 (a classical figure for water mite larvae; 1.1.3 being customary in most Trombidiformes). Index pedibus, Ip = 640 to 720, indicates medium-sized larvae. Synthetic Identification Formula, SIF = 7B.T-N-2-1111.0000. Parasitic on water-borne arthropods.

**Hydrphantes globus comb. nov.**


*Mackerrasella globus* (Womersley, 1954) comb. nov.

---

**a) Ecological data:** On a Dolichopodidae*) found in a light trap in Merbein, Victoria (Australia), 2 December 1951 by Mrs. G. M. Mackerras.

**b) Taxonomical data:**

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N.B.: SBA = distance from the anterior sental edge to the anterior sensilla bases.
SBP = distance from the posterior sental edge to the posterior sensilla bases.
88 = distance between the anterior and the posterior sensilla bases.

**c) Diagnosis:** According to its Ip = 648, this is a medium-sized water mite (Thyasidae customarily display an Ip over 1000. or large size). Coxal setae tapering and nude (24—30 µ). The five eye corneae are inserted on sclerotized platelets; the two anteriors are the largest (diam. 14 µ), the two posteriors are a little smaller in diameter (12 µ), and the scutellum is the smallest (9 µ). The body setae are few and tapering, as shown (Fig. 6). On the palpotarsus (fT = 7B.T) the three outer setae are feathered and rather

*) Some dolichopodid flies skate on the surface of swamps, and their attack by hydrphantid larvae would not be surprising or uncommon.

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* Charletonia sp. (25) C. domrowi Borchartia adrasus Cucullia darwinieni. Sphaerotorus leptopilus

| T 28 28 28 | 28 28 28 | 28 28 28 | 28 28 30 | 21 21 21 |
| t 18 18 18 | 12 13 14 | 16 16 14 | 17 18 18 | 14 14 14 |
| G 12 12 12 | 10 14 12 | 8 8 8 | 12 12 12 | 12 8 8 |
| F 9 9 7 | 9 9 7 | 7 9 7 | 9 9 7 | 7 7 7 |

N.B.: (Between parentheses, the No. of species seen).
long (32 μ), the shorter four inners bear only a few barbs. Separated from the base by
two branched setae, the solenidion (S₀) is long and tapering (22 μ); while, short and
spinelike, the nude tarsala (T) is terminal (6 μ). Gnathobase quadrilateral (Fig. 1).
Solenidia, S₁ = 16 μ, with its famulus next to its base (4 μ), S₂ = 17 μ, its famulus (3 μ)
being at the level of its apex. Anterior leg with its two tibia (26 μ) inserted near its
base, its apical microspur, thicker and pointed (9 μ). On mid leg the two tibia (29 μ)
are also inserted basally. Anterior and mid genualae (19 μ), each situated behind
a thick microspur of, respectively, 14 and 10 μ. On posterior leg, one slender and
tapering genuala of 34 μ and a tibia of 32 μ, both dorsobasal (for other interesting
comparisons, see the addendum). Uropore opening in a small shield (17 × 14 μ), between
two short and nude setae (22 μ). Leg barbed setae as tabulated (L.S.T.).

ADDENDUM

For a certain time now, a systematic study has been undertaken on the leg pilosity, restricted to
the barbed setae, also called “simple”, “ordinary”, or “normal” (n) by several authors. Those setae are
reported principally on the four distal segments, i.e., tarsus (T), tibia (t), genu (G), and femur (F), disregarding,
in the case of the latter, the splitting of femur into basi- and telofemur, and neglecting
that on the trochanters which is omnipresent and usually single, except for certain Gubriepina. The
twelve figures obtained for anterior (a), mid (m), and posterior (p) legs are set in a table which
permits the formation of an opinion in a glance.

These figures are very constant for certain groups. The (Trombiculidae) for instance, show mainly:

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<td>F</td>
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As with any biometrical data, the figures may vary according to the probabilities induced by
the law of the great numbers, and, obviously, it is mandatory to rely upon averages. Variations, of
course, occur, mostly in the tarsal numbers and principally, the anterior tarsus, although one
may observe occasional variations in the three other lines.

If one compares, for instance, Trombiculidae and Leeuwenhoekinae, one observes the same
number for tibia and femur: t = 8 6 6 and F = 6 6 5, but the genu shows 4 3 3 for the former
and 4 4 4 for the latter.

Hereafter is a display of the species involved in the preceding work, and also some other interesting
groups or species. A more substantial revision of these tabulations is in progress and will be published
in the near future.

Ревизия клещей Apoloniinae (Acarina, Leeuwenhoekidae)
поУомерсли (Womersley) в Азиатское-тихоокеанской
области

П. И. Веркамен-Гранжев

Резюме. Уомерсли (Womersley 1954) предварительно включил несколько трудно по-
местительных видов в подсемейство Apoloniinae. Эту группу рассматривали Одн (Audy
1957) и Сауксот (Southcott 1957), не сделав однако других существенных предложений
или соответствующей ревизии.

По причине близости к постоянную ревизию включены три других вида, которые Уо-
мерсли не приняли во внимание; один из них вводит новое подсемейство Polydiscinae. Все
просмотренные виды вновь описаны в таксономически распределены следующим образом:
S.-Fam. Prostigmata, Fam. Johnstonianidae, s/Fam. Lassenidae: Notothrombicula deinacridae,
Grossia onychia и Pteridopus pseudhannemania: 251
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