

A revision of the phoretic deutonymphs (hypopi) of the genus *Sennertia* Oudemans, 1905 (Acari, Astigmata, Chaetodactylidae)

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Summary

The genus *Sennertia* Oudemans, 1905 (Acari, Chaetodactylidae) is revised. Up to now, 49 species have been described in this genus, almost all from their hypopial stage. Adults are known only for four species. The adults live in the nests of bees, mainly Xylocopidae, and their heteromorphic deutonymphs (= hypopi) are phoretic on the bees. The parasitic role of these mites is not known but they probably feed on the bee larvae as do the members of the allied genus *Chaetodactylus* which are parasitic in the nests of Megachilidae. The holotypes or lectotypes of 35 species have been examined and most of them are redescribed and redepicted. Four species have been placed in synonymy: *S. moandensis* Fain, 1971 with *S. morstatti* Vitzthum, 1914; *S. xylocopae* (Donnadieu, 1868) with *S. cerambycina* (Scopoli, 1763); *S. sumatrensis* Oudemans, 1924 with *S. horrida* (Vitzthum, 1912); *S. donaldi* Turk, 1948 with *S. argentina* Vitzthum, 1941. The genus *Sennertia* is redefined from the hypopial stage and four new subgenera (*Afrosennertia*, *Asiosennertia*, *Amsennertia* and *Spinosenertia*) and two new species *S. (Asiosennertia) vitzthumi* and *S. (Asiosennertia) delfinadoae* are described. A key to the species is given.

Introduction

The genus *Sennertia* Oudemans, 1905, (Chaetodactylidae) is a cosmopolitan group of astigmatic mites which live as adults in the nest of carpenter

bees, mostly Xylocopidae, and whose hypopial deutonymphs are phoretic on the adult bee. Until now 49 species have been described, almost all from their phoretic hypopi. Adults are known only for four species: *S. cerambycina* Scopoli, *S. morstatti* Vitzthum, *S. perturbans* Vitzthum and *S. caffra* Vitzthum. Most of these species have been briefly described and incompletely depicted and their identification is therefore very difficult.

The purpose of this paper is to give new descriptions and figures of the hypopi of most of these species. In addition four new subgenera and two new species are described and a new definition of the genus *Sennertia*, based on the hypopi, is given. Among the described species, four are placed in synonymy. A key for the hypopi is provided.

The holotypes or lectotypes have been examined for 35 species.

The nomenclature of the idiosomal setae and of the organs (suckers and conoids) of the suctorial plate proposed recently (Fain, 1973 and 1974b) is used here.

Abbreviations of the Institutions where types have been deposited are: ASL = Academy of Sciences, Leningrad; ESE = Entomological Society of Egypt, Cairo; IRSNB = Institut royal des Sciences naturelles de Belgique, Bruxelles; MRAC = Musée royal de l'Afrique Centrale, Tervuren, Belgique; NRS = Naturhistoriska Riksmuseet, Stockholm; RMNH = Rijksmuseum van Natuurlijke Historie, Leiden; SAM = South Australian Museum Adelaide; USNM = United States National Museum, Washington; ZSM = Zoologische Staatssammlung, München.

Genus *Sennertia* Oudemans, 1905

Definition (from the hypopial stage): Body flattened, 195 to 558 μ long.

Dorsum: Propodonotum striated without shield; hysteronotum with a median, generally well-developed shield bearing the setae *d 1* to *d 5*. In some species the shield is restricted to the posterior third of the body and bears only the *d 4* and *d 5* setae. In most of the species the posterior part of this shield reflects ventrally and presents a deep cleft which corresponds to the posterior border of the suctorial plate. The postero-median area of the shield generally bears a longitudinal sclerite variable in length.

Venter: Epimera I fused, generally Y-shaped, rarely V-shaped, other epimera free. Suctorial plate variably developed bearing two pairs of suckers and two pairs of conoids: the anterior suckers are pedunculate, generally small and situated at each side of the vestigial anus, the posterior suckers are larger, non-pedunculate and closer to each other. Behind the posterior suckers are the paramedian conoids and more laterally the lateral conoids. The conoids are elastic conical buffers probably allowing the mite to facilitate release from the host (Fain, 1973, 1974b). The situation of the lateral conoids is variable, either on the same level as paramedian conoids or more anterior.

Chaetotaxy of idiosoma: The following are present: *v i* very small; *s cx* very small and globulous; *sc i* either small microsetae or long and spinous; *sc e* long spines; *l 1*, *l 2*, and *h* are spines; *d 1*, *d 2*, *d 3*, *d 4*, *d 5* and *l 4* are generally microsetae, more rarely *d 1* to *d 3* are spinous and long; *l 3* is either a spine or a microseta; *l 5* is a thin rather long seta. Ventrally, the following are present: *cx I*, *cx III*, *g a*, *g m*, *g p*, and *sh*.

Solenidiotaxy: The palposomal area bears two solenidia *alpha 3* to 18 μ long.

Legs: legs I-III well-developed, with a long fleshy pretarsus ending in a spirally twisted claw. In some species the pretarsi bear a lateral process, either rounded or triangular. Legs IV generally short and thin, with a tarsus variable in length, generally very short. In the subgenus *Afro-sennertia* the legs IV are long.

Chaetotaxy of legs: Tarsi I-III with 5-5-4 setae. Apical third of tarsi I-II with three short setae: a ventro-apical either thin or spinous, an antero-lateral thin and a posterolateral variable in shape, either simple or spinous, or rodlike, or thick lanceolate and sharply bent. Median third of these tarsi with two long setae either broadly or very narrowly foliate. Tarsi III with an apico-ventral seta either thin or spinous, two long dorso-median, unequal generally foliate setae and one longer dorso-basal simple seta. Tarsi IV with a very long and strong apical seta; in most of the species there is a ventral seta, variable in length, and two very short ventro-apical setae; in the species with long tarsi there are four short setae (two ventro-median setae, two ventro-apical) and one long apical seta. Tibiae I-IV with 2-2-1-0 setae. Genua 2-2-1-0. Femora 1-1-0-1. Trochanters 1-1-1-0. Solenidiotaxy: Tarsi 3-1-0-0. Tibiae 1-1-1-0. Genua 1-1-1-0. On tarsus I $\omega 3$ is generally twice to three times as long as $\omega 1$. The $\omega 2$ is generally as long as $\omega 1$, but is thinner and generally attenuated apically. There is a thin and short famulus between $\omega 1$ and $\omega 3$.

Type species: *Pediculus cerambycinus* Scopoli, 1763

Subgeneric division of genus Sennertia based on the hypopi

Five subgenera may be distinguished in this genus:

1. *Sennertia* Oudemans, 1905: Dorsal shield at least as long as half the body length and bearing setae *d 1* to *d 5* except in *s. zhelochovtzevi* where *d 1* is in front of the shield. Setae *sc i* either short or long but always shorter than *sc e*. Setae *d 1* to *d 4* are microsetae. Tarsus IV not more than 2.5 times as long as wide.

Type species: *Pediculus cerambycinus* Scopoli, 1763. More than 30 species belong to this subgenus.

Distribution: Cosmopolitan.

The subgenus *Sennertia* may be divided into three groups:

1. Group 'horrida' — Setae *sc i* strong and 40 to 100 μ long. This group contains five species.

2. Group 'japonicus' — Setae *sc i* are microsetae. Tarsus IV with a ventral seta four to seven times as long as this tarsus. This group contains seven species.

3. Group 'cerambycina' — Setae *sc i* are microsetae. Tarsus IV with a ventral seta not longer than this tarsus. This group contains 20 species.

2. *Afrosennertia* n.subg: Body large (length 405–558 μ). Dorsal shield as long as about 30% of the body length, remaining far behind the setae *d 2*. Dorsal setae relatively thin and short. Legs IV as long or longer than half the body width. Tarsus IV five to six times as long wide. Pretarsi I-III with a long triangular process. Suctorial plate with a U-shaped frame. Conoids very small.

Type species: Sennertia monicae Fain, 1971. There are two other species in this subgenus.

Distribution: Afrotropical.

3. *Asiosennertia* n.subg.: Resembling *Afrosennertia* but body smaller; legs IV shorter (shorter than body width) with tarsus IV only 3 to 3.4 times as long as wide; dorsal shield longer reaching *d 2* setae.

Type species: Sennertia (Afrosennertia) delfinadoae n.sp. There are two (or ? three) other species in this subgenus.

Distribution: Japan and India.

4. *Amseennertia* n.subg.: Dorsal shield longer than half the body length and bearing setae *d 2*. The *d 1* are either in front of or on the margin of the shield. Setae *d 1*, *sc i* and *sc e* are relatively long subequal spines. Legs IV short with very short tarsus bearing a very short ventral seta.

Type species: Sennertia frontalis Vitzthum, 1941. There are two other species in this subgenus.

Distribution: Neotropical and Nearctic.

5. *Spinoseennertia* n.subg.: Distinguished from other subgenera by the aspect of many setae, especially those of trochanters I-III, femur IV, tibia III which are modified into short conical spines. Pretarsi I-III with two large membranous processes. Setae *sc i* spinous much longer than *sc e*. Setae *d 1* to *d 3* are microsetae. Dorsal shield slightly longer than half the body length. Legs IV long; tarsus IV three times as long as wide bearing a very short ventral seta. Anterior suckers much larger than posterior suckers.

Type species: Sennertia argentina Vitzthum, 1941. Monotypic subgenus.

Distribution: Neotropical.

Key to the genus *Sennertia* (hypopi)

(*Remark: S. bifilis* (Canestrini), *S. dissimilis* Zachvatkin, *S. egyptiaca* Elbadry, *S. indica* Delfinado & Baker and *S. queenslandica* Wormersley, inadequately described, are not mentioned here.)

1. Setae of trochanters I-III, femur IV and tibia III modified into short conical spines. Pretarsi I-III with 2 membranous rounded projections. Setae *sc i* spinous and much longer than *sc e*. Setae *d 1* are microsetae and situated far in front of the shield. Legs IV long, with a tarsus 3 times as long as wide. Anterior suckers larger than posterior ones.

From *Xylocopa frontalis* from Argentina

. Subgenus *Spinoseennertia* n.subg.

(One species: *S.(S.) argentina* Vitzthum, 1941) Setae of trochanters I-III, femur IV and tibia III not modified into short conical spines. Pretarsi either with one triangular or without projections. Setae *sc i* either spinous or very thin and small and shorter, or only slightly longer, than *sc e*. Other characters variable 2

2. Setae *sc i* and *d 1* are long, subequal spines. Setae *d 1* situated in front or on the anterior margin of hysteronotal shield. Pretarsi I-III with a short thumb-like lateral projection

. Subgenus *Amseennertia* n.subg. (3)

Setae *d 1* are microsetae; setae *sc i* variable 5

3. Setae *d 2* and *d 3* are microsetae. 4

Setae *d 2* and *d 3* are spinous and only slightly shorter than *d 1* and *sc i*.

From *Xylocopa* sp. from Peru.

. *S.(A.) ignota* Delfinado & Baker, 1976

4. Length of body 200 μ , of dorsal shield 130 μ . Setae *d 1* situated on the anterior margin of the shield.

From *Xylocopa frontalis* from Argentina

. *S.(A.) frontalis* Vitzthum, 1941

Length of body 319 μ . Dorsal shield approximately 175 μ long. Setae *d 1* situated in front of the shield.

From *Xylocopa virginica* from Florida, USA

. *S.(A.) americana*

Delfinado & Baker, 1976

5. Dorsal shield triangular, very short, remaining far behind the *d* 2 setae. Dorsal setae relatively short and thin. Legs IV as long or longer than half of the body width. Tarsus IV 5 to 6 times as long as wide. Pretarsi I-III with a long lateral triangular projection. Suctorial plate surrounded by a U-shaped sclerotized frame; conoids very small. Length of body 405 to 558 μ Subgenus *Afrosennertia* n.subg. (6)
6. Dorsal shield longer, reaching at least the *d* 2 setae. Legs IV shorter than half the body width; tarsus IV not more than 3.4 times as long as wide. Other characters variable 8
6. Dorsal striations thick, punctate and very unequal in length. 7
- Dorsal striations very thin, regular and not punctate. Dorsal shield broadly rounded. Lateral conoids more anterior than paramedian conoids. Setae *sc e* and *l* 1, *l* 3 36 to 45 μ long. Tarsi IV 72 μ long. Body 405 μ long. From *Mesotrichia inconstans* from Zaïre *S.(A.) monicae* Fain, 1971
7. Dorsal shield much wider (240 μ) than long (170 μ). Setae *d* 3 situated on anterior margin of the shield. Lateral conoids more anterior than paramedian conoids. Setae *l* 3 thick 88–99 μ long. Body 525 to 558 μ long. On *Mesotrichia* spp. from Zaïre *S.(A.) jeanalexi* Fain, 1971
- dorsal shield slightly wider (150 μ) than long (135 μ). Setae *d* 3 situated in front of the shield. Conoids situated on a straight transverse row. Setae *l* 3 very thin, 10 μ long. Body 435 μ long. From *Megachilidae* sp. from Zaïre *S.(A.) basilewskyi* Fain, 1974
8. Dorsal shield distinctly shorter than half the body length. Tarsus IV from 3 to 3.4 times as long as wide
- Subgenus *Asiosennertia* n.subg. (9)
- Dorsal shield at least as long as half the body length. Setae *d* 2 always situated on the shield. Tarsus IV not more than 2.5 times as long as wide
- . . . Subgenus *Sennertia* Oudemans, 1905 (11)
9. Pretarsi I-III with a long triangular projection. Seta *l* 2 and *l* 3 thin and very short (15 μ and 13 μ). Dorsal cuticle completely punctate and with thick folds instead of striations. Length of body 354 μ . Host and locality unknown *S.(A.) vitzthumi* n.sp.
- Pretarsi I-III without such projection. Setae *l* 2 much longer than *sc e* and *l* 1. Dorsal cuticle not punctate and without thick folds. 10
10. Dorsal shield 1.6 times as long as wide. Setae *d* 2 not situated on the shield. Setae *l* 2 about 3 times as long *l* 3. Tarsus IV without ventral seta. From *Xylocopa dissimilis* from Japan. *S.(A.) oudemansi* Zachvatkin, 1941
- Dorsal shield 1.17 times as long (123 μ) as wide (105 μ) bearing the *d* 2. Setae *l* 2 twice as long as *l* 3. Tarsus IV with a ventral seta 25 μ long. From a (?) rat from India. *S.(A.) delfinadoae* n.sp.
11. Setae *sc i* strong and 40 to 100 μ long Group 'horrida' (12)
- Setae *sc i* are microsetae, thin and very short: (3–8 μ long) 16
12. Setae *sc i* and *sc e* subequal or equal. Ventral setae of tarsus IV are microsetae. 13
- Setae *sc i* and *sc e* very unequal. Ventral seta of tarsus IV at least 3.5 times longer than tarsus 14
13. Dorsal shield 1.7 times longer than wide, enlarged anteriorly and much longer than half the length of body. Seta *d* 1 situated on shield. Seta *sc i* 55 μ , *sc e* 63 μ . Genua I-II with a bifid sabre-like seta. Body 510 μ long. Tarsus IV as long as wide. From *Ceratina chloris*, from Surinam *S. (S.) surinamensis* Fain & Lukoschus, 1971
- Dorsal shield strongly narrowed anteriorly and as long as half the length of body. Setae *d* 1 situated in front of the shield. Setae *sc i* and *sc e* 100 μ . Genua I-II without flattened sabre-like seta. Body 375–460 μ long. Tarsus IV slightly longer than 1.5 times its width.
- From *Xylocopa olivieri* from Greece, Turkey, Central Asia *S. (S.) zhelochovtsevi* Zachvatkin, 1941
14. Anterior suckers about twice as large (diameter 42–45 μ) as posterior suckers (diameter 21 μ). Setae *sc i* thick and much shorter (57 μ) than *sc*

e (135 μ). Idiosoma and dorsal shield 325 μ and 240 μ long respectively. Pretarsi I-III with a triangular process. Tarsus IV less than twice as long (24 μ) as wide (13 μ).

From *Xylocopa mirabilis* from Madagascar *S. (S.) madagascarensis* Fain, 1971

Anterior suckers much smaller and always smaller than posterior suckers. 15

- 15. Setae *sc i* one fourth the length of *sc e* (40 μ). Tarsus IV 1,5 times longer than wide with a ventral seta 3.5 times longer than tarsus. Posterior suckers very close to paramedian conoids. From *Xylocopa pictifrons* from W. China *S. (S.) potanini* Zachvatkin, 1941
 Setae *sc i* 100–105 μ , *sc e* 170–180 μ . Tarsus IV 2.5 times as long (40 μ) as wide (16 μ) with a ventral seta 4 to 5 times longer (165–200 μ) than tarsus. Posterior suckers far in front of paramedian conoids. Tibiae I-II with a simple seta and a spine. Setae *g a* ovoid, setae *cx III* forming short ovoid spines. Body 468 μ long (lectotype).

From *Xylocopa* spp. from Indonesia
 *S. (S.) horrida* (Vitzthum, 1912)
 (= *S. sumatrensis* Oudemans, 1924)

- 16. Tarsus IV short, 7 to 18 μ in species where this length has been measured, not longer than twice as long as its maximum width and with a ventral seta 4 to 7 times longer than tarsus itself (50 to 100 μ in species where this length is measured). Apicoventral seta of tarsi I-III is a spine except in *S. cantabrica* where it is a fine seta.
 group 'japonicus' (17)
 Tarsus IV short (7 to 23 μ) with a ventral seta very slightly or not longer than this tarsus. Apicoventral seta of tarsi I-III generally pili-form, rarely slightly spinous
 group 'cerambycina' (23)
- 17. Pretarsi of tarsi I-III with a long oblique triangular process. Apicoventral seta of tarsi I-III is a narrow spine 18
 Pretarsi of tarsi I-III without such process. Apicoventral seta of tarsi I-III is either a thick spine or a fine seta. 19
- 18. Tarsus IV wider (9 μ) than long (7 μ) bearing a

ventral seta 30 μ long. Tarsi I-II without thick lanceolate incurved seta at apex. Dorsal shield 2.3 times as long as wide with parallel sides. Body length 315 μ , width 270 μ (strongly flattened).

From *Bembix borrei* from Java

. *S. (S.) micheli* Fain, 1971

Tarsus IV longer (18 μ) than wide (15 μ) bearing a ventral seta 78 μ long. Tarsi I-II with a thick lanceolate and incurved seta near apex. Dorsal shield 1.6 times longer than wide with lateral margins convex. Body length 318 μ , width 270 μ .

