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THREE NEW SPECIES, AND A REDESCRIPTION
OF MITES OF THE GENUS SCHWIEBIA (ACARINA: TYROGLYPHIDAE)

BY

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ABSTRACT.

Three new species of the genus Schwiebia are described: S. zingiberi from various hosts and localities; S. similis on Gerbera from Australia and on taro from Hong Kong, and S. receptacula on paeony rose from Japan. S. elongata (Banks) is re-described and transferred from the genus Rhizoglyphus.

INTRODUCTION.

The genus Schwiebia was first erected by Oudemans (1916) when he described S. talpa from one female found in rotting leaves from the neighbourhood of Bonn. The species was inadequately described, but a comprehensive re-description was subsequently provided by Hughes (1957). Zachvatkin (1941) gave an account of the genus and divided it into two subgenera, Megninietta and Schwiebia s. str., but both Hughes (1957) and Woodring (1966) agreed that this division was unwarranted. Woodring (1966) described four new species of this genus and listed all the known species. He also defined the genus Schwiebia and showed its relationships to similar genera.

In appearance, mites of the genus Schwiebia are very like a small Rhizoglyphus, but differ in the following points: Many of the body setae are lacking, e.g. the supra coxal seta, sc.i., dr, d2, h.i., h.v. and sa.e. may be absent. There is usually only one pair of anal setae compared to two or more pairs in Rhizoglyphus. The number of protruding apical setae on tarsus I and II differs in the two genera. Van Eyndhoven (pers. comm.) first suggested this possibility and an examination of the respective genera confirmed this difference. In Rhizoglyphus there are five apical setae on tarsus I and four apical setae (in each case, including the sensory rod) on tarsus II, whereas in Schwiebia there are four or fewer apical setae on tarsus I and usually three apical setae on tarsus II.

In the following descriptions, the terminology is that of Hughes (1961) and all measurements are given in microns (μ). All holotype slides (except for S. elongata) are deposited in the Department of Agriculture, Levin. Paratype slides are located, as indicated, under the descriptions of the various species.
Fig. 1-5: *S. zingiberi*.

1. — Dorsal view of hypopus.  2. — Ventral view of hypopus.  3. — Leg I of hypopus  4. — Leg I of female.  5. — Leg I of heteromorphic male.
Schwiebia zingiberi n. sp.
(figs 1-10)

This is a variable species but the characteristic indentation, or cleft, in the propodosomal shield, together with the distinctive "hat-shaped" spermathecae should distinguish it from other species.

**Female**: Description from 25 specimens. Length of idiosoma 483-604 μ; greatest width of idiosoma 296-454 μ. Propodosomal shield with a deep broad indentation, arising from the posterior margin and extending almost half the length of the shield (fig. 6). This indentation is more clearly visible in some specimens than in others and in some instances is very difficult to detect. Lengths of propodosomal setae: v.i. 69-130; v.e. not apparent; sc.e. 111-200; sc.i. usually absent, but present in 5 specimens, length 3-57. There is great variability in the presence of the various hysterosomal setae and also in their lengths. In some instances only v.e. and h.e. may be absent, while at the other extreme v.e., h.e., h.i., h.v., d1, d2 and sa.e. may be absent. Lengths and presence of hysterosomal setae as follows: d1 present in 10 specimens, 7-73 long; d2 present in 10 specimens, 41-117 long; d3 29-101; d4 52-162; h.i. present in 3 specimens, 10-47 long; h.e. 95-165; h.v. absent; la present in 8 specimens, 44-101 long; lp 54-159; sa.e. present on 1 specimen only, 28 long; sa.i. 57-171.

ω1 of leg I slightly enlarged apically; ω2 about half as long as ω1. Genu I with σ1 and σ2 almost the same length, although σ1 slightly shorter; seta mG spine-like. Epimeres III and IV separate. Spermathecae consisting of two blunt finger-like projections near the circular opening, sometimes giving the impression of being "hat-shaped". (fig. 7); duct a narrow tube leading to the opening of the bursa copulatrix, just posterior of the anal slit. Length of post anal setae, pa 73-162. Mean leg segment lengths:

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<td>tibia</td>
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<td>femur</td>
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**Homeomorphic Male**: not observed.

**Heteromorphic Male**: Description from ten specimens.

Length of idiosoma 525-586 μ; greatest width of idiosoma 270-375 μ. Propodosomal shield present, similar to that of female, but the indentation not quite so deep. In some specimens the propodosomal shield is poorly defined and the posterior indentation not apparent. Lengths of propodosomal setae: v.i. 92-146; v.e. not apparent; sc.e. 159-200; sc.i. absent. Lengths of hysterosomal setae: d1 and d2 absent; d3 22-57; d4 143-206; h.i. absent; h.e. 133-168; h.v. absent; la absent; lp 70-111; sa.e. absent; sa.i. 152-196.