From *Xylocopa circumvolans* from Japan
 *S. (S.) alfkeni* (Oudemans, 1901)

- 19. Apicoventral seta of tarsi I-III is a fine seta, the 2 other short lateral pre-apical setae (the anterior and the posterior) are straight and thin. Dorsal shield twice as long as wide with parallel sides in its posterior two thirds and not prolonged ventrally. Ventral seta of tarsus IV 4 times as long as this tarsus. Body length 340 μ , width 285 μ .
 From *Xylocopa cantabrica* from Algeria.
 *S. (S.) cantabrica* Zachvatkin, 1941
 Apicoventral seta of tarsi I-III is a spine 20
- 20. Tarsi I-II with a posterior pre-apical lanceolate sickle-shaped seta. Body in front of palposomal solenidia is reinforced by 2 large paramedian subcuticular sclerites originating from the bases of epimera I. Dorsal shield 1.75 times as long as wide with parallel sides. Seta *l 3* far remote from the shield. Anterior suckers 6–7 μ , posterior suckers 12 μ wide. Conoids large, situated on a concave line. Posterior seta of genu II 100 μ long. Body length 230 μ , width 195 μ .
 From *Xylocopa circumvolans* from Japan
 *S. (S.) japonicus* (Oudemans, 1901)
 Tarsi I-II without a thick preapical lanceolate incurved seta. Body in front of palposoma without subcuticular sclerites. Dorsal shield from 1.3 to 1.7 times as long as wide and with lateral margins convex. Seta *l 3* strong situated on the margins of the shield. Posterior seta of genu II 40–50 μ long 21

21. Suctorial plate very large (width 105 μ , length 87 μ); diameter of anterior suckers 13 μ , of posterior suckers 35 μ . Conoids large, lateral conoids situated on same line as posterior suckers. Coxal and genital setae with a short base strongly inflated and an apical part flagelliform, the *cx 1* and *III* are 75 and 65 μ long. Seta *l 5* 80 μ apart. Tarsus IV 18 μ long, with a ventral seta 90–100 μ long. Claws small (*I* 24 μ , *II* 21 μ , *III* 18 μ). Dorsal cuticular striations thin and numerous. Dorsal shield 1.3 times as long as wide. Body length 305 μ , width 225 μ . From *Mesotrichia* sp. from Zaïre and *Mesotrichia inconstans flavescens* from Zaïre and Angola *S. (S.) varicosa* Fain, 1971
- Suctorial plate very small (not exceeding 42 μ in width); suckers less than 15 μ wide; conoids very small situated close to each other on a straight or very slightly concave line. Coxal and genital setae with base not or very slightly inflated and much shorter. Seta *l 5* 20–36 μ apart. 22
22. Cuticular striations of dorsum thin and numerous; there are 10–15 striations between *sc i* and *sc e* setae. Tarsus IV 15 μ long, with a ventral seta 4 times longer (48–60 μ) than tarsus. Dorsal shield 1.6 to 1.7 times longer than wide. Setae *l 1*, *l 2*, *l 3*, 78 μ , 80 μ , 80 μ long. Setae *l 1* much shorter than the width of dorsal shield. Body length 235 μ , width 200 μ . From *Mesotrichia nigrita* from E. Africa, Zaïre *S. (S.) morstatti* Vitzthum, 1914 (= *S. (S.) moandensis* Fain, 1971)
- Cuticular striations of dorsum thick and widely spaced (only 6–7 striations between *sc i* and *sc e*). Tarsus IV 12 μ long with a seta 5.5 to 6 times as long (70 μ). Dorsal shield 1.35 times as long (180 μ) as wide (130 μ). Setae *l 1*, *l 2*, *l 3*, 136 μ , 118 μ and 105 μ . Setae *l 1*, as long as the width of dorsal shield. From *Mesotrichia torrida* and *M. imitator* from Zaïre. *S. (S.) tanythrix*, Fain, 1971
23. Dorsal striation very thick and punctate 24
- Dorsal striations thin and never punctate 26
24. Setae *g a* in very short ovoid, and with apex ending in a point. Setae *l 3* are microsetae (2 μ long). Body 245 μ long and 186 μ wide. From *Apidae* sp. and *Ceratina* sp. from Kenya *S. (S.) latipilis* Fain, 1974
- Seta *g a* thin. Seta *l 3* are spines 24–36 μ long 25
25. The 4 conoids are on the same line. Dorsal setae thinner and shorter (*l 1* 30 μ , *l 2* 27 μ , *l 3* 24 μ). Setae *l 5* 34 μ apart. Body length 240 μ , width 210 μ . From *Ceratina* spp. from Afrotropical Region *S. (S.) ceratarum* Fain, 1974
- Lateral conoids distinctly in front of paramedian conoids. Setae *l 1* 34 μ , *l 2* and *l 3* 36 μ . Setae *l 5* 54 μ apart. Body length 240 μ , width, 195 μ . From *Ceratina aereola* from Zaïre. *S. (S.) spinifera* Fain, 1974
26. Posterior third of dorsal shield bearing a median crescent-shaped sclerite convex anteriorly, 20 μ long and 30 μ wide. Tarsi IV very short bearing 4 setae, one apical very long, one ventral seta 18 μ long and 2 very short apico-ventral setae. On *Koptorthosoma tenuiscapa* from India. *S. (S.) hipposiderus* (Oudemans, 1902)
- Posterior shield without a median crescent-shaped sclerite 27
27. Posterior shield with a median sclerotized structure in the shape of 'sugar tongs'. Dorsal shield 1.2 times as long as its maximum width. On *Koptorthosoma tenuiscapa* from Oriental Region 28
- Posterior shield without such structure 29
28. Suctorial plate 44 μ long and 50 μ wide. Posterior suckers 18 μ in diameter. Posterior sclerite of shield complete reaching posterior margins of body. Setae *l 3* 27 μ long. From Java. *S. (S.) koptorthosomae* (Oudemans, 1901)
- Suctorial plate 60 μ long and 30 μ wide. Posterior suckers 25–29 μ wide. Only the anterior part of the posterior sclerite of the dorsal shield is present. Setae *l 3*, 51 μ long. From Sri Lanka.

- *S. (S.) vanderhammeni* Fain, 1974
29. Setae *l* 3 very thin and 5 μ long. Sternum very short or absent. Dorsal shield 1.4 times as long as wide. Posterior setae of genua I and II subequal in length 30
 Setae *l* 3 at least 21 μ long and spinous. Sternum longer. Other characters variable 31
30. Body length 225–240 μ .
 From *Ceratina* sp. from Ivory Coast and *C. atopura* from Zaïre.
 *S. (S.) benoiti* Fain, 1974
 Body length 355 μ .
 From Megachilid bee and *Xylocopa* sp. from India.
 ... *S. (S.) robusta* Delfinado & Baker, 1976
31. Pretarsi I-III thick and short with a postero-lateral triangular process. Ventral seta of femur IV 26–34 μ long (this length is not known for *S. gargantua*). 32
 Pretarsi I-III without such process. Ventral seta of femur IV 4 to 18 μ long. 34
32. Tarsi I-II with 3 pre-apical or apical setae: a postero-lateral seta thick, lanceolate and sharply bent, an antero-lateral seta thin and a ventro-apical seta thin. Anterior region of idiosoma in front of palposomal solenidia with 2 very subcuticular paramedian sclerites reaching the anterior extremity of the body. Body length 243 to 515 μ 33
 Tarsi I-II with the 3 apical or pre-apical setae very thin. Anterior region of idiosoma without such subcuticular sclerite. Claws I-II 36 and 35 μ long. Body length 210 to 261 μ .
 From *Mesotrichia* spp. from Zaïre
 *S. (S.) mesotrichia* Fain, 1971
33. Body length 243 to 380 μ . Setae *d* 5 thin. Dorsal shield with almost parallel sides. Claws I-II 45 and 42 μ long.
 From *Xylocopa* spp. of the *violacea* group from Europe, Asia
 *S. (S.) cerambycina* (Scopoli, 1763)
 Body length 463 to 515 μ . Setae *d* 5 are spines. Dorsal shield tapering gradually towards its anterior end.
 From *Xylocopa punctilabris* and *X. valga* from Turkey
 *S. (S.) gargantua* Zachvatkin, 1941
34. Posterior edge of dorsal shield broadly reflected ventrally and presenting a deep cleft which corresponds to the posterior border of the suctorial plate 35
 Posterior edge of dorsal shield reflected ventrally only by 2 postero-lateral sclerotized lobes. Suctorial plate relatively very wide (80–90 μ); anterior suckers 18 μ , posterior suckers 21 μ wide. Setae *l* 5 66–72 μ apart. Body length 231 μ , width 180 μ .
 From *Mesotrichia inconstans* from Zaïre
 *S. (S.) leclercqi* Fain, 1971
35. Anterior region of idiosoma in front of solenidia *alpha* with 2 very thick subcuticular paramedian sclerites. Posterior border of body slightly incised in midline. Claws I-III very strong (I 54 μ ; II 45–50 μ ; III 36–48 μ). Tarsi IV 20 μ long. Seta *l* 5 200 μ long. Body length 310–330 μ , width 130–223 μ .
 From *Xylocopa sicheli* from South Africa ...
 *S. (S.) capensis* Fain, 1971
 Anterior region of idiosoma either without sclerites or with narrow poorly developed sclerites. Body not incised posteriorly. Claws I-III 13 to 27 μ long. Tarsi IV 6–15 μ long. Seta *l* 5 60–100 μ long. Body length and width not exceeding 265 μ and 233 μ respectively .. 36
36. Setae *h* and *sh* subequal in length (60 and 57 μ) and thickness; posterior setae of genu I and II subequal (33 μ). Suctorial plate 60 μ wide. Dorsal shield 1.44 times as long as wide. Body length 265 μ , width 233 μ .
 From *Ceratina truncata* and *C. viridor* from South Africa
 *S. (S.) scutata* Fain, 1974
 Seta *h* about twice as long and thick as *sh*. Posterior seta of genu II about twice as long as posterior seta of genu I 37
37. Dorsal shield 1.9 or twice as long as wide 38
 Dorsal shield 1.38 to 1.6 times as long as wide 39
38. Sternum 30–40 μ long. Claws I-II 27 μ long. Setae *sc e*, *l* 2, *l* 5 and trochanters I-II 102 μ ,

45 μ , 100 μ and 50–60 μ long respectively. Dorsal shield twice as long as wide. Apicoventral seta of tarsi I-III very thin. Body length 234 μ width 195 μ . Palposomal solenidia (*alpha*) very short (3 μ long).

From *Mesotrichia striata* and *M. imitator* from Zaïre.

. *S. (S.) congoicola* Fain, 1971

Sternum 18 μ long. Claws I-III 21 μ long. Setae *sc e*, *l 2*, *l 5* and trochanters I-II 66 μ , 63 μ , 60 μ and 30 μ long respectively. Apicoventral seta of tarsi I-III distinctly inflated in its basal two thirds. Body length 250 μ , width 201 μ . Palposomal solenidia (*alpha*) thin, 15–18 μ long.

From *Mesotrichia olivacea* from Zaïre.

. *S. (S.) elseni* Fain, 1971

39. Suctorial plate 69 to 75 μ wide. Posterior suckers 17–18 μ wide. Sternum 12 μ . Claws 13–14 μ . Dorsal setae short (*sc e* 39 μ). Dorsal shield 1.5 times as long as wide. Length of body 230 μ .

From *Ceratina* spp. from Tunisia

. *S. (S.) tunisiana* Fain, 1980

Suctorial plate 45–60 μ wide. Posterior suckers 14–15 μ wide. Sternum 15–25 μ long. Claws 18–21 μ long. Dorsal setae longer (*sc e* 54–70 μ). Length of body 240–258 μ 40

40. Dorsal shield 1.38 times as long as wide. Anterior suckers 12 μ wide. Setae *l 1* 42 μ , *l 2* 31 μ . From *Ceratina* spp. from Tunisia

. *S. (S.) dalyi* Fain, 1980

Dorsal shield 1.6 times as long as wide. Anterior suckers 7–9 μ wide. Setae *l 1* 54–57 μ , *l 2* 50–51 μ 41

41. Solenidia *alpha* 15 μ long. Tarsus IV longer than wide (15 \times 9 μ) Sternum 15–18 μ long.

From *Koptorthosoma caffra* from South Africa

. *S. (S.) caffra* Vitzthum, 1919

Solenidia *alpha* 4–5 long. Tarsus IV wider than

long (8 \times 6 μ) Sternum 25 μ long.

From *Xylocopa nigrita* from Cameroun

. *S. (S.) simplex* Trägårdh, 1904

Study of the species

1. *Sennertia (Sennertia) cerambycina* (Scopoli, 1763)

Pediculus cerambycinus Scopoli, 1763, p. 386

Trichodactylus xylocopae, Donnadieu, 1868, p. 70

Trichotarsus xylocopae, Canestrini, 1888, p. 23

Sennertia cerambycina, Oudemans 1905, p. 21:

Vitzthum, 1919, p.31; Zachvatkin, 1941, p. 527 (Figs. 653-655)

The hypopi of this species are very common on several *Xylocopa* spp. especially of the group *violacea*, in Europe and in Central Asia. The size of the body varies greatly even in specimens from the same bee.

Hypopus (Figs. 1, 4, 65): Measurements of a large specimen: Idiosoma 335 μ long and 270 μ wide. Other specimens from the same bee measure 243 \times 210 μ ; 280 \times 233 μ ; 301 \times 285 μ ; 315 \times 280 μ . *Dorsum*: Hysteronotal shield 238 μ \times 147 μ , with a short sclerotized postero-median sclerite. Dorsal striations thin. Palposomal area with two strong subcuticular sclerites reaching the anterior extremity. Posterior border of body with a very slight rounded incision. *Venter*: Solenidia *alpha* 9 μ long. Epimera I fused in a rather short sternum. Suctorial plate 72 μ wide. Diameter of suckers: anterior 10.5 μ , posterior 20.5 μ . Lateral conoids slightly behind the level of posterior suckers and distinctly in front of paramedian conoids, the former being larger than the latter. Setae *sc i* are microsetae. Setae *sc e*, *l 1*, *l 2*, *l 3*, *h* and *sh* are spines 94 μ , 84 μ , 80 μ , 75 μ , 84 μ and 43 μ long respectively. Setae *l 5*, 150 μ long, 66 μ apart. *Legs* I-III: Claws strong, claw I 45 μ long; pretarsi short and thick with a short basal and posterior thumb-like process 8-10 μ long; tarsi relatively thick and short. Tarsus IV 1.2 times as long (18 μ) as its maximum width. *Chaetotaxy of legs*: Tarsi I-II with three short apical or subapical setae (two thin and one thick lanceolate sharply incurved) and two medio-dorsal setae long, unequal, strong and very narrowly foliate apically. Tarsus III with one very thin and short apicoventral seta, two medio-dorsal long setae and one

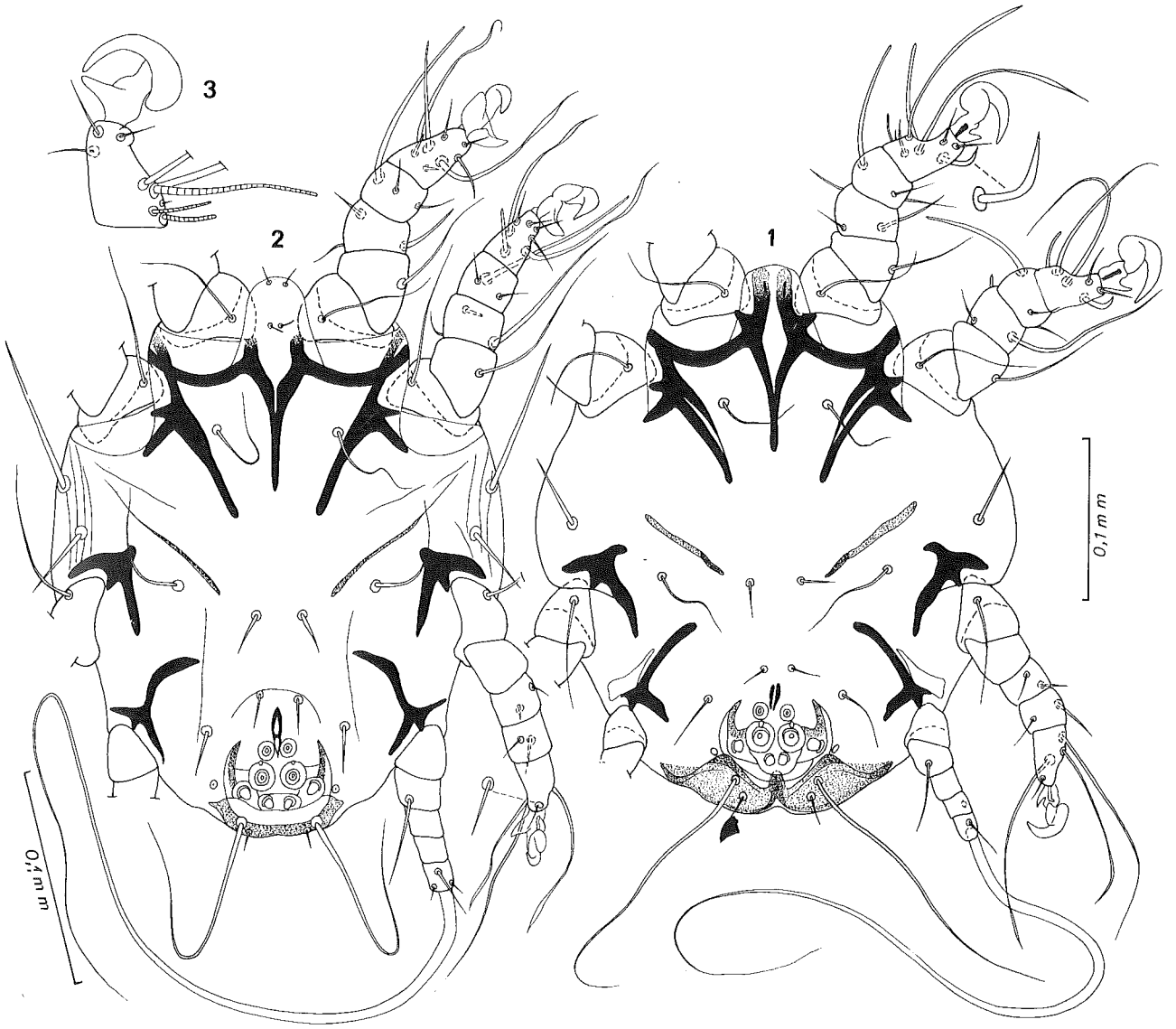


Fig. 1. *Sennertia (Sennertia) cerambycina* (Scopoli), hypopus, ventral view.

Figs. 2, 3. *S. (S.) mesotrichia* Fain, hypopus.

Fig. 2. Ventral view.

Fig. 3. Tarsus I.

baso-dorsal very long seta. Tarsus IV with a very long and strong apical seta and one ventral very thin seta (18-20 μ); the two very short ventro-apical setae present in many species, are lacking here. Femur IV with a stiff seta approximately 30 μ long. Setae of tibiae, genua and femora I-III very thin and relatively long except posterior seta of genu III which is thick and much longer (105 μ). Seta of trochanters I-II very thin, 60-70 μ long, those of trochanters III 50 μ long. *Solenidiotaxy*: Tarsus I with $\omega 3$ much longer (60 μ) than $\omega 1$ (18 μ) and $\omega 2$ (11 μ). Solenidia *phi* of legs I-II 70-80 μ long. In the smallest specimen (246 \times 210 μ) all the organs are proportionally smaller: *sc e* 84 μ , *l 3* 70 μ , suctorial plate 56 μ wide, posterior suckers 16 μ large, claw I 31 μ long, posterior seta of femur II 90 μ , distance *l 5 - l 5* 42 μ , solenidion $\omega 3$ 56 μ .

Host and locality: The specimens studied here were collected from *Xylocopa violacea* from Sorrente, Italy (coll. J. Leclercq, 6.VII.1959). We have also seen specimens from the same host in Barcelona (26.V.1959) and Madrid, (4.VI.1959), Spain (coll. J. Leclercq), and in Pescasseroli, Italy (coll. Dr. F. Lukoschus, 27.VII.1973). This species has been recorded from *Xylocopa* spp. of the group *violacea* in Europe and Central Asia (Zachvatkin, 1941) and from *X. violacea* in The Netherlands (Van Eynhoven, 1952).

Remarks: This species may be recognized by the following combination of characters: dorsal shield about 1.6 times longer than wide, *sc i* are micro-setae, ventral setae piliform, region bearing solenidion *alpha* (palposoma) with two thick subcuticular sclerites, claws large, pretarsi I with a thick but short thumb-like process, tarsi I-II with a thick postero-apical, lanceolate, sharply incurved seta; tarsus IV 1.2 times as long as wide with a short ventral seta, posterior suckers twice as wide as the anterior suckers, conoids situated on a concave line, setae *l 5* widely apart.

2. *Sennertia* (*Sennertia*) *mesotrichia* Fain, 1971
Sennertia (*Sennertia*) *mesotrichia* Fain, 1971, p. 265

Hypopus (Figs. 2, 3, 5, 66): Holotype 261 μ long,

216 μ wide. In three paratypes 255 \times 200 μ , 250 \times 180 μ and 230 \times 165 μ . *Dorsum*: Cuticular striations thin. Shield 1.8 times as long (192 μ) as wide (108 μ), with a short median sclerite 40-45 μ long. Setae *sc e*, *l 1*, *l 2*, *l 3*, *l 5*, and *h* are 90 μ , 63 μ , 70 μ , 60 μ , 100-110 μ and 69 μ . Setae *l 5* 30-35 μ apart. *Venter*: Solenidia *alpha* 6 μ long. Sternum 24-28 μ long. Setae *sh* 33 μ long. Other ventral setae slightly inflated basally. Suctorial plate 54 μ wide. Anterior sucker 9 μ wide, posterior sucker 14 μ wide. Conoids distinctly in front of paramedian conoids but not at level of posterior suckers.

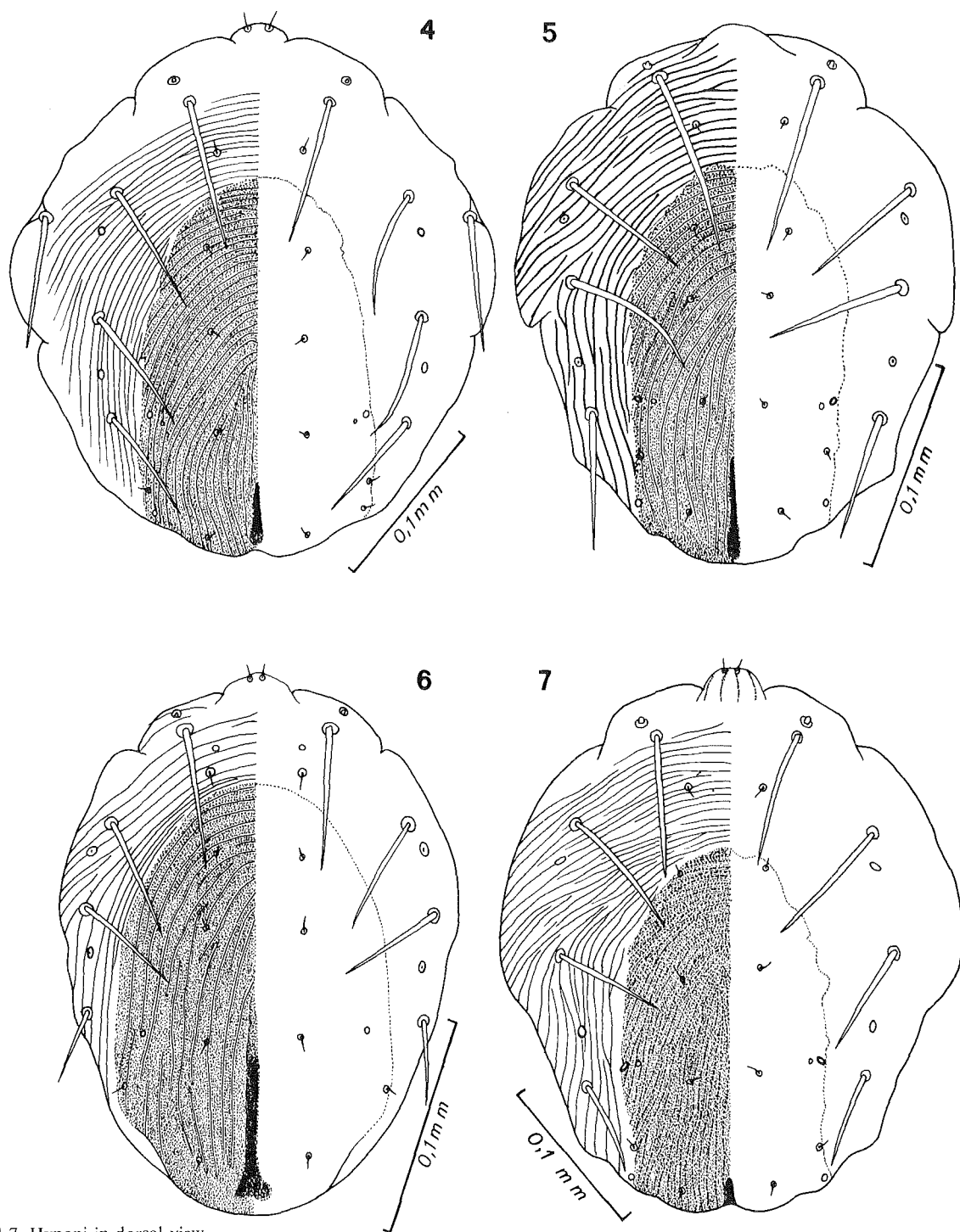
Legs: Claws I-III 36-35-30 μ . Pretarsi I-III with a short, rather thick thumb-like process. Tarsus IV 15 μ long, 12 μ wide, with a ventral seta 16 μ long. Tarsi I-II with three short and thin apical or subapical setae and two much longer, thicker and foliate apically. Tarsi III with a very thin apico-ventral seta and three long and unequal dorsal setae (two foliate and one piliform). Genua I and II with a posterior seta 36 and 90 μ long respectively. Trochanteral setae thin, and long, those of leg I-II 55 to 75 μ long. Seta of femur IV 26-34 μ . Solenidia of tarsus I: $\omega 1$, 12 μ , $\omega 3$ 42 to 50 μ . Solenidion *phi* of tibia I 100 μ long.

Host and locality: (1) Holotype and 20 paratypes from *Mesotrichia africana* from Bambesa, Uélé Province, Zaïre, VII.1933 (coll. P. Elsen); Paratype from the same host but in other localities in Zaïre; (2) *M. lepeletieri*, Kayanga, Katompi, Zaïre, X. 1920 (coll. P. Elsen) (32 paratypes); (3) *Xylocopa tarsata*, Adrenga, Ituri, Zaïre 12.VIII.1933 (15 specimens). Holotype in MRAC.

Remarks: This species differs from *S. cerambycina* by the smaller size of the body, the absence of a lanceolate sharply incurved seta on apex of tarsi I-II, the narrower shape of dorsal shield (1.8 times as long as wide), the greater length of solenidion *phi* of tibia I.

3. *Sennertia* (*Sennertia*) *gargantua* Zachvatkin, 1941
Sennertia (*Sennertia*) *gargantua* Zachvatkin, 1941, p. 531 (Figs. 656, 657)

According to Zachvatkin this species is close to *S. cerambycina* but it differs in the following charac-



Figs. 4-7. Hypopi in dorsal view.

Fig. 4. *Sennertia (Sennertia) cerambycina* (Scopoli).

Fig. 5. *S. (S.) mesotrichia* Fain.

Fig. 6. *S. (S.) leclercqi* Fain.

Fig. 7. *S. (S.) capensis* Fain.

ters: much larger size of body (length 463 to 515 μ), different shape of dorsal shield 1.5 times longer than wide and tapering gradually towards its anterior end, shape of *d* 5 setae which are spines. The ventral seta of tarsus IV is slightly longer than this tarsus and as long as 60 to 70% of the combined length of tarsus and tibia.

Host and locality: From *Xylocopa punctilabris* and *X. valga* from Turkey. Type in ASL.

4. *Sennertia* (*Sennertia*) *koptorthosomae* (Oudemans, 1901)

Trichotarsus koptorthosomae Oudemans, 1901, p. 81 (pl. 3, Figs. 53, 54)

Sennertia koptorthosomae Oudemans, 1924, p. 329; Fain, 1974b, p. 219 (Figs. 1, 2)

We have redescribed and re-illustrated this species from the types. From that material a lectotype has been designated. It is distinguished from all other species of the genus by the presence on the dorsal shield of a sclerotized structure in the shape of 'sugar-tongs'.

Host and locality: From the nest of *Koptorthosoma tenuiscapa* from Java. (lectotype hypopus in RMNH).

5. *Sennertia* (*Sennertia*) *vanderhammeni* Fain, 1974

Sennertia (*Sennertia*) *vanderhammeni* Fain, 1974b, p. 222 (Figs. 3, 4)

This species is close to *S.koptorthosomae*. It differs from it by the much larger size of the suctorial plate and of the suckers, the ventral situation of the *l* 5, the absence of incision on the posterior border of the body, the shape of the 'sugar-tongs' structure which is incomplete in its posterior half, and several other less important characters.

Host and locality: From *Koptorthosoma tenuiscapa* from Java. Lectotype in the RMNH.

Sennertia (*Sennertia*) *vanderhammeni brevipilis* Fain, 1974

Sennertia (*Sennertia*) *vanderhammeni brevipilis* Fain, 1974b, p. 224

This subspecies is distinguished from the typical form by the shorter dorsal setae, the smaller size of the 'sugar-tongs' structure, the smaller size of the

posterior suckers and the shorter aspect of the dorsal shield which does not extend ventrally.

Host and locality and deposition of types as for *S. koptorthosomae*.

6. *Sennertia* (*Sennertia*) *hipposiderus* (Oudemans, 1902)

Trichotarsus hipposiderus Oudemans, 1902, p. 44; 1903, p. 145 (pl. 12, Figs. 46-47)

Sennertia hipposiderus, Fain, 1974b, p. 226 (Figs. 7, 8)

We have redescribed the holotype of this species. It had been found from *Koptorthosoma tenuiscapa*, India. Type in RMNH. Recently we have seen several new specimens of that species among material collected by our colleague Dr. F.S. Lukoschus in the nest of *Xylocopa* (*Platynopoda*) *latipes* near Kuala-Lumpur, Malaysia.

7. *Sennertia* (*Sennertia*) *ceratinarum* Fain, 1974

Sennertia (*Sennertia*) *ceratinarum* Fain, 1974a, p. 216; 1980, p. 983 (Figs. 1, 2)

The dorsal striations are very thick and punctate. Dorsal shield 1.6 times as long as wide. Body length 240 μ , width 210 μ (Fig. 76)

Host and locality: Holotype from *Ceratina* sp. from Natal; paratypes from *C. acutipyga* from Natal; from *C. atopura*, *C. nilicota* and *C. congoensis*, all from Zaïre; from *Pithitis viridis*, W. Cameroun (all Ceratininae). Holotype in MRAC.

8. *Sennertia* (*Sennertia*) *spinifera* Fain, 1974

Sennertia (*Sennertia*) *ceratinarum spinifera* Fain, 1974a, p. 217

Sennertia (*Sennertia*) *spinifera* Fain, 1980, p. 984 (Figs. 3, 4)

This species presents, as *S.ceratinarum*, the dorsal cuticular striations thick and punctate. It is distinguished from it by the larger size of the dorsal spines, the *l* 5 being situated more widely apart and the foliate aspect of the two dorso-median setae of tarsi I-III (Fig. 75).

Host and locality: Holotypes from *Ceratina aereola*, from N.E. Lusambo, Zaïre. Holotype in MRAC.

9. *Sennertia* (*Sennertia*) *latipilis* Fain, 1971

Sennertia (*Sennertia*) *latipilis* Fain, 1974a, p.

217; 1980, p. 986 (Figs. 5-6)

In this species the dorsal striations are thick and punctate as in *S.ceratarum* and *S.spinifera*. It differs from these species by the ovoidal shape of the setae *g a*, the more anterior position of the lateral conoids and the very small shape of *l 3* which is almost vestigial. Solenidia *alpha* are very small (3.2 μ long) as in *S.spinifera* (Fig. 70)

Host and locality: Holotype from a non-identified Apidae from Malindi, Kenya. One paratype from *Ceratina penicilligera* in the same locality. Holotype in MRAC.

10. *Sennertia (Sennertia) benoiti* Fain, 1974

Sennertia (Sennertia) benoiti Fain, 1974a, p. 218; 1980, p. 988 (Figs. 9, 10)

This species is characterized by the shape of the *l 3* setae which are very thin and only 5 μ long. Body 225 μ long and 195 μ wide. (Fig. 72)

Host and locality: From *Ceratina sp.* from Ivory Coast (holotype) and *C. atopura* Zaïre (paratypes mixed with specimens of *Sennertia ceratarum*). Holotype in MRAC.

11. *Sennertia (Sennertia) robusta* Delfinado & Baker, 1976

Sennertia (Sennertia) robusta Delfinado & Baker, 1976, p. 89 (Figs. 37, 38)

Close to *S.benoiti* in the vestigial aspect of the *l 3*. It is distinguished from it by the absence of sternum (epimera I are fused in a 'V').

Host and locality: From *Xylocopa sp.* from India. Type in USNM.

12. *Sennertia (Sennertia) leclercqi* Fain, 1971

Sennertia (Sennertia) leclercqi Fain, 1971, p. 268

Hypopus (Figs. 6, 8, 9): Holotype 231 μ long and 180 μ wide. In two paratypes: 237 \times 177 μ ; 249 \times 189 μ . Posterior border of body rounded. *Dorsum*: Striations thin. Dorsal shield 190 μ long, 130 μ wide with a strong longitudinal median sclerite 60 μ long (70 to 90 μ in paratypes). Setae *sc e*, *l 1*, *l 2*, *l 3*, *l 5* and *h* setae are 60 μ , 48 μ , 42 μ , 30 μ , 90 μ and 36 μ . Setae *l 5* 66–72 μ apart.

Venter: Solenidia *alpha* 6 μ long. Sternum short (25 μ). Suctorial plate very large, 72 to 90 μ wide;

anterior suckers 18 μ wide, posterior suckers 21 μ wide; conoids relatively large, the lateral conoids slightly more anterior than the posterior suckers. the dorsal shield is not prolonged ventrally, but laterally, at each side of the suctorial plate, there is a tongue-shaped sclerite connected with the dorsal shield. Setae *sh* very thin 16 μ long, other ventral setae thin. *Legs*: Claws I-II 25 and 24 μ long. Pretarsi I-III without processes. Tarsus IV 12 μ long and 9 μ wide, bearing a thin seta 9 μ long. Femur IV with a short seta 12 μ long. Trochanter setae 40–45 μ long. Tarsi I-II with a ventro-apical seta slightly inflated basally, two lateral pre-apical thin setae and two long dorso-median foliate setae. Tarsus III with a short ventro-apical spine. Tarsus I with $\omega 1$ 15 μ and $\omega 3$ 40–45 μ .

Host and locality: Holotype and 16 paratypes from *Mesotrichia inconstans* from Zaïre (coll. P. Elsen). Type in MRAC.

Remark: This species differs from the other species of the group 'cerambycina' in the following combination of characters: great development of the suctorial plate and of the suckers, the anterior situation of the lateral conoids, the great development of the median sclerite on the dorsal shield, the great distance between the *l 5* setae. Moreover, the dorsal shield is not prolonged ventrally as in the other species of this group.

13. *Sennertia (Sennertia) capensis* Fain, 1971

Sennertia (Sennertia) capensis Fain, 1971, p. 266

Hypopus (Figs. 7, 10, 11, 64). Holotype 330 μ long, 285 μ wide. In three paratypes 345 \times 310 μ , 321 \times 280 μ , 310 \times 265 μ . Anterior part of body with two thick subcuticular sclerites. Posterior border of idiosoma slightly incised in the middle. *Dorsum*: Hysteronotal shield 1.7 times as long (223 μ) as wide (130 μ), with anterior third attenuated and with posterior two thirds almost parallel-sided, it bears a short (15 μ) longitudinal median sclerite. Setae *sc e*, *l 1*, *l 2*, *l 3*, *l 5*, and *h* are 85 μ , 85 μ , 66 μ , 54 μ , 200 μ and 75 μ long respectively. Setae *l 5* 35 μ apart. Setae *d 5* thin. *Venter*: Sternum 30 μ long. Solenidia *alpha* 12 μ long. Setae *sh* 40 μ , spinous. Other ventral setae very thin, the coxals about 60 μ long. Suctorial plate 57 μ wide, with a sclerotized



Figs. 8, 9. *Sennertia* (*Sennertia*) *leclercqi* Fain, hypopus.

Fig. 8. Ventral view.

Fig. 9. Tarsus I.

Figs. 10, 11. *S.* (*S.*) *capensis* Fain, hypopus.

Fig. 10. Ventral view.

Fig. 11. Tarsus I.

frame in an inverted-U, bearing the conoids. Diameter of anterior suckers 12–13 μ , of posterior suckers 17–18 μ . Conoids small, situated on a transverse very slightly concave line. *Legs*: Claws I–III very large, 54 μ , 46–51 μ and 38–44 μ long respectively. Pretarsi I–III without processes. Tarsus IV 20–22 μ long and 12–13 μ wide at its base, bearing a ventral seta 9–12 μ long. Posterior seta of genu I 40 μ , of genu II 70 μ . Trochanteral I–II setae very thin and 45–50 μ long. Tarsi I–II with five setae: three short and straight apical or subapical (a ventro-apical thin, a postero-lateral rodlike, an antero-lateral very thin) and two long and narrowly foliate mediodorsal. Tarsi III with a thin and rather long apico-ventral seta and three long and unequal dorsal setae, of which two are narrowly foliate. Femur IV with a ventral seta 16 μ long. Tarsus I with $\omega 3$ 42 μ long and $\omega 1$ 24 μ long; tibia I with a long ϕ (120 μ long).

Host and locality: Holotype and 15 paratypes from *Xylocopa sicheli* from Willowmore, Cape Province, South Africa, V.1918 (coll.P.Elsen). Bee and holotype in MRAC.

Remarks: this species differs from *S.caffra* Vitzthum, 1919, described from the same locality, in the much larger size of the body, the relatively longer $l 3$ setae compared to $l 2$ setae, the greater length of $l 5$ and their position closer to the midline, the relatively greater size of claws, the shape of the dorsal shield which is parallel-sides (in *S.caffra* the lateral margins are convex and distinctly narrowed posteriorly).

14. *Sennertia (Sennertia) scutata* Fain, 1974

Sennertia (Sennertia) scutata Fain, 1974a, p. 217; 1980, p. 986 (Figs. 7, 8)

This species is characterized mainly by the great development of the sh setae which are subequal (57 μ) to the h setae (60 μ). The apical or subapical setae of tarsi I–III are very thin. Dorsal shield 1.44 times as long as wide. Suctorial plate relatively large (60 μ wide). Solenidia α 6 to 7 μ long. Setae of trochanters I–II 25–28 μ long. Posterior setae of genua I–II equal (33 μ) strong. Idiosoma 265 μ long, 233 μ wide. (Fig. 68)

Host and locality: From *Ceratina truncata* from

South Africa. Type in MRAC.