Legs longer than in female and leg III much stouter than in female. ω2 of leg I almost two thirds the length of ω1; setae cG and mG on genu I short and spine-like. Epimeres III and IV separate. Penal structure broad, with the four suckers placed anteriorly to this. Anal suckers prominent, a curved sclerotized band running anteriorly from each anal sucker to just
Fig. 6-10: *S. singiberi.*

posterior of the penis. A sclerotized band is present at the posterior body margin, running transversely between setae paz and sometimes extending beyond these. Lengths of post anal setae pai 15-25; pa2 155-193; pa3 10-22. Mean leg segment lengths:

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<td>femur</td>
<td>79</td>
<td>79</td>
<td>94</td>
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_Hypopus:_ (figs 1, 2, 3).
Length of idiosoma 212-244 (6 specs). Broadly oval, smooth, shining, convex, with minute pale coloured spots. v.i. setae short, 6-7 long; sc.i. and sc.e. setae present as short slender hairs. Transverse division between propodosoma and hysterosoma. Dorsal setae d1-d4, h.i., h.e., and la present as short slender hairs. Length of apical setae of gnathosoma z7-3z. Sternum distinct, terminating abruptly near the base of coxae II. Apodemes II running diagonally towards the mid line. Apodeme III directed diagonally forwards initially and then running transversely, meeting its opposite member. Apodemes IV directed diagonally, at the termination of each being a small seta.

_Holotype:_ Female, ex rotting ginger, China, Hong Kong and Malaya. 3-1-68, N. H. HYDE.


_Schwiebia similis_ n. sp.
(figs 11-13, 16)

The shape of the spermathecae is distinctive, consisting of a cluster of large cells similar to that of _S. receptacula_ and _S. elongata_. It can be separated from these species by the differing shape of the basal and distal cells, giving it a "parachute-shaped" appearance. The heteromorphic male has a distinctive "semi-circular" shaped opisthosomal shield.

_Female:_ Description from 11 specimens. Length of idiosoma 439-547; greatest width of idiosoma 260-454. Propodosomal shield present, rectangular, longer than wide, some specimens with the shield cleft. Lengths of propodosomal setae: v.i. 60-98; v.e. not apparent; sc.e. 111-162; sc.i. absent. Hysterosomal setae d1, d2, h.i., h.v. and sa.e. absent; d3, 22-41; d4 70-107; h.e. 66-114; la 19-32, lp 35-76; sa.i. 67-101.

ω1 of leg I slightly enlarged apically; ω2 about two-thirds as long as ω1. Genu I with σ1 and σ2 about the same length; σa mG seta-like. Epimeres III and IV separate. Spermathecae "parachute-shaped", consisting of a cluster of large cells, the basal and distal cells of differing shapes (fig. 12); a narrow duct leading directly to the bursa copulatrix, which projects
Fig. 11, 12, 13 and 16: *S. similis*.


Fig. 14 — Tarsus I of *S. receptacula*.

Fig. 15 — Leg I of adult female of *S. elongata*

Fig. 16 — Tarsus I of *S. similis*
slightly from the posterior body margin as a cone-shaped nozzle. Length of post anal setae pa 66-108.

Mean leg segment lengths:

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<td>57</td>
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<td>tibia</td>
<td>25</td>
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<td>femur</td>
<td>57</td>
<td>58</td>
<td>40</td>
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Homeomorphic male not observed.

*Heteromorphic Male*: Description from seven specimens.

Length of idiosoma 390-476 μ; greatest width of idiosoma 219-292. Propodosomal shield present, similar to that of female with some specimens showing a posterior indentation or cleft. Lengths of propodosomal setae: v.i. 66-98; v.e. not apparent; sc.e. III-139; sc.i. absent. Lengths of hysterosomal setae: dr and dz absent; d3 19-44; d4 98-120; h.i. absent; h.e. 77-95; h.v. absent; la 13-47; lp 42-60; sa.e. absent; sa.i. 95-130.

Epimeres III and IV separate. Usually a narrow sclerotised band running transversely at posterior body margin, and anterior of this a similar band, semi-circular in shape, running posteriorly and laterally of the anal discs, although in some instances this band is indefinite and almost absent. Opisthosoma with a distinct sclerotised semi-circular shield. Lengths of post anal setae pa1 10-17; pa2 87-120; pa3 10-17. Mean leg segment lengths:

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<td>femur</td>
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<td>57</td>
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Hypopus not observed.