15. *Sennertia (Sennertia) simplex* (Trägårdh, 1904)
Trichotarsus simplex Trägårdh, 1904, p. 156 (Figs. 17, 18)

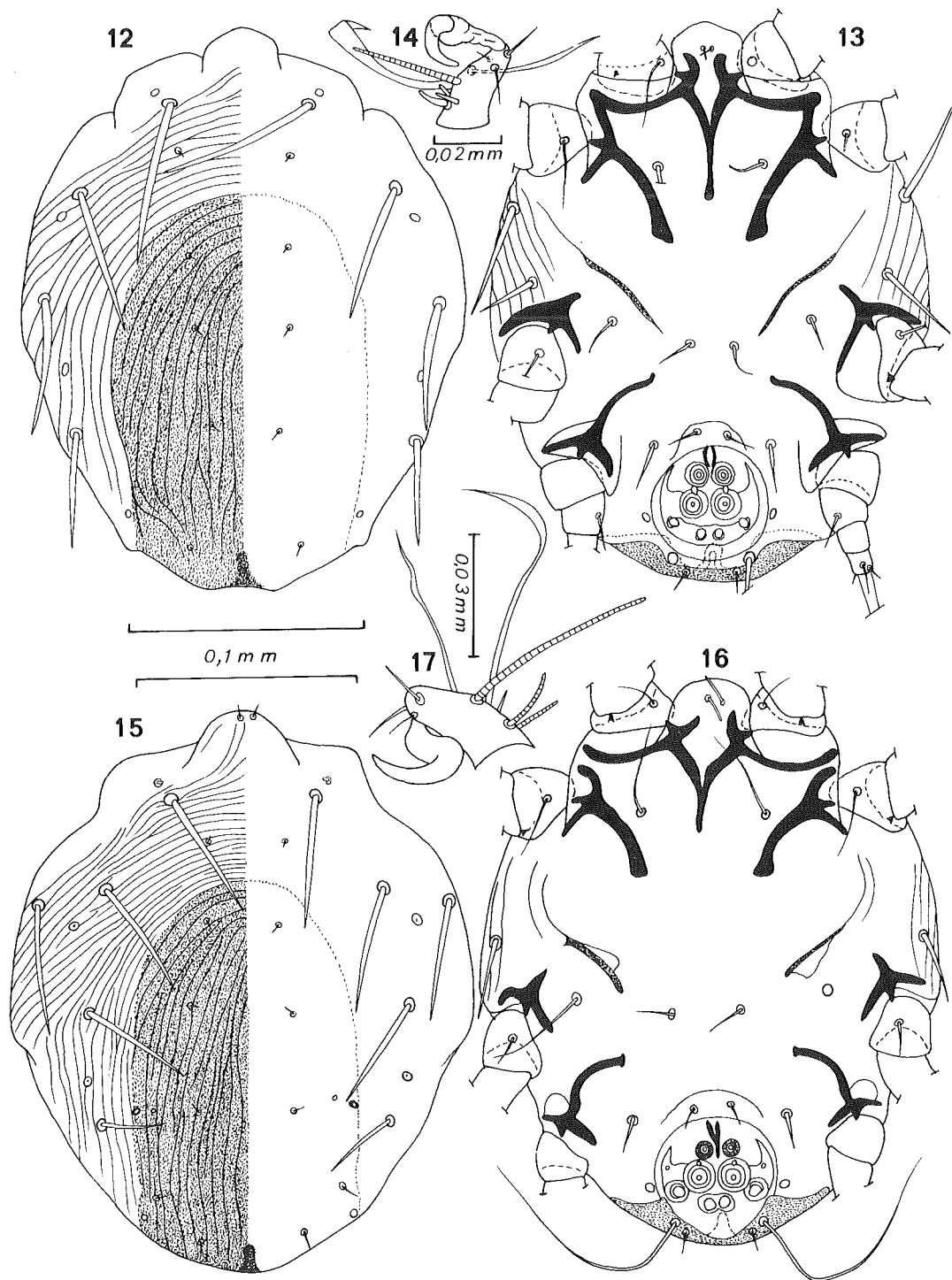
I have seen the holotype and only known specimen of this species and I here redescribe it.

Hypopus (Figs. 12–14, 74): Body 240 μ long and 195 μ wide. The length given by Trägårdh is 208 μ . *Dorsum*: Cuticle not punctate and finely and regularly striated. Shield 171 μ long, 105 μ wide (maximum width in the middle of the shield) with a very short postero-median sclerite. The shield is reflected ventrally. Setae $sc e, l 1, l 2, l 3, h$ are thick and 70 μ , 57 μ , 51 μ , 43 μ and 48 μ long respectively. Setae $d 1-d 5$ are microsetae and situated on the shield. *Venter*: Sternum long (25 μ). Suctorial plate 48 μ wide; anterior suckers 7.2 μ , posterior suckers 12 μ wide; conoids relatively large, situated on a slightly concave line. Setae $l 5$ 31 μ apart. Ventral setae slightly thickened basally. Setae sh 29 μ . Trochanteral setae I–II 25 μ long. Solenidia α 4–5 μ long. *Legs*: Claws 18–19 μ long. Pretarsi I–III long, without processes. The three apical or subapical setae of tarsi I–II and the ventro-apical seta of tarsus III are thin. Posterior setae of genua I and II 18 and 33 μ . Tarsus I: Solenidium $\omega 1$ 10 μ , slightly incurved; $\omega 3$ 39 μ ; the two mediodorsal setae are foliate, one broadly, the other narrowly. Tarsus IV wider (8 μ) than long (6 μ) with a short (12 μ) ventral seta, two short ventro-apical setae and a very long apical seta.

Host and locality: Holotype from *Xylocopa nigrita* from Cameroun, Holotype in NRS.

Remark: This species belongs to the group 'cerambycina'. It is characterized by the combination of the following characters: apical setae of tarsi I–III very thin; claws small; tarsus IV wider than long; dorsal macrosetae relatively very thick and long; α very short; $\omega 1$ (tarsi I and II) thick and curved; sternum relatively long; shield relatively wide.

16. *Sennertia (Sennertia) caffra* Vitzthum, 1919
Sennertia caffra Vitzthum, 1919, p. 53 (Figs. 47–49)



Figs. 12-14. *Sennertia (Sennertia) simplex* (Trägårdh), hypopus.

Fig. 12. Dorsal view.

Fig. 13. Ventral view.

Fig. 14. Tarsus I.

Figs. 15-17. *S. (S.) caffra* Vitzthum, hypopus.

Fig. 15. Dorsal view.

Fig. 16. Ventral view.

Fig. 17. Tarsus I.

I have seen several slides of hypopi labelled 'syntypen'. I designate a specimen of the slide no. V3094 as *Lectotype* of the species. This slide contains three hypopi, the lectotype is situated in the middle.

Lectotype hypopus: (Figs. 15-17, 69) Body 255 μ long, 210 μ wide. *Dorsum*: Cuticle not punctate and very finely striated. Shield 160 μ long and 100 μ wide (ratio length-width = 1,6) with a very short posteromedian sclerite. Setae *sc e*, *l 1*, *l 2*, *l 3* and *h* are spines 60 μ , 54 μ , 50 μ , 36 μ and 54 μ long respectively. *Venter*: Sternum 15-18 μ long. Solenidia *alpha* 15 μ . Suctorial plate 50 μ wide; anterior suckers 8-9 μ , posterior suckers 14-15 μ ; conoids on a slightly concave line. The shield is reflected ventrally. Setae *sh* 28 μ ; *l 5* 60 μ long and 42 μ apart. Ventral setae with thick base and very thin apically. *Legs*: Pretarsi without lateral processes. Claws 21 μ long. Tarsi I-II with three and tarsi III with one very thin apical or subapical setae and with two medio-dorsal setae narrowly foliate. Posterior seta of genera I-II 25 and 45 μ long. Tarsus IV longer (15 μ) than wide (9 μ) with a ventral seta 15 μ long. Tarsus I with $\omega 1$ thin, very slightly curved and 15 μ long; $\omega 3$ 48 μ .

Host and locality: Lectotype and two paralectotype hypopi, all on the same slide, from *Xylocopa* (*Kop-torthosoma*) *caffra* from Willowmore, Cape Province, South Africa. The type material contains, in addition, 11 other slides, all labelled 'syntypen' (hypopi and males). Lectotype in ZSM.

Remark: This species resembles *S. simplex* in most of the characters. It differs from it by the following: tarsus IV longer than wide, solenidia *alpha* longer, claws slightly larger, sternum slightly shorter.

17. *Sennertia* (*Sennertia*) *congoicola* Fain, 1971

Sennertia (*Sennertia*) *congoicola* Fain, 1971, p. 265

Hypopus (Figs. 18, 19, 22, 67): Holotype 234 μ long and 195 μ wide. In two paratypes 228 \times 180 μ and 250 \times 198 μ . *Dorsum*: Striations slightly thickened. Shield almost twice as long (180 μ) as wide (96 μ) with parallel sides and presenting a longitudinal median depressed non-striated area and more posteriorly a short sclerite. Setae *sc e*, *l 1*, *l 2*, *l 3*, *l 5*,

h, 102 μ , 75 μ , 45 μ , 42 μ 100-110 μ and 56 μ long respectively. The *l 5* are 30 μ . *Venter*: All setae are relatively short and almost subequal Solenidia *alpha* 3,5 μ long. Sternum 30-40 μ long. Setae *sh* are stiff hairs 28 μ long. Suctorial plate 45 μ wide, anterior suckers 8 μ , posterior suckers 13 μ wide; conoids relatively large, the lateral distinctly in front of the paramedians but not arriving at level of posterior suckers. *Legs*: Pretarsi without processes. Claws I 27 μ long. Tarsus IV is 15 μ long, 12 μ wide, bearing two short subequal ventral setae. Tarsi I-III with a very thin apico-ventral seta. On tarsi I-II there are two latero-subapical setae, one is posterior and rodlike, the other anterior and thin. Mediodorsal setae of tarsi I-III widely foliate. Genu I-II with a posterior seta 25 and 54 μ long respectively. Trochanters I-II with a seta 40-45 μ long. Tarsus I with $\omega 3$ 44 μ and $\omega 1$ 15 μ long.

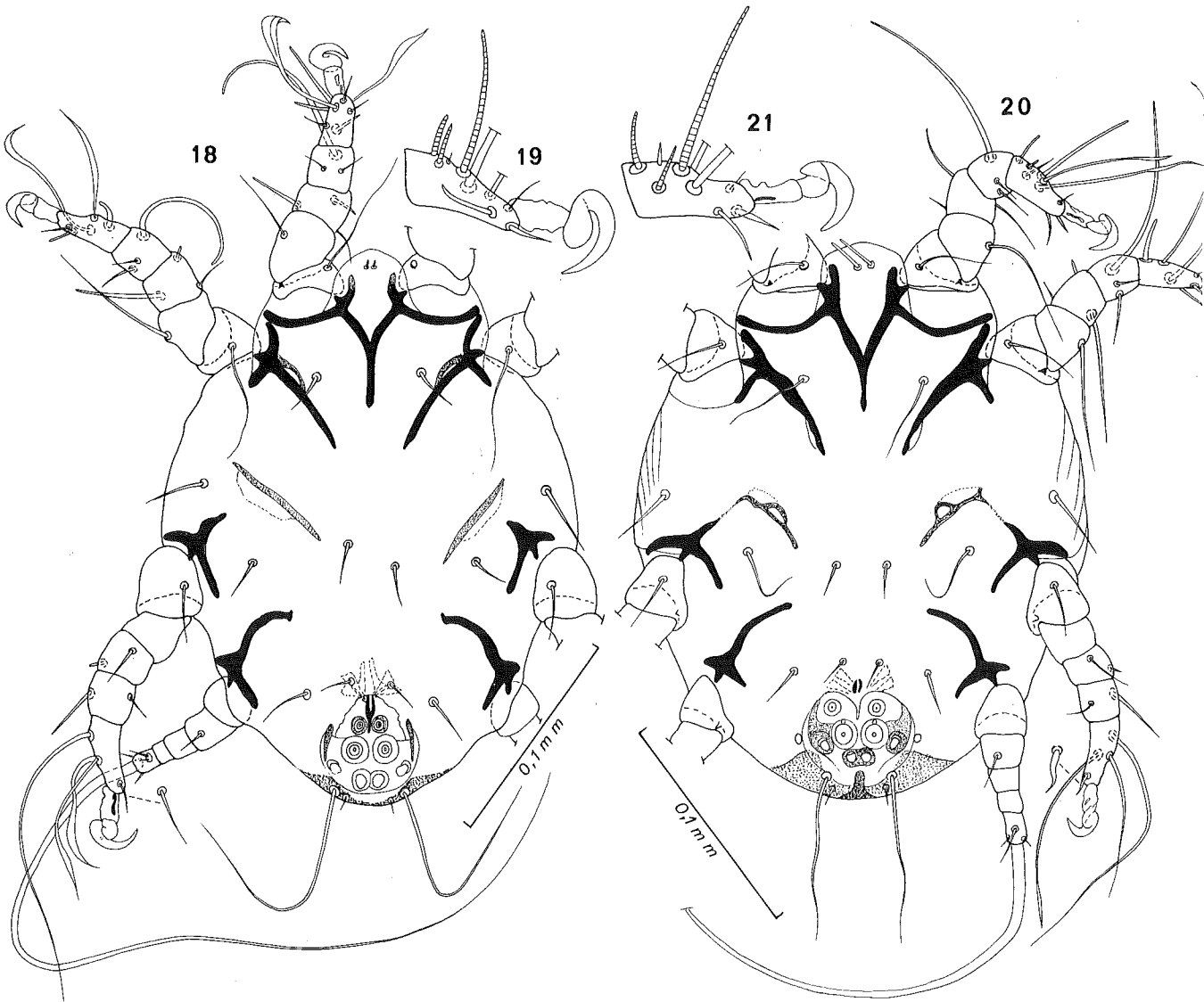
Host and locality: Holotype and two paratypes from *Mesotrichia striata*. One paratype from *M. imitator*, both from Zaïre; four other specimens from *M. torrida* from Moanda, Zaïre. Holotype in MRAC.

Remarks: This species is characterized as follows: small size of the idiosoma; dorsal shield twice as long as wide with parallel sides and presenting a longitudinal median depressed and non-striated area; dorso-median setae of tarsi I-III widely foliate; ventro-apical seta of tarsi I-III very thin; coxal setae short; setae *sh* thin and relatively short; seta of trochanters I-II long and thin; tarsi IV with two short and unequal ventral setae.

18. *Sennertia* (*Sennertia*) *elseni* Fain, 1971

Sennertia (*Sennertia*) *elseni* Fain, 1971: 266

Hypopus (Figs. 20, 21, 23, 71): Holotype 250 μ long, 201 μ wide. In four paratypes 243 $\mu \times$ 200 μ , 240 $\mu \times$ 198 μ , 235 $\mu \times$ 189 μ , 225 $\mu \times$ 188 μ . Posterior extremity not incised, rounded. *Dorsum*: Cuticular striations thin. Hysteronotal shield 1.9 times longer (160 μ) than wide (90 μ), folded ventrally around posterior extremity and with a longitudinal median sclerite 36 μ long. Setae *sc e*, *l 1*, *l 2*, *l 3*, *l 5*, *h* are 66 μ , 63 μ , 63 μ , 51 μ , 60 μ and 60 μ long respectively. Setae *l 5* 30 μ apart. *Venter*: Sternum 18 μ long. Solenidia *alpha* particularly



Figs. 18-19. *Sennertia (Semertia) congoicola* Fain, hypopus.

Fig. 18. Ventral view.

Fig. 19. Tarsus I.

Figs. 20-21. *S. (S.) elseni* Fain, hypopus.

Fig. 20. Ventral view.

Fig. 21. Tarsus I.

long (16–18 μ). Setae *sh* 30 μ , relatively thin. All other ventral setae thin. Suctorial plate with a sclerotized incomplete frame 45 μ wide. Anterior suckers 6.5 μ wide, posterior suckers 12 μ wide. Paramedian conoids very close to each other, lateral conoids in front of paramedians and slightly behind posterior suckers. *Legs*: Claws I-III 21 μ . Pretarsi I-III without processes. Tarsus IV 15 μ long, 12 μ wide, with a ventral seta 12 μ long. Tarsi I-II with five setae: three short apical or subapical (a ventro-apical with a thick base, a posterior subapical rodlike and an anterior thin), two medio-dorsal thick and narrowly foliate apically. Tarsus III with a short spinous and sinuous apico-ventral and three dorsals (two narrowly foliate, one piliform). Posterior seta of genu I 20 μ , of genu II 48 μ . Trochanteral setae (I-III) relatively short. Tarsus I: ω 1 12 μ , ω 3 45 μ .

Host and locality: Holotype and eight paratypes from *Mesotruchia olivacea* from Moanda, Bas-Zaïre, 28.IV.1970 (coll. P. Elsen). Holotype in MRAC.

Remarks: This species is characterized by its long solenidion *alpha* (15–18 μ), combined to the shape slightly spinous of the apico-ventral setae of tarsi I-III, the narrow shape of dorsal shield (1,9 times longer than wide).

19. *Sennertia* (*Sennertia*) *dalyi* Fain, 1980

Sennertia (*Sennertia*) *dalyi* Fain, 1980, p. 990 (Figs. 11, 12)

In this species the dorsal shield is relatively very wide (1.38 times longer than wide) and the tarsi I-II bear three very thin apical or pre-apical setae (Fig. 73).

Host and locality: From *Ceratina dellatorreana* from Tunisia (holotype and paratypes); Paratypes from *C. chalybea*, *C. mocsaryi* and *C. callosa* all from Tunisia. Holotype in MRAC.

Sennertia (*Sennertia*) *dalyi nilotica* Fain, 1980

Sennertia (*Sennertia*) *dalyi nilotica* Fain, 1980, p. 990

This subspecies has been described from *Pithitis* n.sp. A. (holotype and paratypes), from *P. tarsata* and from *Ceratina* n.sp. all from Benha, in the Nile Delta. Type in MRAC.

20. *Sennertia* (*Sennertia*) *tunisiana* Fain, 1980

Sennertia (*Sennertia*) *tunisiana* Fain, 1980, p. 991

This species has been described from several species of *Ceratina* in Tunisia: *C. cucurbitina* (holotype), *C. albosticta*, *C. mocsaryi*, *C. dellatorreana* and *C. chalybea*. Type in MRAC.

21. *Sennertia* (*Sennertia*) *japonicus* (Oudemans, 1901)

Trichotarsus japonicus Oudemans, 1901, p. 117 (Fig. 21)

Sennertia japonicus, Fain, 1974b, p. 224, (Figs. 5-6)

I have redescribed this species from the holotype. It belongs to the group 'japonicus' characterized as follows: long-shield bearing the *d* 1 setae; all *d* setae are microsetae; tarsus IV short bearing a long ventral seta (33 to 100 μ long); the apico-ventral seta of tarsi I-III is generally a short spine.

Host and locality: *Xylocopa circumvolans* from Japan. Type in RMNH.

22. *Sennertia* (*Sennertia*) *alfkeni* (Oudemans, 1901)

Trichotarsus alfkeni Oudemans, 1901, p. 115 (Figs. 18-20)

Sennertia alfkeni, Fain, 1974b, p. 229 (Figs. 11, 12, 15, 16)

I have redescribed this species from the holotype. The pretarsi I-III bear a well-developed triangular process. Ventral seta of tarsus IV 4.3 to 5 times as long (78 μ) as this tarsus. Apico-ventral seta of tarsi I-III is a short and strong seta and not a true spine. Dorsal shield 1.6 times as long (246 μ) as wide (150 μ).

Host and locality: From *Xylocopa circumvolans* from Japan Holotype in RMNH.

23. *Sennertia* (*Sennertia*) *cantabrica* Zachvatkin 1941

Sennertia (*Sennertia*) *cantabrica* Zachvatkin, 1941, p. 532 (Figs. 662-664)

This species is placed provisionally in the group 'japonicus' owing to the small size of tarsus IV and relatively great length of the ventral seta of this tarsus which is four times as long as the tarsus.

Dorsal shield twice as long as wide and parallel-sided in its median and posterior part. Absence of process on pretarsi I-III and of an incurved lanceolate seta on tarsi I-II. All apical or preapical setae of these tarsi are thin.

Host and locality: From *Xylocopa cantabrica* from Algeria. Type in ASL.

24. *Sennertia (Sennertia) micheli* Fain, 1971

Sennertia (Sennertia) micheli Fain, 1971, p. 268

This species is represented only by the holotype, in rather bad condition and partly crushed.

Hypopus (Figs. 24, 26-28): Holotype 315 μ long, 270 μ wide. *Dorsum:* Cuticle finely striated. Hysteronotal shield very narrow 2.3 times as long (216 μ) as wide (90 μ) with parallel sides and with a short median sclerite. Setae *sc e* and *l 1* are broken, *l 2*, *l 3*, *l 5*, and *h* 210 μ , 150 μ , 150 μ and 110 μ long. The *l 5* are 37 μ apart. Setae *d 2* closer to *d 1* than to *d 3*. *Venter:* Sternum 29 μ long. Solenidia *alpha* vestigial (3 μ long). Setae *s h* 45 μ . Coxal setae broken. Suctorial plate strongly flattened, with a sclerotized frame; anterior suckers 6 μ wide, posterior suckers 10 μ wide. Conoids relatively large almost on a straight line.

Legs: Claws I-II 30 μ -28 μ . Tarsus IV wider (9 μ) than long (7 μ) with a stout ventral seta 30 μ long. Pretarsi I-III with a well-developed triangular process. Tarsi I-II with a short ventro-apical spine, two short and thin lateral subapical setae (one anterior and one posterior) and two long and strong dorso-median setae widely foliate apically. Tarsi III with a short ventro-apical spine and three long unequal dorsal setae of which two are foliate apically. Posterior seta of genu I 50 μ , of genu II 120 μ . *Solenidia:* Tarsus I with $\omega 3$ longer (60 μ) than $\omega 1$ (14 μ) and $\omega 2$ (13 μ).

Host and locality: Holotype from *Bembix borrei* from Java (coll. de Soignies). Holotype in IRSNB.

Remarks: This species differs from *S. alfkeni*, the only other species of the group 'japonicus' with a triangular process on pretarsi I-III, by the narrow dorsal shield (90 μ wide compared with 150 μ in *S. alfkeni*), the absence of a lanceolate incurved seta on tarsi I-II, the smaller length of tarsus IV, the greater length of *l 2* and *l 3*, the smaller size of posterior suckers.

25. *Sennertia (Sennertia) morstatti* Vitzthum, 1914
Sennertia (Sennertia) morstatti Vitzthum, 1914, p. 323; 1919, p. 42 (Figs. 35-37)

Sennertia (Sennertia) moandensis Fain, 1971, p. 267. New synonym.

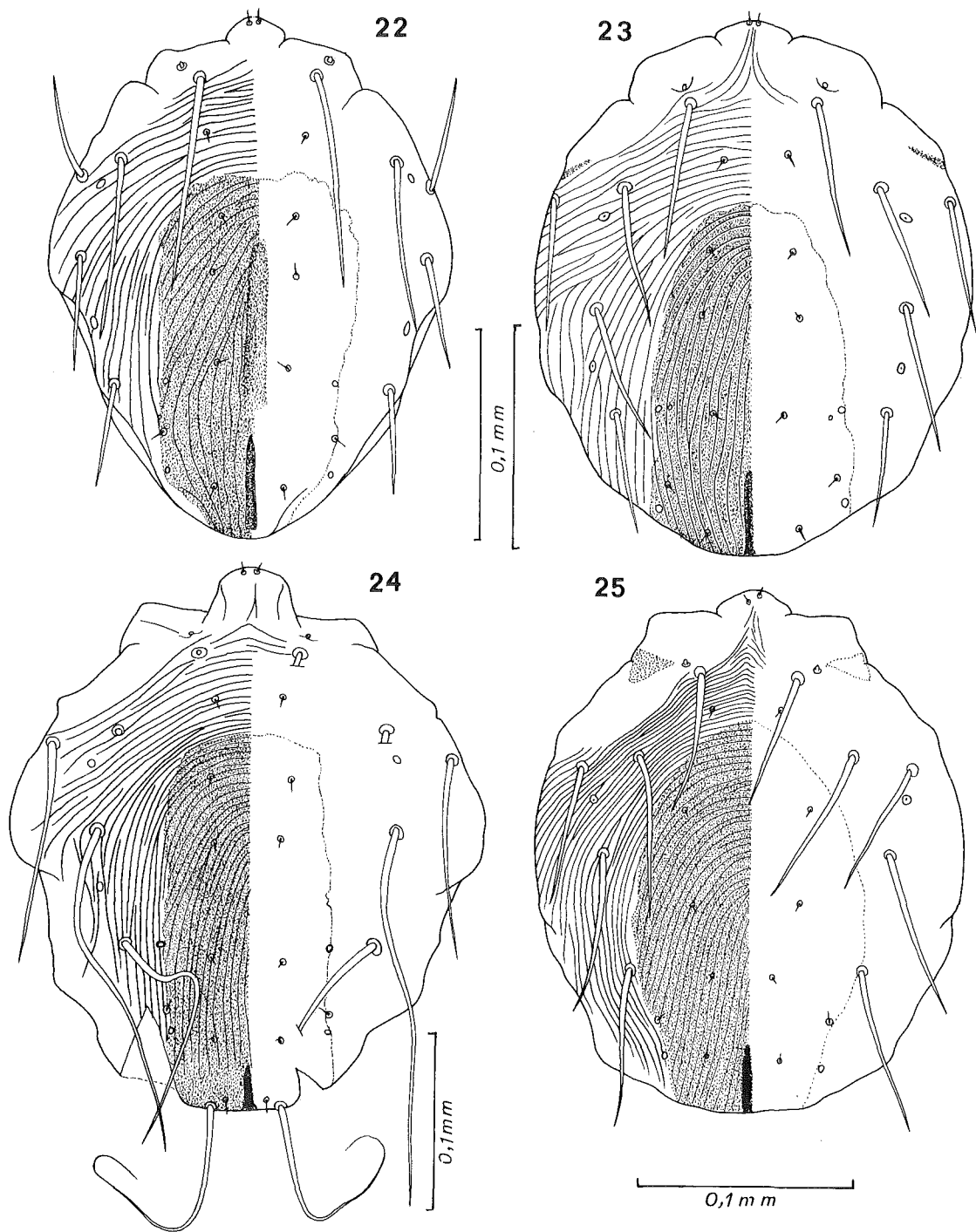
I have examined the type material of *S. morstatti* and could find no significant difference between this species and *S. moandensis*. I give here a new description and new figures of this species, based on the holotype and paratypes of *S. moandensis* which are in better condition than Vitzthum's types.

Hypopus (Figs. 25, 29, 30): Body length 240 μ , width 198 μ . *Dorsum:* Cuticular striations thin. Shield 180 μ long and 108 μ wide with a longitudinal sclerite 30 μ long. Setae *sc e*, *l 1*, *l 2*, *l 3* 66 μ , 78 μ , 80 μ and 80 μ long respectively. Setae *l 3*, situated on the margins of the shield. Setae *l 5* 24 μ apart. *Venter:* Solenidia *alpha* thin and relatively long (11 μ). Sternum 30 μ long. Suctorial plate 33 μ wide; anterior suckers 4-4.5 μ wide, posterior suckers 9-10 μ wide; conoids very small and close together, almost on a straight line.

Legs: Claws I-II 18 μ long. Pretarsi long, without lateral projections. Tarsus IV 15 μ long, 8 μ wide with a ventral seta 50-60 μ long. Posterior seta of genu II much thicker and longer (43-50 μ) than that of genu I (16-21 μ). Tarsi I-II with a ventro-apical short spine and two short pre-apical thin setae. The two medio-dorsal setae are foliate. Trochanters I-III with a rather short seta. Tarsi III with an apico-ventral short spine and three long dorsal unequal setae, of which two are foliate.

Host and locality: (1) Type series, including hypopi and adults, from the nest of *Koptorthosoma nigrata* in Amani, E. Africa (1912 and 1914). Types in ZSM; (2) hypopi of this species (described as *S. moandensis* Fain, 1971) were collected from the same host in Moanda, Zaïre (holotype and one paratype of *S. moandensis* in MRAC); (3) other specimens were collected from the type host from Kisangani, Zaïre (one hypopus); from *Xylocopa (Koptorthosoma)* sp. in Sudan (three hypopi sent by D. Johnston, USA); from *Megachilidae* No. M3, Bambesa, Zaïre (several hypopi).

Remarks: This species differs from *S. alfkeni* and *S. micheli* by the absence of a process on pretarsi I-III



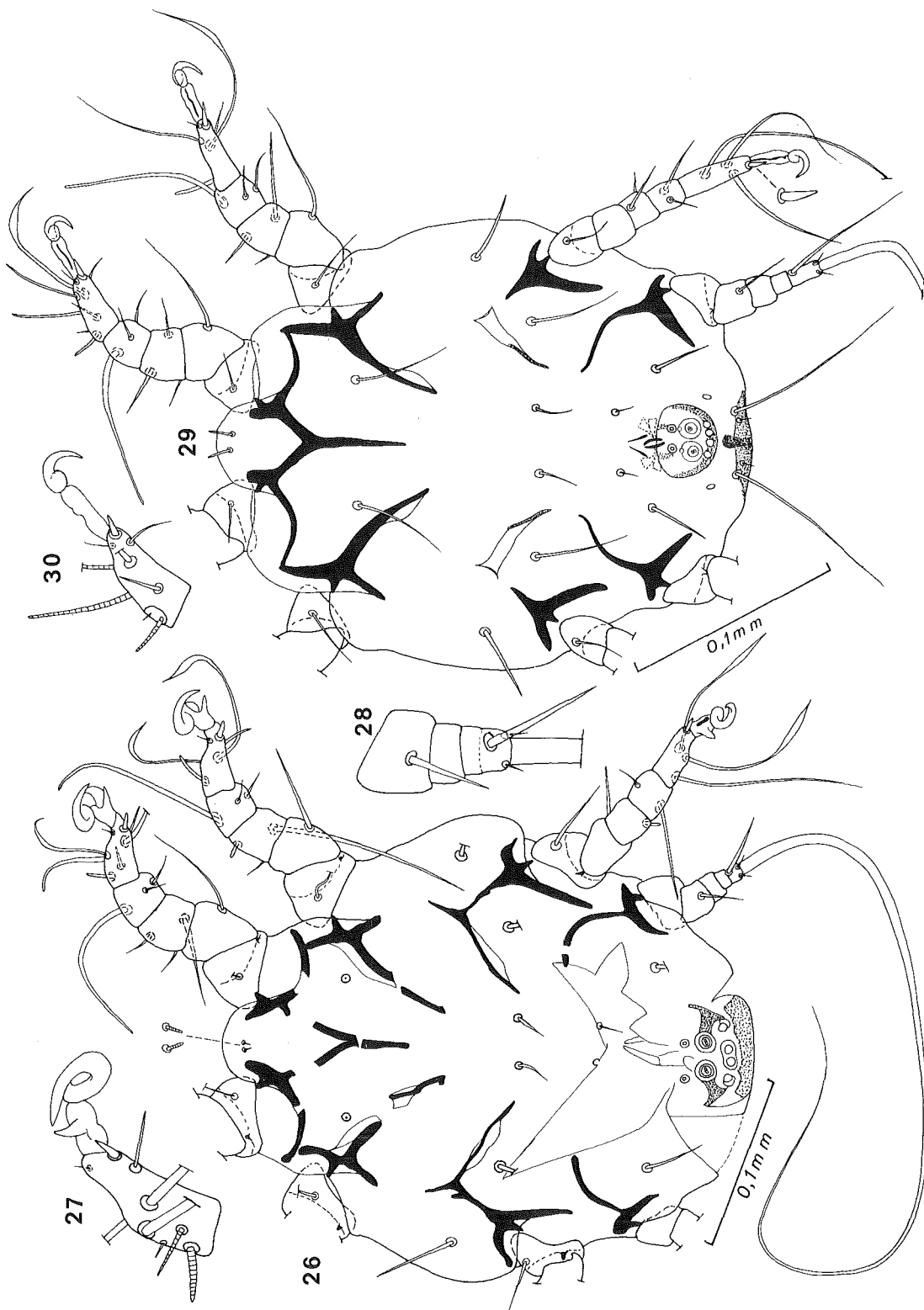
Figs. 22-25. Hypopi in ventral view.

Fig. 22. *Sennertia (Sennertia) congoicola* Fain.

Fig. 23. *S. (S.) elseni* Fain.

Fig. 24. *S. (S.) micheli* Fain.

Fig. 25. *S. (S.) morstatti* Vitzthum.



Figs 26-28. *Sennertia (Sennertia) micheli* Fain, hypopus.

Fig. 26. Ventral view.

Fig. 27. Tarsus I.

Fig. 28. Tarsus, tibia, genu and femur IV ventrally.

Figs 29, 30. *S. (S.) morstatti* Vitzthum.

Fig. 29. Ventral view.

Fig. 30. Tarsus I.

and by the much narrower suctorial plate. It differs from *S. japonicus* and *S. varicosa* by the small development of the suctorial plate and suckers.

26. *Sennertia (Sennertia) varicosa* Fain, 1971

Sennertia (Sennertia) varicosa Fain, 1971, p. 268

Hypopus (Figs. 31, 32, 37: Holotype 305 μ long and 225 μ wide. In one paratype 290 $\mu \times$ 210 μ . Posterior extremity rounded. *Dorsum*: Striations thin, regular. Hysteronotal shield strongly widened posteriorly, 240 μ long and 180 μ wide, with a longitudinal sclerite 90 μ long. Setae *sc i* are microsetae. Setae *sc e*, *l1*, *l2*, *l3*, *l5* and *h* 80–90 μ , 90 μ , 90 μ , 80–90 μ , 150 μ and 72 μ long respectively. Setae *l5* 80 μ apart. *Venter*: Sternum 27 μ long. Suctorial plate 105 μ wide, 87 μ long; anterior suckers 12–13 μ wide, posterior suckers 33–35 μ wide; conoids large, lateral conoids are on the same line as the posterior suckers. All ventral setae, except *sh* have a very thick bulbous base and a very thin apical prolongation. *Legs*: Claws I–II 24 and 21 μ long. Pretarsi I–III without triangular processes. Tarsus IV 18 μ long and 10 μ wide at its base, bearing a ventral seta 90–100 μ long. Tarsi I–II with three setae in apical third (an apico-ventral which is a short spine, and two laterals which are thin) and two long foliate setae in its median third. Tarsus III with a short apico-ventral spine and three long setae (two medio-dorsal foliate and one dorso-basal simple and longer). Tarsus I with ω 3 much longer (48 μ) than ω 1 (18 μ).

Host and locality: (1) Holotype and three paratypes, all hypopi, collected by P. Elsen from a *Mesotrichia* sp. from Kundulungu, Shaba, Zaïre (coll. Zielinski, VI. 1949); (2) from *Mesotrichia inconstans flavescens*, from Angola (bee in MRAC No. 136.482), three paratypes hypopi, and from Uvira, Zaïre, one paratype hypopus. Holotype in MRAC.

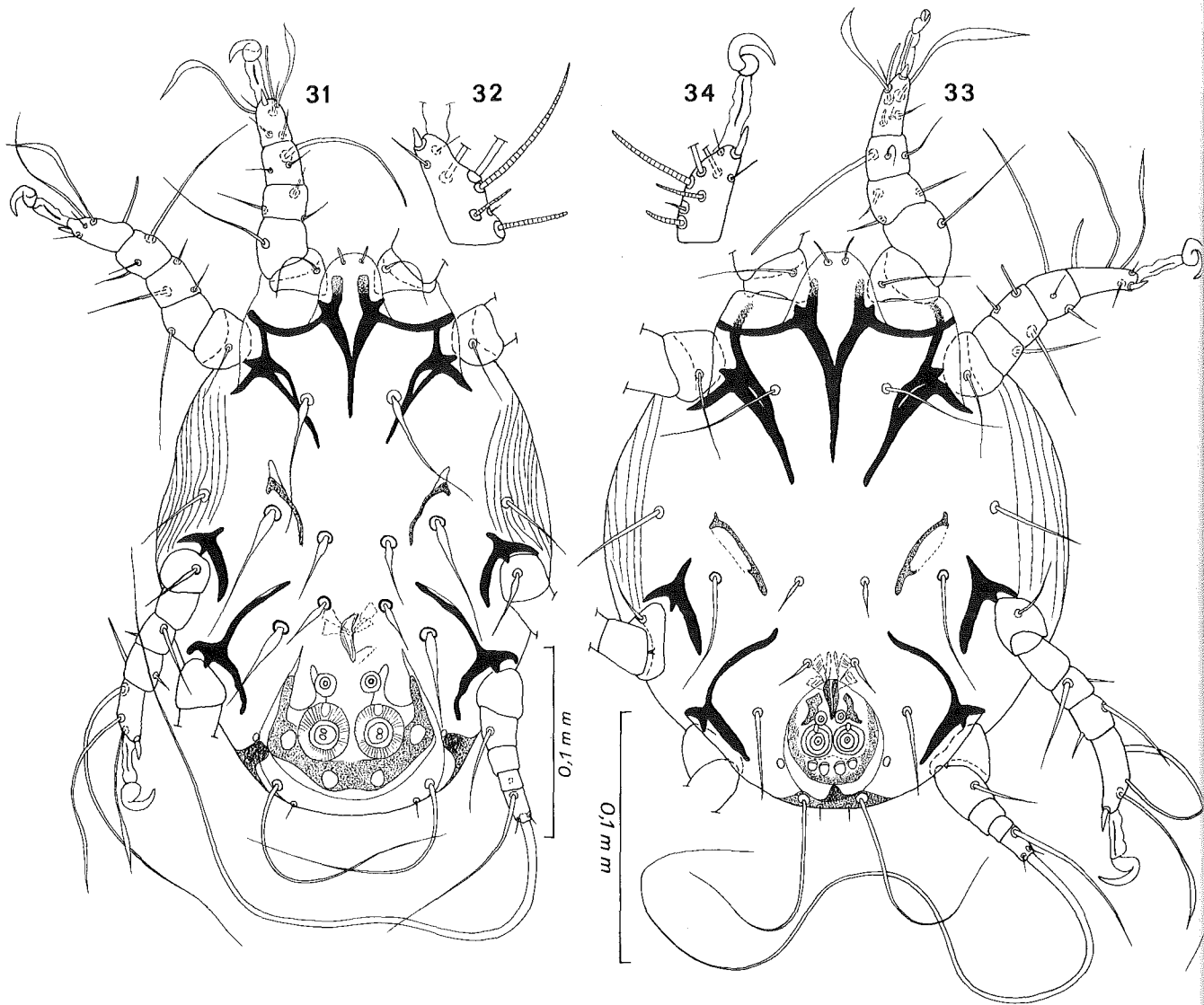
Remark: This species differs from *S. alfkeni*, by the absence of a process on pretarsi I–III. It differs from *S. japonicus* by the much larger posterior suckers, by the relatively much wider dorsal shield, the shorter posterior seta of genu II, the absence of a thick incurved and lanceolate seta in postero-apical region of tarsi I–II, this seta is replaced by a thin seta.