*Holotype*: Female, on the dirt-encrusted roots of *Gerbera*, Australia, 21-X-70, A. Tolla-Day.

*Paratypes*: Thirty two females, nine heteromorphic males with same data as holotype; three females ex taro (*Colocasia* sp.), Hong Kong, 29-X-64, P. C. Hunt.


(figs 14, 17-18)

*Schwiebia receptacula* n. sp.

This species is similar to *S. similis* and *S. elongata* in that the spermathecae consists of a cluster of large cells. It can be distinguished from the former in that the cells tend to be of uniform size and from the latter in that the ratio of the length of leg I to body length in the females...
is usually less than 3, whereas in *elongata* it is usually greater than 3. Also seta la is longer in *receptacula* (17-24) than in *elongata* (9-11).

**Female**: Description from 4 specimens. Length of idiosoma 505-597; greatest width of idiosoma 306-388. Propodosomal shield present, rectangular, longer than wide. Lengths of propodosomal setae: v.i. 82-101; v.e. not apparent; sc.e. 108-130; sc.i. absent. Presence and lengths of hysterosomal setae as follows: d1 absent; d2 absent in three specimens; d3 long in the fourth; d3 29-38; d4 86-101; h.i. absent; h.e. 89-108; h.v. absent; la 17-24; lp 82-86; sa.e. absent; sa.i. 86-101.

ω1 of leg I slightly enlarged apically; similar to that of *S. similis*; ω2 about half as long as ω1. Genu I with σ1 and σ2 almost the same length; seta mG seta-like. Epimeres III and IV separate. Spermathecae consisting of clusters of large cells of about uniform size, a short narrow duct leading to the exterior. Length of post anal setae p.a. 70-99.

Mean leg segment lengths:

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<td>femur</td>
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<td>62</td>
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<td>Ratio of length of leg I to body length — 2.84; 2.74; 2.83.</td>
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Homeomorphic male not observed.
Heteromorphic male not observed.
Hypopop not observed.

**Holotype**: Female, ex paeony rose, Japan, 29-xi-63, M. R. EALES.


*Schwiebia elongata* (Banks) new combination

(figs 15, 19-20)


Through the courtesy of Mr R. SMILEY, it has been possible to obtain the holotype slide of this species. The specimens were remounted and the species is here re-described. JACOT (1939) and WOODRING (1966) believed this species was of the genus *Schwiebia* and an examination of the type material supports this conclusion.

*S. elongata* is very similar to *S. receptacula* but the ratio of the length of leg I to body length in the females is usually greater than *receptacula*. Also, seta la in *elongata* is shorter (9-11) than in *receptacula* (17-24).

**Female**: Description from 6 specimens. Length of idiosoma 428-557; greatest width of idiosoma 240-324. Propodosomal shield present, rectangular, longer than wide, not cleft. Lengths of propodosomal setae: v.i. 57-79; v.e. not apparent; sc.e. 76-143; sc.i. absent. Pre-
Fig. 17-18: *S. receptacula.*
17. — Dorsal view of adult female. 18. — Ventral view of adult female.

Fig. 19-20: *S. elongata.*
sence and lengths of hysterosomal setae as follows: d1 and d2 absent; d3 10-18; d4 63-89; h.i. absent; h.e. 60-98; h.v. absent; la 9-11; lp 54-80; sa.e. absent; sa.i. 73-86.

Solenidion o1 on tarsus I slightly but distinctly swollen apically; o2 about half as long as o1. Genu I with o1 and o2 almost the same length; seta mG seta-like. Epimeres III and IV separate. Spermathecae consisting of a cluster of large cells, similar to that of S. receptacula, a short narrow duct leading to the exterior where it projects as a blunt cone-shaped nozzle. Length of post-anal setae p.a. 66-89.

Mean leg segment lengths:

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<td>femur</td>
<td>54</td>
<td>54</td>
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Leg segment lengths all shorter than the corresponding lengths in S. receptacula. Ratio of length of leg I to body length 3.17; 3.12; 3.23; 3.34; 2.92; 3.10.

Homeomorphic male not observed.

Heteromorphic male not observed.

Hypopus not observed.

Lectotype: Female, on roots of clover, Oct. 7/79, probably in Missouri, U.S.A.
In United States National Museum, Washington D. C., U.S.A.

Syntypes: Five females with same data as lectotype.
Also deposited in the United States National Museum.

ACKNOWLEDGEMENTS

My thanks are due to Dr G. L. Van Eynhoven for first suggesting the placement of these species in the genus Schwebea. Dr J. P. Woodring has kindly read through the manuscript and made several valuable comments.

REFERENCES