27. *Sennertia (Sennertia) tanythrix* Fain, 1971

Sennertia (Sennertia) tanythrix Fain, 1971, p. 267

Hypopus (Figs. 33, 34, 36): Holotype 240 μ long and 195 μ wide. In 3 paratypes 235 $\mu \times$ 190 μ , 225 $\mu \times$ 180 μ , 210 $\mu \times$ 160 μ . *Dorsum*: Cuticular striations thick, widely spaced. Hysteronotal shield 180 μ long and 130 μ wide, with a short longitudinal sclerite (12 μ long). Setae *sc i* are microsetae. Setae *sc e*, *l1*, *l2*, *l3*, and *h* 100 μ , 136 μ , 118 μ , 105 μ and 80 μ long respectively. All these setae are thick basally and very thin apically. Setae *l5* 105 μ long and 21–24 μ apart. *Venter*: Sternum 30 μ long. Setae *sh* 34 μ long. Setae *cx I* and *cx III* thin and long. Suctorial plate longer (42 μ) than wide (40 μ); anterior sucker 7.2 μ wide, posterior sucker 13 μ wide; conoids relatively large, very close to each other and situated on a very slightly concave line. *Legs*: Claws I–II 18 μ long, claw III 16 μ . Pretarsi I–III narrow and long, without lateral processes. Tarsus IV 12 μ long and 9 μ wide basally, bearing a ventral seta 70 μ long. Genua I and II with a posterior seta 18 μ and 40 μ long respectively. Tarsi I–II with a short apico-ventral spine, a posterior short pre-apical rod-like seta and an anterior thin and shorter pre-apical seta; the two dorso-median setae are foliate apically. Tarsus III with a short apico-ventral spine and three long dorsal setae of which one is basal, simple and very long and two are shorter, median and narrowly foliate in their apical part. Tarsus I with ω 3 much longer (39 μ) than ω 1 (12 μ).

Host and locality: (1) Holotype and six paratypes, all hypopi, from *Mesotrichia torrida* from Province Uélé, Zaïre; (2) other specimens (seven paratypes, hypopi) from *M. imitator*, from Province Uélé, Zaïre. Holotype in MRAC. The specimens recorded (Fain, 1971) from *M. nigrita* belong to *S. morstatti*. *Remarks*: This species is close to *S. morstatti*. It differs from it by the structure of the dorsal cuticular striations which are thicker and more spaced, by the relatively wider shield, the larger posterior suckers, the greater length of the ventral seta of tarsus IV.



Figs. 31, 32. *Sennertia (Sennertia) varicosa* Fain, hypopus.

Fig. 31. Ventral view.

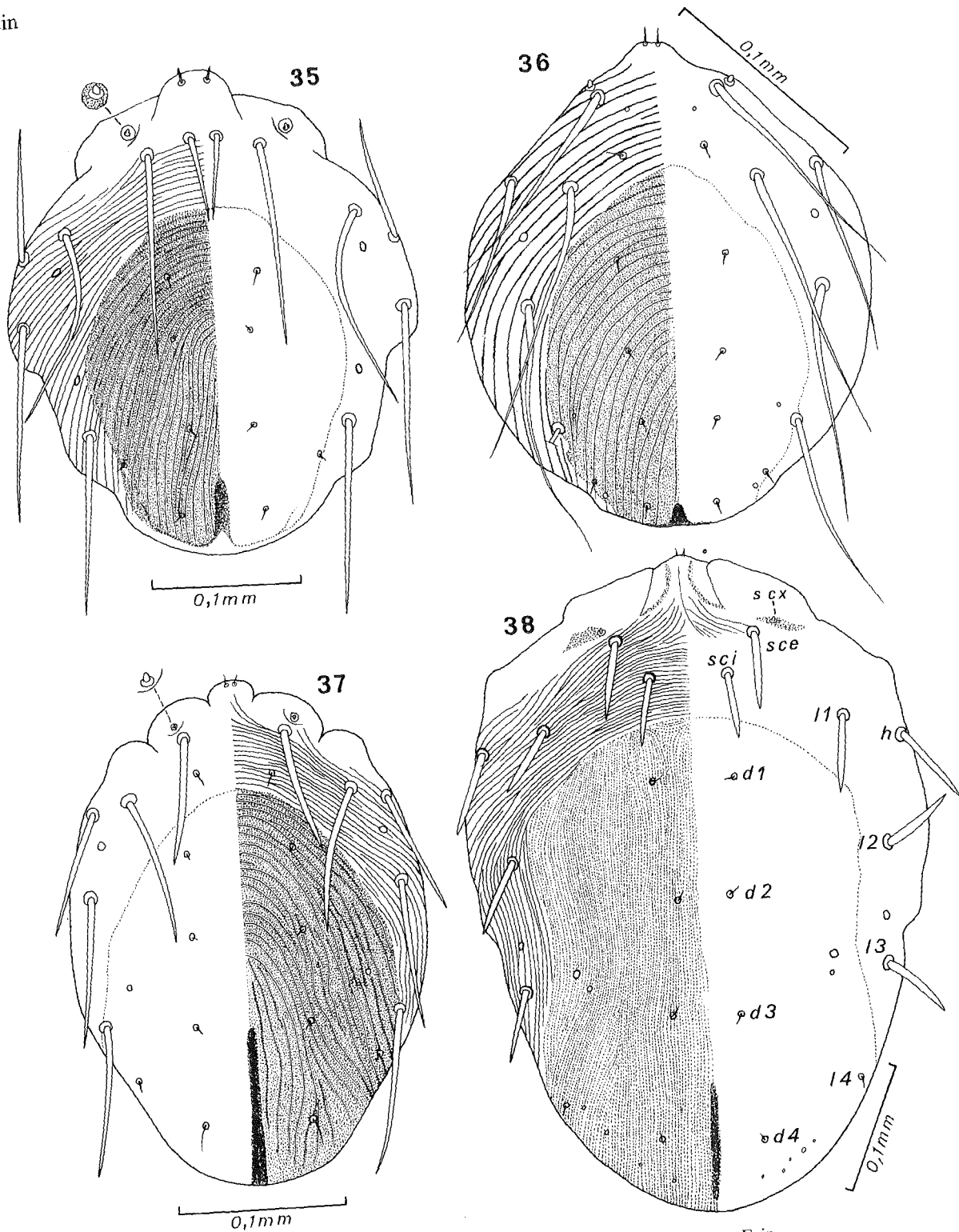
Fig. 32. Tarsus I.

Figs. 33, 34. *S. (S.) tanythrix* Fain.

Fig. 33. Ventral view.

Fig. 34. Tarsus I.

A. Fain



Figs. 35-38. Hypopi in dorsal view.

Fig. 35. *Sennertia (Sennertia) madagascarensis* Fain.Fig. 36. *S. (S.) tanythrix* Fain.Fig. 37. *S. (S.) varicosa* Fain.Fig. 38. *S. (S.) surinamensis* Fain.

28. *Sennertia* (*Sennertia*) *horrida* (Vitzthum, 1912)
Trichotarsus horrida Vitzthum, 1912, p. 289
Sennertia horrida Vitzthum, 1919, p. 57 (Figs. 51-52)
Sennertia sumatrensis Oudemans, 1924, p. 329;
 Fain, 1974b, p. 228 (Figs. 9, 10, 13, 14). New synonym.

This species is known only from hypopi. I have examined several syntypes of *S. horrida* and I designate one of these specimens as the *Lectotype*. These specimens agree perfectly with the lectotype of *S. sumatrensis* Oudemans redescribed recently (Fain, 1974). The latter becomes therefore a synonym of *S. horrida*.

Host and locality: The lectotype of *S. horrida* is labelled: 'slide No. V3087, Umgebung Batavia, *Xylocopa nigrita*, dét. Vitzthum 20.12.1910'. The two paralectotypes are Nos. V 3088 and V 3126 and bear the same data. In another publication by Vitzthum (1919), however, the host is changed to '*Xylocopa dissimilis*'. Lectotype in ZSM. The type series of *S. sumatrensis* was collected from *Xylocopa* sp. Medan Deli, Sumatra. Lectotype in RMNH.

29. *Sennertia* (*Sennertia*) *zhelochovtsevi* Zachvatkin, 1941

Sennertia (*Sennertia*) *zhelochovtsevi* Zachvatkin, 1941, p. 537 (Figs. 661, 666-668)

This species is well characterized by the short dorsal shield which remains far behind the *d 1* setae.

Host and locality: *Xylocopa olivieri* and *Xylocopa* sp. from the south-east of Europe and Central Asia. Type in ASL.

30. *Sennertia* (*Sennertia*) *potanini* Zachvatkin, 1941

Sennertia potanini Zachvatkin, 1941, p. 539 (Figs. 669, 671)

According to the original description this species possesses a long tongue-shaped shield, a small suctorial plate, relatively long *sc i* setae (approximately 40 μ). The tarsi IV are 1.5 times as long as their width at their base and bear a seta 3.5 times longer than tarsus. Pretarsi without lateral processes. Body 370-415 μ long.

Host and locality: *Xylocopa pictifrons* from West China. Type in ASL

31. *Sennertia* (*Sennertia*) *madagascarensis* Fain, 1971

Sennertia madagascarensis Fain, 1971, p. 270
Hypopus (Figs. 35, 39, 40): Holotype 325 μ long and 270 μ wide. In two paratypes: 322 \times 257 μ and 318 \times 245 μ . Posterior border of body rounded. *Dorsum*: Cuticular striations thin. Hysteronotal shield 240 μ long, 174 μ wide, with strongly convex lateral margins and bearing a short postero-median longitudinal sclerite (30 μ long). Setae *sc i*, *sc e*, *l 1*, *l 2*, *l 3*, *h* and *l 5* thick, 57 μ , 135 μ , 138 μ , 129 μ , 126 μ , 98 μ and 150 μ long respectively. Setae *l 5* 72 μ apart. *Venter*: Setae *sh* spinous 45 μ long; other ventral setae thin except *g a* setae whose base is strongly inflated. Suctorial plate 110 μ wide. Anterior suckers twice as wide (42-45 μ) as the posterior suckers (21 μ). Conoids situated on a slightly concave line. *Legs*: Claws I-II 30 μ long. Pretarsi with a well-developed triangular process. Tarsus IV 24 μ long, 13 μ wide with a ventral seta 120 μ long. Tarsi I-II with three rather short apical setae (one ventral with inflated base, one postero-lateral rod-like and one very thin antero-lateral), and two long thick setae foliate apically. Tarsi III with one short ventro-apical seta as in anterior tarsi, two long foliate medio-dorsal and one very long simple apical. Solenidia of tarsus I: $\omega 1$ 14 μ , $\omega 3$ 54 μ . Famulus very small.

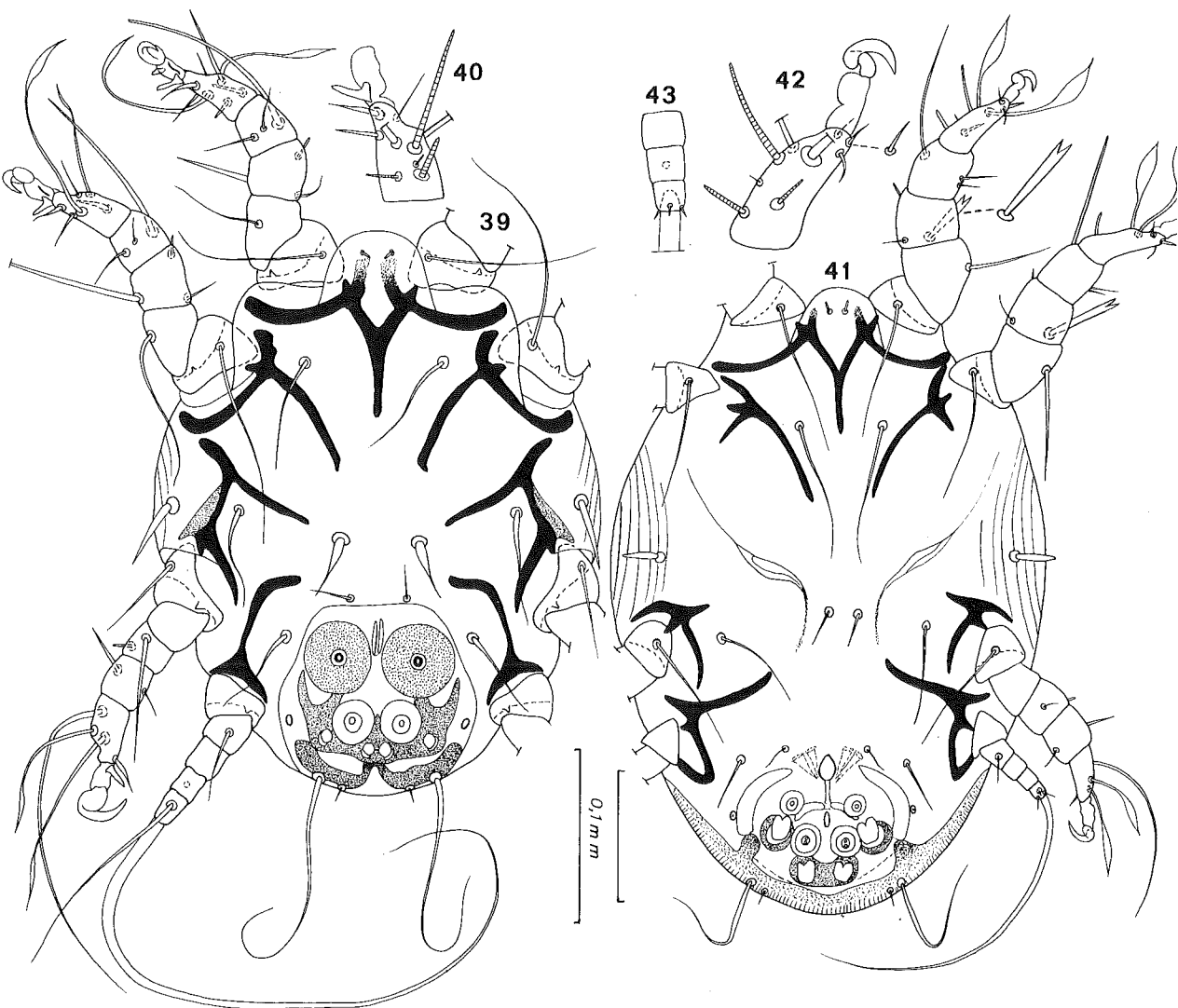
Host and locality: Holotype and 12 paratypes, all hypopi, from *Xylocopa mirabilis* from Tananarive, Madagascar. Holotype in MRAC.

Remarks: This species presents strong *sc i* setae as in some of the preceding species. It is well characterized by the enormous size of the anterior suckers, which are much larger than the posterior suckers.

32. *Sennertia* (*Sennertia*) *surinamensis* Fain & Lukoschus, 1971

Sennertia surinamensis Fain & Lukoschus, 1971, p. 270

Hypopus (Figs. 38, 41-43): Length of holotype 510 μ , width 345 μ . In two paratypes 453 \times 300 μ and 500 \times 360 μ . Posterior border of body rounded. *Dorsum*: Striations thin, numerous. Hysteronotal shield very large, 385 μ long and 225 μ wide (maximum), with a postero-median subcuticular



Figs. 39, 40. *Sennertia (Sennertia) madagascarensis* Fain, hypopus.

Fig. 39. Ventral view.

Fig. 40 Tarsus I.

Figs. 41-43. *S. (s.) surinamensis* Fain, hypopus.

Fig. 41. Ventral view.

Fig. 42. Tarsus I.

Fig. 43. Tarsus, tibia and genu IV ventrally.

sclerite 80 μ long. Setae *sc i*, *sc e*, *l 1*, *l 2*, *l 3*, and *h* thick spinous and 55 μ , 63 μ , 57 μ , 58 μ , 58 μ , 66 μ long respectively. Setae *l 5* with a thick base and very thin apically, 150 μ long and 118 μ apart. *Venter*: Seta *sh* spinous, 34 μ long, other ventral setae very thin. Suctorial plate 138 μ wide. Diameter of anterior suckers 18 μ , of posterior suckers 25 μ . Conoids large, with bifid apex; the lateral conoids are situated in front of the posterior suckers. *Legs*: Claws 25–29 μ long. Pretarsi long, without lateral process. Tarsus IV as long (12 μ) as wide, with two ventro-apical microsetae and one very long apical seta. Tarsi I–II with three short simple subapical setae (one median thick, one antero-lateral very thin and one postero-lateral thick and incurved) and two a little more basal, long and foliate unequal setae. Genua I–II bearing a strong dorsal sabre-like seta with bifid apex 48 and 63 μ long respectively. Tarsi III with a ventro-apical thick seta, two long unequal foliate seta and one very long simple seta. Solenidia of tarsus I unequal $\omega 3$ about twice as long (42 μ) as $\omega 1$ and $\omega 2$. In the holotype $\omega 1$ is more basal than $\omega 2$ at one leg and more apical than the latter at the other leg; in the paratypes $\omega 1$ is always more basal than $\omega 2$. Famulus very thin.

Host and locality: Holotype and five paratypes, all hypopi, from *Ceratina chloris* from Surinam (coll. F. Lukoschus), 29.XII.1969. Holotype in IRSNB.

Remarks: This species resembles the preceding species with large *sc i* setae. It differs from those by the shape of the scapulars, the laterals (*l 1*–*l 3*) and the *h* setae which are relatively very thick, short and subequal. Another character is the presence on genua I–II of a sabre-like seta with bifid apex.

33. *Sennertia* (*Asiosennertia*) *delfinadoae* n.sp.

This species is named for Dr. Mercedes Delfinado, the prominent American Acarologist.

Hypopus (Figs. 44–46, 63): Body 255 μ long, 200 μ wide. *Dorsum*: Cuticle finely striated and soft. Shield well-sclerotized 123 μ long and 105 μ wide. Setae *sc e*, *l 1*, *l 2*, *l 3*, and *h* 81–85 μ , 69 μ , 150 μ , 75–80 μ and 68 μ long respectively. Other setae very short and thin. Setae *d 2* on the shield. *Venter*:

Sternum 21 μ . The U-shaped frame around suctorial plate is 45 μ wide. Anterior and posterior suckers 7 μ and 12 μ wide. Conoids small, situated on a very slightly concave line. Dorsal shield folded ventrally around posterior extremity. Setae *l 5* 105 μ long and 22 μ apart. Ventral setae not inflated. Setae *sh* 30 μ , solenidia *alpha* 12 μ long. Legs IV relatively long but distinctly shorter than half of the width of body; tarsus 21 μ long, 7 μ wide bearing a ventral seta 21 μ long. Claw III 21 μ long, other claws not measurable. Pretarsi I–III without projections. Tarsi I–II with three thin apical or pre-apical setae.

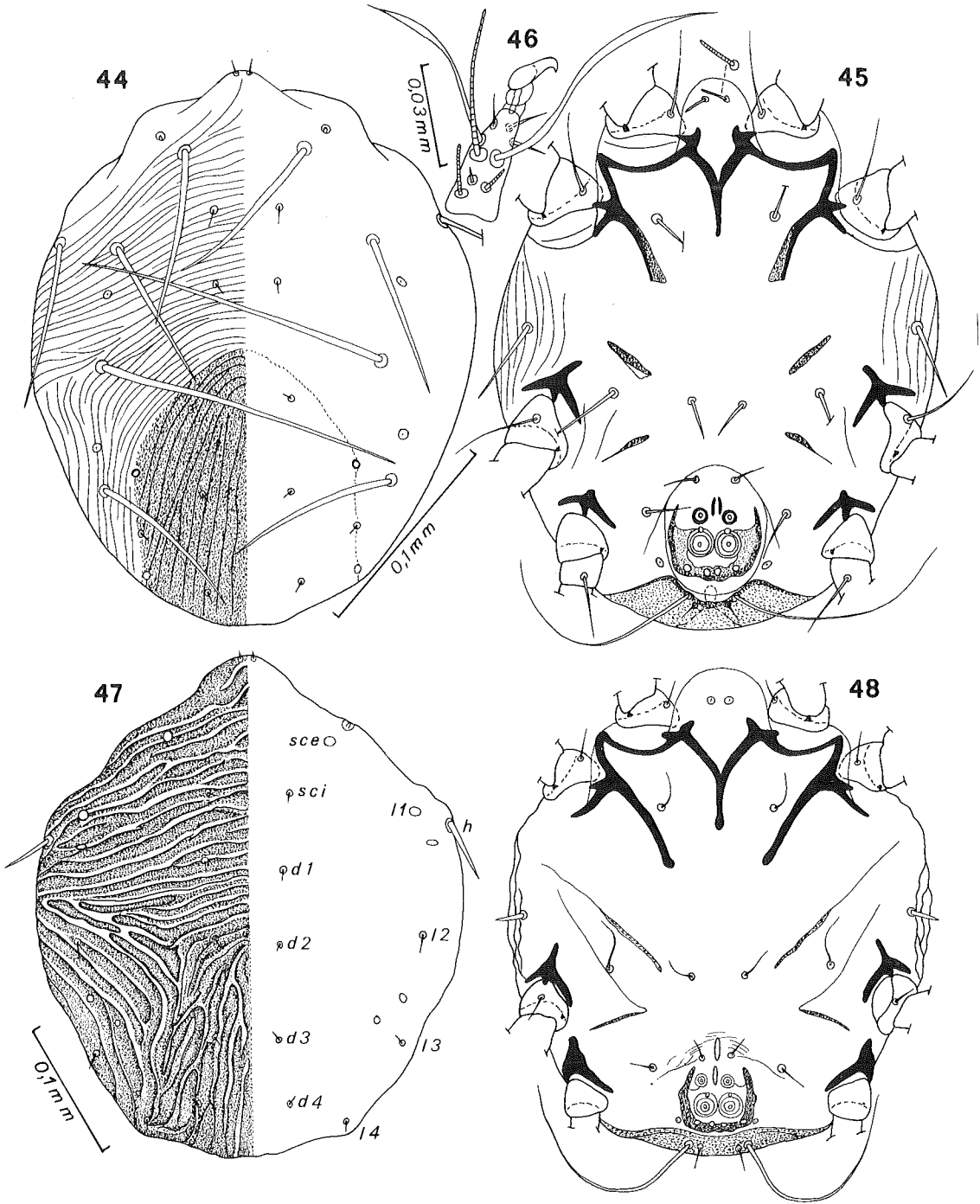
Host and locality: Holotype and only known specimen from a rat from India which is an accidental host. Type in IRSNB.

Remark: This species differs from *S. (A.) oudemansi* Zachvatkin by the relatively much wider and more sclerotized aspect of the dorsal shield, the presence of the *d 2* on the shield, the relatively longer *l 3* setae, the smaller body and the presence of a rather long ventral seta on tarsus IV.

34. *Sennertia* (*Asiosennertia*) *vitzthumi* n.sp.

Among the specimens of the Vitzthum collection received from the Museum of Munchen for this study, I found a specimen that belongs to a new species. I describe it here. This specimen is labelled 'No. V 3068. *Sennertia alfkeni* Ouds. 2-Ny, Exuvie, 14.9.1928'.

Hypopus (Figs. 47, 48, 62): Body 354 μ long, 310 μ wide. *Dorsum*: Cuticle strongly punctate, with thick folds instead of striations. Shield a little more punctate than cuticle, but not clearly separated from the latter, about 156 μ long and 135 μ wide, bearing setae *d 2*. Setae *sc e* and *l 1* broken. Setae *sc i* thin, 12 μ long. Setae *l 2* and *l 3* thin and short (15 and 13 μ). *Venter*: Sternum 36 μ . Suctorial plate with an U-shaped sclerotized frame 57 μ wide. Anterior suckers 9 μ , posterior suckers 18 μ wide. Conoids very small situated on a straight line. Setae *l 5* 140 μ long, 45 μ apart. Setae *sh* a narrow spine 21 μ long; other ventral setae thin. Solenidia *alpha* vestigial. Legs IV relatively long but shorter than half the body length, with tarsus 42 μ long and 12 μ wide bearing two short ventral pre-apical setae. Tarsi I–II



Figs. 44-46. *Semertia (Asiosemmertia) delphinadoae* Fain, hypopus.

Fig. 44. Dorsal view.

Fig. 45. Ventral view.

Fig. 46. Tarsus I.

Figs. 47, 48. *S. (A.) vitzthumi* Fain, hypopus.

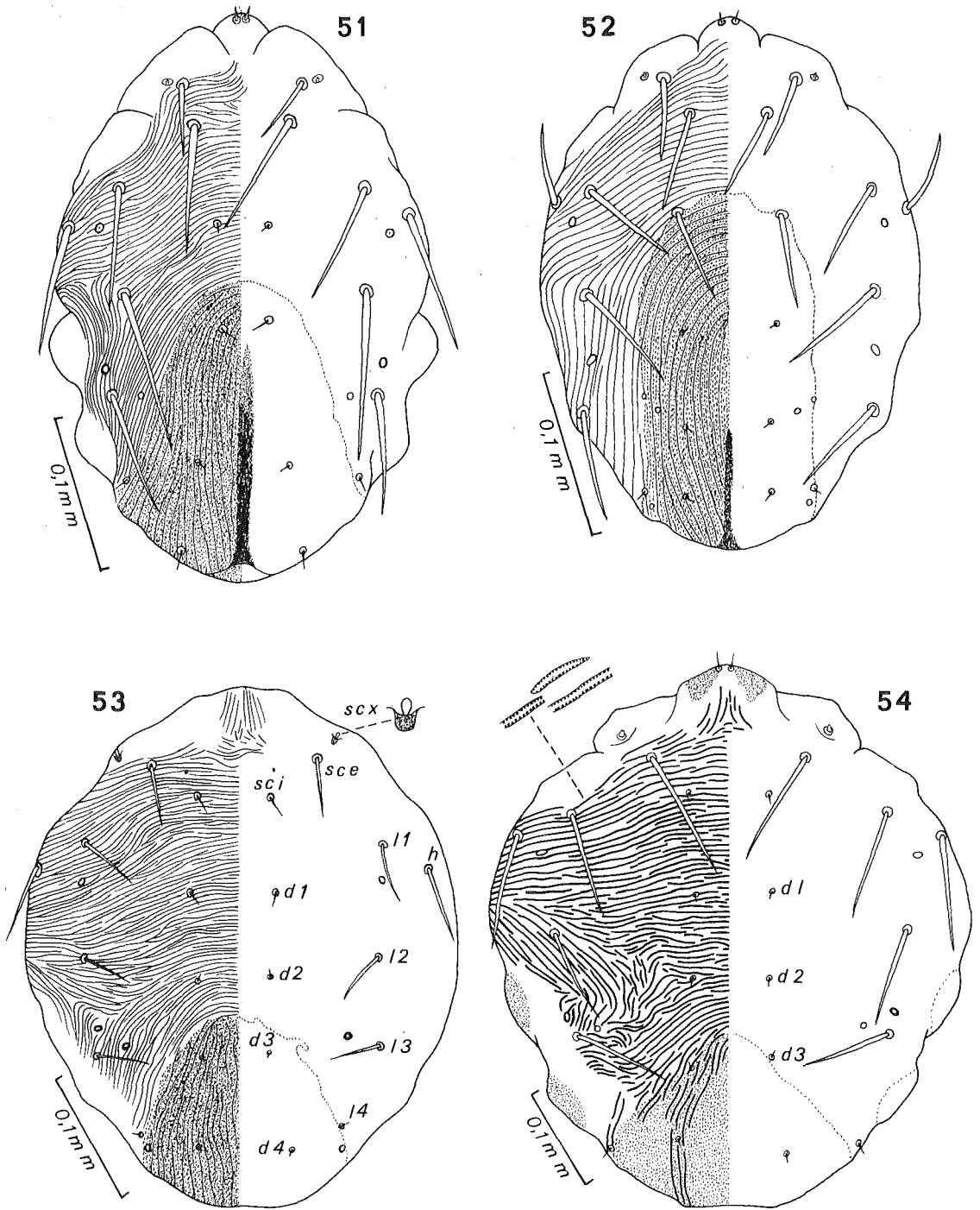
Fig. 47. Dorsal view.

Fig. 48. Ventral view.



Fig. 49. *Sennertia (Spinosenertia) argentina* Vitzthum, hypopus, ventral view.

Fig. 50. *Sennertia (Amsemeria) frontalis* Vitzthum, hypopus, ventral view. Abbreviations used for the suckorial plate: *as* = anterior suckers, *ps* = posterior suckers, *pc* = paramedian conoids, *lc* = lateral conoids.)



Figs. 51-54. Hypopi in dorsal view.
Fig. 51. *Sennertia (Spinosenertia) argentina* Vitzthum.
Fig. 52. *Sennertia (Amosenertia) frontalis* Vitzthum.
Fig. 53. *Sennertia (Afrosennertia) monicae* Fain.
Fig. 54. *Sennertia (Afrosennertia) jeanalexi* Fain.

with three thin apical or pre-apical setae, tarsus I with a thin apicoventral seta. Claws I-II 42 μ long. Pretarsi I-II with a long triangular process.

Host and locality: Unknown. Holotype No. V 3068 in ZSM.

Remark: This species is distinguished from the two other species in the subgenus by the sclerotized and folded aspect of the cuticle and the presence of a long lateral projection on pretarsi I-III.

35. *Sennertia (Asiosennertia) oudemansi* Zachvatkin, 1941

Sennertia oudemansi Zachvatkin, 1941, p. 539 (Figs. 675-677)

I have not seen this species and I summarize here the author's description and figures: Body almost round, 303 μ long. Dorsal shield very small feebly sclerotized and indistinctly separated from soft cuticle. Setae *d* 2 are situated on the cuticle at each side of the shield. Setae *l* 2 3 times as long as *l* 3 (according to Fig. 675), the latter being shorter than all the other dorsal macrosetae. Sucking disc very small, without sclerotized frame. Conoids situated on a concave line. Pretarsi I-III without lateral projections. On tarsi I-II one of the pre-apical setae is lanceolate. Tarsus IV is three times as long as wide and does not bear a ventral seta.

Host and locality: *Xylocopa dissimilis*. Japan. Type in ASL.

36. *Sennertia (Asiosennertia) queenslandica* Womersley, 1941

Sennertia queenslandica Womersley, 1941, p. 479 (Fig. 16).

I have not seen specimens of that species. (I place it provisionally in the subgenus *Asiosennertia*.) According to the original drawing and description it presents a very short and triangular hysteronotal shield, a long tarsus IV and large claws. Idiosoma 410 μ long and 330 μ wide. According to the description the dorsal spines should be 162 μ long but in the drawing these spines appear to be not longer than one sixth of the idiosoma (circa 68 μ). The type host is *Mesotruchia bryorum* from Moa Island, Torres Straits, Northern Australia. Type in SAM.

37. *Sennertia (Spinosenertia) argentina* Vitzthum, 1941

Sennertia argentina Vitzthum, 1941, p. 309 (Fig. 2); Turk, 1948, p. 84

Sennertia donaldi Turk, 1948, p. 84, (Figs. 1-4) New synonym

I have seen two syntypes of this species. I select the specimen No. V 3105 as *Lectotype*. The original description is very incomplete and I give here a new description and figures.

Lectotype: (Figs. 49, 51): Body 360 μ long, 230 μ wide. *Dorsum*: Hysteronotal shield 180 μ long, 150 μ wide (ratio 1.2), distinctly widened posteriorly and with a long median sclerite. Setae *sc* i, *sc* e, *l* 1, *l* 2, 3 and *h* are spines 78 μ , 46 μ , 76 μ , 102 μ , 75 μ and 88 μ long respectively. *Venter*: Suctorial plate 90 μ wide. Diameter of suckers: anterior 30 μ , posterior 24 μ . Lateral conoids slightly more anterior than posterior suckers. Coxal, *ga* and *gp* setae are short conical spines. Setae *sh* is a narrow spine (27 μ). Setae *l* 5 75 μ long and 78 μ apart. Trochanteral I-III, tibial I-III and femoral IV setae are conical spines. Pretarsi I-III with two large membranous projections. Claws small. Tarsus IV three times as long (36 μ) as wide (12 μ), bearing a very long apical seta, and three short and thin spines (one ventral and two ventro-apical). Tarsi I-II with two apicoventral conical spines, one long dorsal seta very narrowly foliate, one shorter very thin seta and one very short thin seta. Tarsus III with three long dorsal setae and one short ventro-apical spine. Femur IV with a short conical spine.

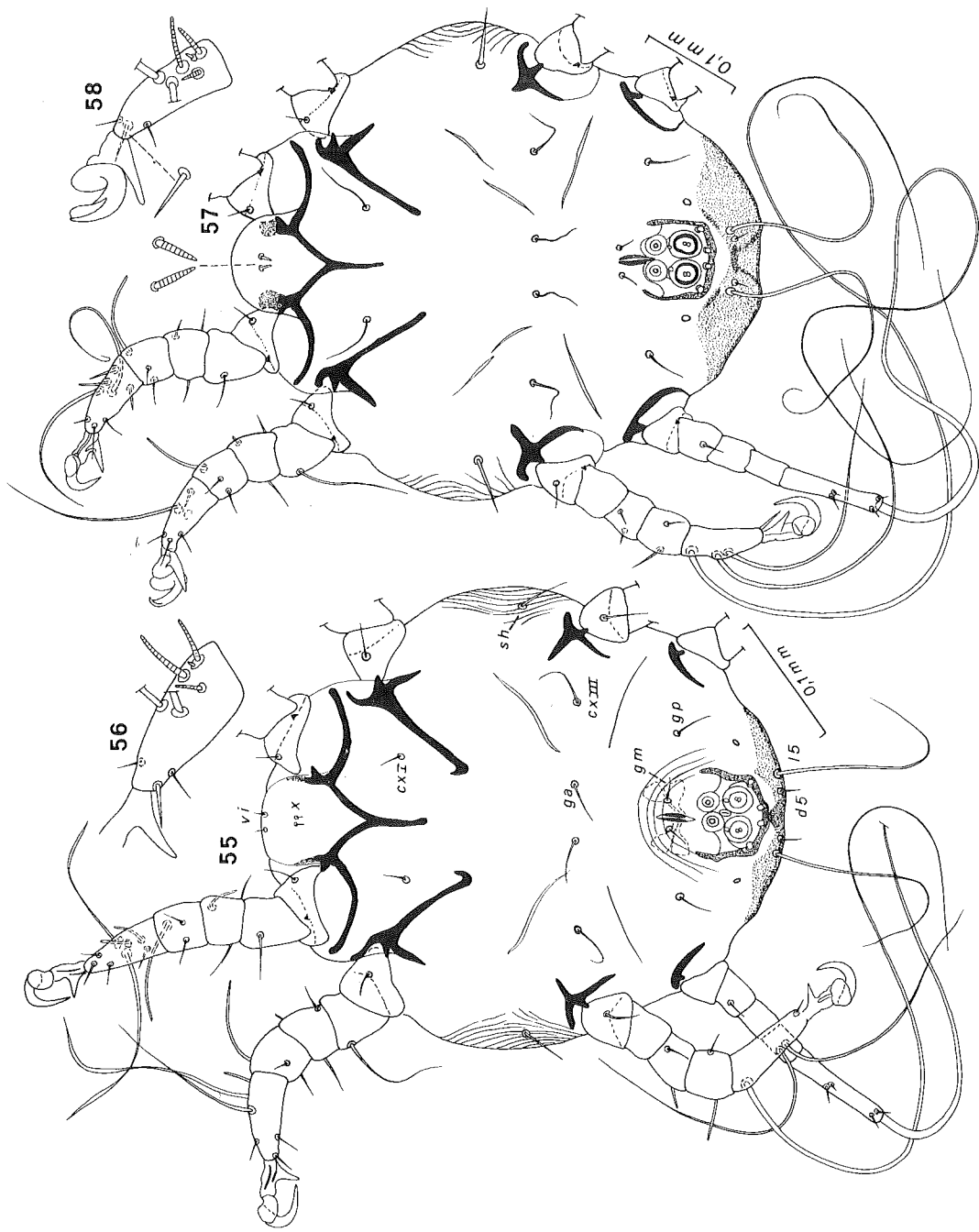
Host and locality: From adult *Xylocopa frontalis* from Argentina. Lectotype No. V 3105 and 1 paralectotype No. V 3067 in ZSM. The types of *S. donaldi* were collected from the same host in Trinidad. Type in the collection of F. Turk.

Remark: *S. donaldi* Turk was collected from *Xylocopa frontalis* in Trinidad. The original description and the figures correspond to Vitzthum's species and I think that it is a synonym of the latter.

38. *Sennertia (Amsennertia) frontalis* Vitzthum, 1941

Sennertia frontalis Vitzthum, 1941, p. 308 (Fig. 1)

I have examined three syntypes of this species



Figs. 55, 56. *Semertia (Afrosemertia) monicae* Fain, hypopus.

Fig. 55. Ventral view.

Fig. 56. Tarsus I.

Figs. 57, 58. *S. (A.) jeanalexi* Fain, hypopus.

Fig. 57. Ventral view.

Fig. 58. Tarsus I.

mounted on one slide. I designate as lectotype the specimens with the apical seta of tarsus IV broken at one side.

Lectotype hypopus: (Figs. 50, 52): Body 200 μ long, 141 μ wide (paralectotype 198 \times 145 μ). *Dorsum*: Hysteronotal shield 130 μ long and 66 μ wide with parallel sides. Setae *sc i*, *sc e*, *d 1*, *l 1*, *l 2*, *l 3* and *h* are 32 μ , 36 μ , 33 μ , 39 μ , 39 μ , 36 μ and 30 μ long respectively. Median sclerite of shield is 40 μ long. *Venter*: Sternum 18 μ . Suctorial plate 46 μ wide; anterior suckers 6 μ , posterior suckers 9 μ wide; lateral conoids distinctly more anterior than paramedian conoids. Setae *sh* thin 20 μ long; other ventral setae thin, with a small inflation at a short distance from the base. Setae *l 5* 35 μ long, 39 μ apart. Claws small (13–15 μ) Pretarsi I–III with a small triangular lateral projection. Tarsus IV as long as wide (7 μ) with a short ventral seta. Femur IV with a rather long seta (69 μ long). Tarsi I–II with an apicoventral conical spine and two thin pre-apicolateral setae; the two long dorsal setae are broadly foliate. Tarsus III with an apicoventral spine with a curved apex.

Host and locality: From adult *Xylocopa frontalis* from Argentina. Lectotype and two paralectotypes on the same slide No. V 3090. Types in ZSM.

Remark: The setae *v i*, *sc e*, *d 2* and *d 3* have been omitted in the drawing (Fig. 1) by Vitzthum.

39. *Sennertia* (*Amseennertia*) *americana* Delfinado & Baker, 1976

Sennertia americana Delfinado & Baker, 1976, p. 84 (Figs. 31–32)

This species is recognizable by the great development of *sc i* and *d 1* setae which are spinous and subequal, in contrast with the very small size of *d 2*–*d 4*. The dorsal shield is relatively short. Pretarsi I–III with thumb-like processes.

Host and locality: *Xylocopa virginica* from Albany, New York, USA. Holotype in USNM.

40. *Sennertia* (*Amseennertia*) *ignota* Delfinado & Baker, 1976

Sennertia ignota Delfinado & Baker, 1976, p. 85 (Figs. 33–34)

Dorsal shield and setae *sc i* and *d 1* as in *S.*

americana. This species differs from the latter by the size of *d 2* and *d 3* which are spines only slightly shorter than *d 1*. A thumb-like process is present in pretarsi I–III. Holotype in USNM.

Host and locality: *Xylocopa* sp. from Talara, Peru.

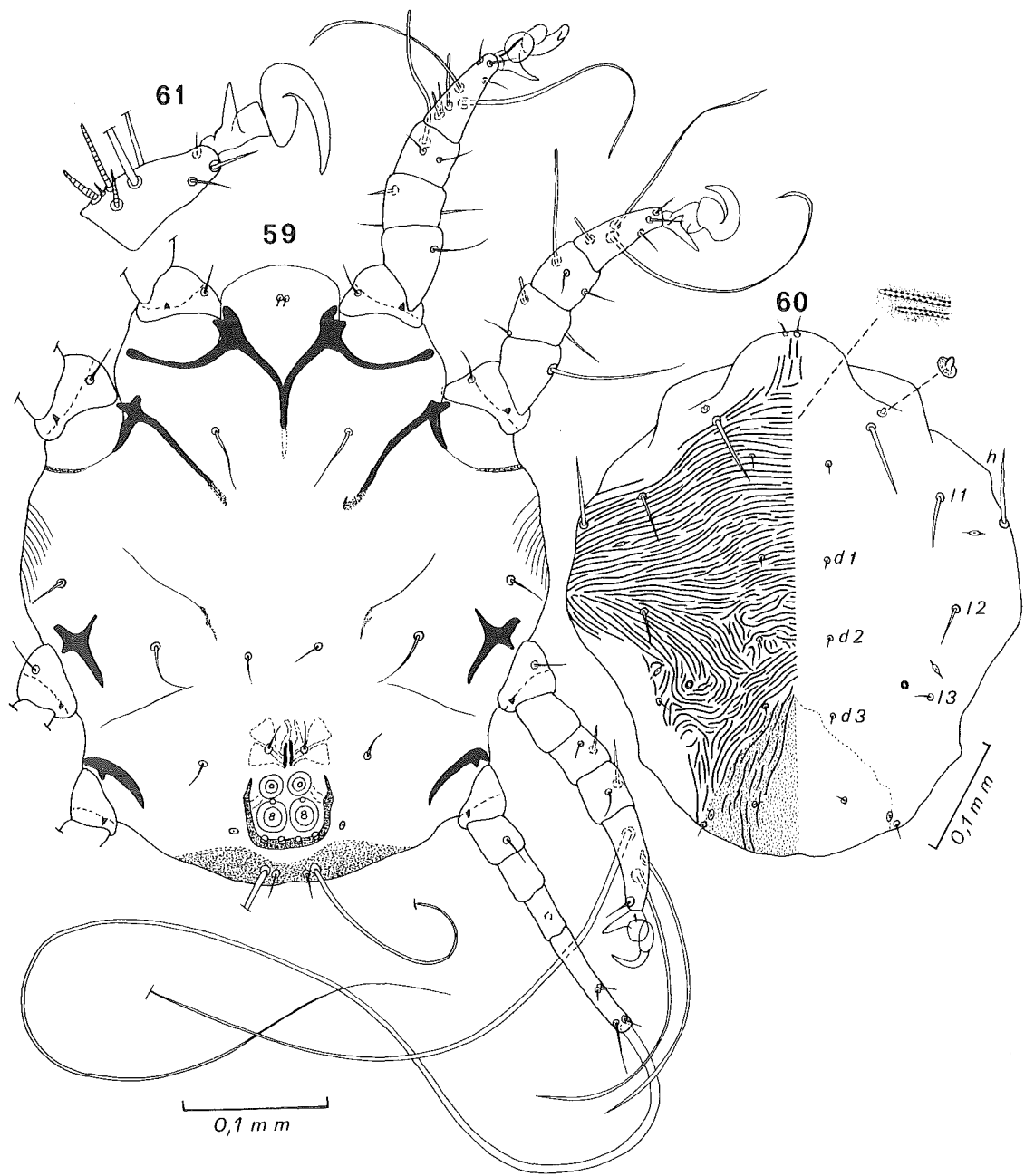
41. *Sennertia* (*Afroseennertia*) *monicae* Fain, 1971
Sennertia monicae Fain, 1971, p. 269

Hypopus (Figs. 53, 55, 56): Length of holotype 405 μ , width 330 μ . In two paratypes 402 $\mu \times$ 315 μ and 390 \times 312 μ . Posterior border of body rounded. *Dorsum*: Cuticular striations thin. Hysteronotal shield 150 μ long, maximum width 160 μ , without median sclerite. Setae *sc i* thin 12–15 μ long. Setae *sc e*, *l 1*, *l 2*, *l 3*, and *h* strong, 45 μ , 45 μ , 42 μ , 36 and 63 μ long respectively. Setae *l 5* thin, 150–170 μ long, 54–60 μ apart. *Venter*: Setae *sh* 30 μ long. Coxal and genital setae thin. Suctorial plate surrounded by a sclerotized frame 75 μ wide. Diameter of anterior suckers 15 μ , of posterior suckers 21 μ . Conoids small, the laterals distinctly separated from the paramedians, all situated on a slightly concave line. *Legs*: Claws very large (I and II 42–45 μ , III 40 μ). Pretarsi I–III with a triangular process 22–25 μ long, directed laterally. Tarsus IV 72 μ long, 15 μ wide, bearing four very short and one very strong, long apical setae. Tarsi I–II with three thin and short subapical setae and two much stronger and longer unequal setae narrowly leaflike in their apical third. Tarsus III with three long simple setae and one thin and short (15 μ) apico-ventral seta. Solenidia of tarsus I relatively short: $\omega 1$ 19 μ , $\omega 3$ 27 μ and $\omega 2$ 15 μ . Famulus very small.

Host and locality: holotype and 12 paratypes, all hypopi, from *Mesotrichia inconstans* from Uvira, Kivu (Zaire). Holotype in MRAC.

42. *Sennertia* (*Afroseennertia*) *jeanalexi* Fain, 1971
Sennertia jeanalexi Fain, 1971, p. 269

Hypopus (Figs. 54, 57, 58): Length of holotype 534 μ , width 465 μ . In two paratypes: 525 $\mu \times$ 460 μ and 558 $\mu \times$ 470 μ . Posterior border of body not incised. *Dorsum*: Cuticular striations thick. Hysteronotal shield 170 μ long, 240 μ wide, without median sclerite. Setae *sc i* thin, 8 μ long. Setae *sc e*, *l 1*, *l 2*, *l 3*, strong and 120 μ , 114 μ , 100 μ and 88–99



Figs. 59-61. *Semertia (Afrosennertia) basilewskyi* Fain, hypopus.
Fig. 59. Ventral view.
Fig. 60. Dorsal view.
Fig. 61. Tarsus I.

μ long respectively. Setae *l 5* 360 μ long, 60 μ apart. *Venter*: Setae *sh* thin, 48 μ ; other ventral setae thin. Suctorial plate surrounded by a sclerotized frame 80 μ wide. Diameter of anterior suckers 21 μ , of posterior suckers 30 μ . Conoids small situated along a slightly concave line. *Legs*: Claws very large (I-II 50–58 μ long, III 45–50 μ). Pretarsi I-III with a long triangular process. Tarsi IV 105 μ long, 21 μ wide at base, bearing four very small setae and one strong and very long apical hair. Tarsi I-II with three thin and short pre-apical setae and two stronger, much longer and not leaflike setae. Tarsi III with two long, one very long and one very small setae. Solenidia of tarsus I short.

Host and locality: (1) Holotype and 14 paratypes, all hypopi, from *Mesotrichia (Koptorthosoma) nigrita* (σ) from river in Bubulu, near Mvungu, Mayumbe, Zaïre (coll. P. Elsen), (2) From *M. lepeletieri* from Bambesa, N.Zaïre (one paratype). Holotype in MRAC.

Remarks: This species is distinguished from *S. queenslandica* and *S. monicae* by the structure of the cuticular striations, thick and punctate, and by the shape of the dorsal shield which is much wider posteriorly.

43. *Sennertia (Afrosennertia) basilewskyi* Fain, 1971

Sennertia basilewskyi Fain, 1974, p. 215

Hypopus (Figs. 59-61): Holotype 435 μ long and 375 μ wide. In two paratypes: 450 $\mu \times$ 350 μ and 432 $\mu \times$ 370 μ . *Dorsum*: Cuticular striations thick, punctate and very unequal in length. Hysteronotal shield very short, triangular, wider (150 μ) than long (135 μ), without longitudinal sclerite. Setae *sc i* very small; the *sc e*, *l 1*, *l 2*, *l 3*, *l 5*, and *h* are 57 μ , 45 μ , 25 μ , 10 μ , 150–200 μ and 60 μ long. Setae *l 5* 36 μ apart. *Venter*: Sternum 40 μ long. All ventral setae thin, *sh* 21 μ . Suctorial plate surrounded by a sclerotized frame 65 μ wide. Anterior suckers 15 μ wide, posterior suckers 21–24 μ wide; conoids small equidistant and situated on a straight line. *Legs*: Claws I and II 54 μ and 51 μ long. Pretarsi I-III with a long and narrow projection. Tarsus IV 84 μ long and 15 μ wide at its base, bearing five setae (four thin and short, and one apical strong and very

long). Tarsi I-II with three short and thin apical or subapical setae and two long medio-dorsal setae very narrowly foliate apically. Tarsi III with a ventro-apical thin and short seta, two long and strong unequal medio-dorsal setae and one dorso-basal very long seta. Posterior setae of genua I and II subequal. On tarsus I solendion $\omega 3$ is situated in basal half of tarsus and is only 1.5 times longer than $\omega 1$.

Host and locality: Holotype hypopus from a Megachilidae from Bambesa, Uélé Region, N.Zaïre (bee in the MRAC, No. M 42); two paratype hypopi, one from *Chedron nigrihirtum* from Dingila, Uélé, Zaïre (V 1933), and one from *Mesotrichia africana* from Bambesa, Uélé, Zaïre (bee collected by H. Bredo, VIII.1933, No. 136517). Holotype in MRAC.

Remarks: This species possesses thick cuticular striations as in *S. jeanalexi*. It is distinguished from it by the smaller development of the dorsal setae especially the *l 3* seta which is very thin and very small but is a long spine in *S. jeanalexi*.

Species of *Sennertia* inadequately described

The types of the following species were not available for our study as they are not recognizable from their original description or figures.

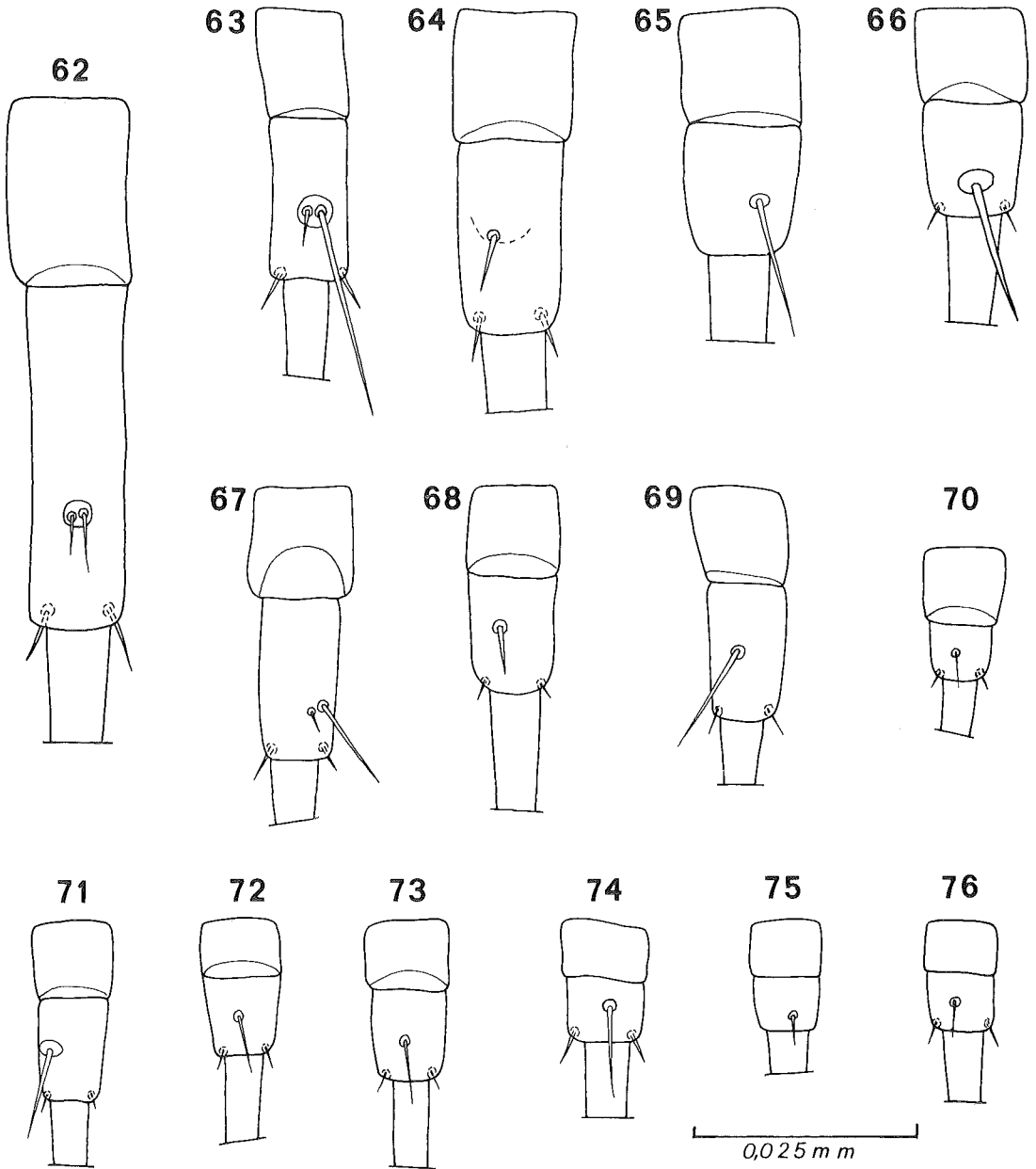
44. *Sennertia bifilis* (Canestrini, 1897)

Trichotarsus bifilis Canestrini, 1897, p. 474

Sennertia bifilis, Vitzthum, 1919, p. 61; Womersley, 1941, p. 480 (Fig. 17)

Canestrini only gave a short diagnosis of this species, without figures. According to this diagnosis the hypopus is 240 μ long, 180 μ wide. General aspect as in *S. cerambycina* (Scopoli). Dorsal spines thick. Tarsus IV with two long setae, one very long, the other about one third the length. There are three rows of suckers, the posterior (= our conoids) formed of four equal suckers, the median with two suckers equal in size to the posterior ones and the anterior also formed of two suckers but very small.

The host is *Xylocopa combinata*, the locality: Erima, Astrolabe Bay, New Guinea. Womersley (1941) tentatively attributed several specimens col-



Figs. 62-76. Tarsus and tibia IV, in ventral view, in hypopi.

- Fig. 62. *Semertia (Asiosemertia) vitzthumi* Fain.
- Fig. 63. *S. (A.) delphinodae* Fain.
- Fig. 64. *Semertia (Semertia) scapensis* Fain.
- Fig. 65. *S. (S.) cerambycina* (Scopoli).
- Fig. 66. *S. (S.) mesotrichia* Fain.
- Fig. 67. *S. (S.) congoicola* Fain.
- Fig. 68. *S. (S.) scutata* Fain.

- Fig. 69. *S. (S.) caffra* Vitzthum.
 - Fig. 70. *S. (S.) latipilis* Fain.
 - Fig. 71. *S. (S.) elseni* Fain.
 - Fig. 72. *S. (S.) benoiti* Fain.
 - Fig. 73. *S. (S.) dalyi* Fain.
 - Fig. 74. *S. (S.) simplex* (Trägardh).
 - Fig. 75. *S. (S.) spinifera* Fain.
 - Fig. 76. *S. (S.) ceratinarum* Fain.
- (All drawings to the same scale.)

lected from *Mesotrichia bryorum* from Moa Id, Torres Straits, Queensland, to *S. bifilis*.

45. *Sennertia dissimilis* Zachvatkin, 1941

Sennertia dissimilis Zachvatkin, 1941, p. 531 (figs. 658 to 660, 665)

According to Zachvatkin, this species is very similar to *S. cerambycina* but the body is smaller and narrower (224 μ to 255 μ long), the dorsal shield is narrower (twice as long as wide and with parallel sides), the dorsal setae are shorter, there is no process on pretarsi I-III, the incurved lanceolate posterior pre-apical seta of tarsi I-II is replaced by a straight seta, the *l* 2 is longer than *sc e*, and the ventral seta of tarsus IV is distinctly longer than this tarsus.

Host and locality: From *Xylocopa dissimilis* from Japan. Holotype in ASL.

46. *Sennertia egyptiaca* Elbadry, 1971

Sennertia egyptiaca Elbadry, 1971, p. 87 (Figs. 1, 2)

This species is closely related to *S. cerambycina* (Scopoli) but it differs from it in the shape of the dorsal shield, which is narrower and has a pointed anterior end, the (?) absence of long setae on femur I, while femur II has long setae, the different shape of the external apical seta of tarsi I-II which is neither sharply bent nor thickened. Length of body 280 μ , width 228 μ .

Host and locality: From *Xylocopa aestuans* from Egypt. Holotype in ESE

47. *Sennertia indica* Delfinado & Baker, 1976

Sennertia indica Delfinado & Baker, 1976, p. 87 (Figs. 35, 36)

This species is 325 μ long and 255 μ wide. It belongs to the group 'cerambycina'. According to the description and the drawings, the shield is 1.8 times as long as wide, pretarsi I-III have no process, suctorial plate is of medium size with anterior suckers only slightly smaller than posterior suckers, ventro-apical seta of tarsi I-III is thin, setae of trochanters I-II are thin, posterior setae of genua I-II are subequal, tarsus IV is very short and its ventral seta is not longer than this tarsus, solenidia *alpha* are long.

Host and locality: From *Pithitis binghami* from India. Holotype in USNM

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