Greenideinae from Java (Homoptera: Aphididae)

D. Noordam

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Descriptions are given of 10 genera and subgenera, and 33 species, with keys to the apterae and alatae viviparae. The following new species are described: *Eutrichosiphum glabrum* spec. nov., from *Quercus gemelliflora* Bl., and *Q. glauca* Thunb.; *E. nigrum* spec. nov. from *Castanopsis javanica* (Bl.) DC., and *Lithocarpus Bennettii* (Miq.) Rehd.; *E. pallidum* spec. nov., from *Castanea crenata* Sieb. & Zucc.; *E. pullum* spec. nov., from *Castanopsis acuminatissima* (Bl.) A. DC., and *C. argentea* (Bl.) DC.; *Greenidea maculata* spec. nov., from *Syzygium antisepticum* (BL.) Merr. & Perry; *G. magna* spec. nov., from *Castanea crenata* Sieb. & Zucc., *Castanopsis* spec., *C. acuminatissima* (Bl.) A. DC., *C. argentea* (Bl.) DC., *C. javanica* (Bl.) DC.; *G. (Trichosiphum) castanopsidis* spec. nov., from *Castanopsis acuminatissima* (Bl.) DC.; *G. (Trichosiphum) fulva* spec. nov., from *Bridelia monoica* (Lour.) Merr.; *G. (Trichosiphum) nigricans* spec. nov., from *Syzygium lineatum* Merr. & Perry, *S. racemosum* (Bl.) DC., and *S. syzygioides* (Miq.) Amsh.; *G. (Trichosiphum) pallidipes* spec. nov., from *Castanea crenata* Sieb. & Zucc., *Castanopsis argentea* (Bl.) DC., *C. javanica* (Bl.) DC., *Lithocarpus Bennettii* (Miq.) Rehd., and *Quercus glauca* Thunb.; *Greenideoida fransseni* spec. nov., from *Bridelia monoica* (Lour.) Merr.; *Mesotrichosiphum brevisetosum* spec. nov., from *Lithocarpus Bennettii* (Miq.) Rehd.; *Mollitrichosiphum (Metatrichosiphon) syzygii* spec. nov., from *Syzygium antisepticum* (Bl.) Merr. & Perry. Neotypes are designated for *Greenidea (Trichosiphum) psidii* van der Goot, 1917; *Greenideoida elongata* van der Goot, 1917; *Schoutedenia lutea* (van der Goot, 1917), and *S. viridis* (van der Goot, 1917).

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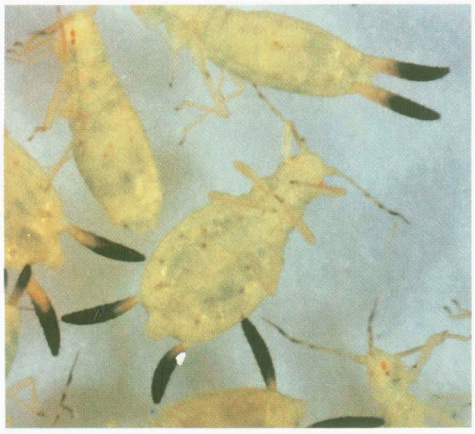

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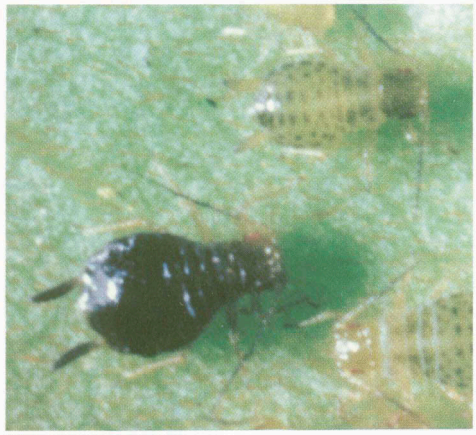

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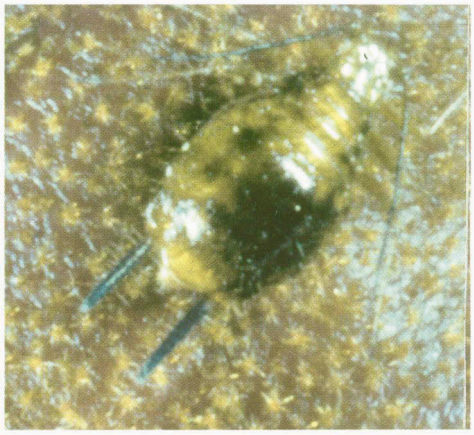

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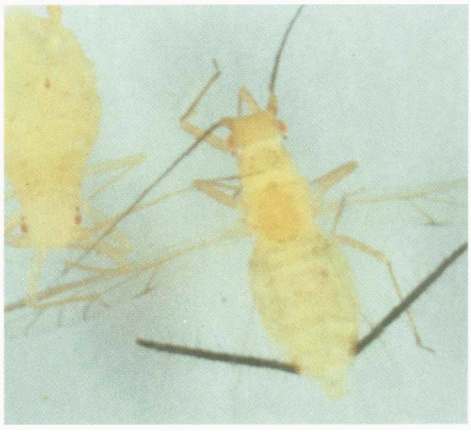

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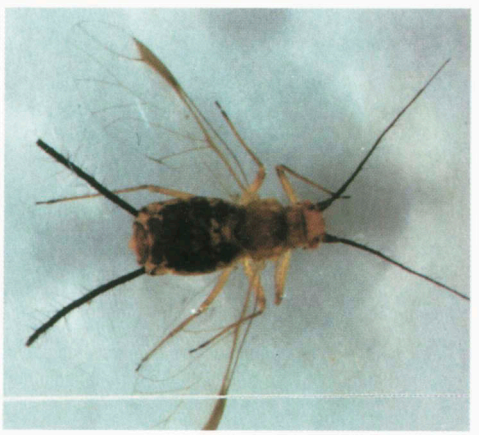

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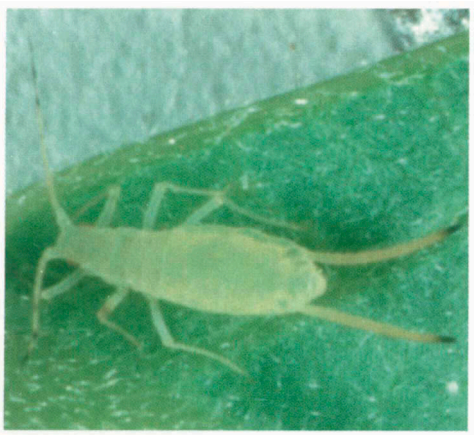

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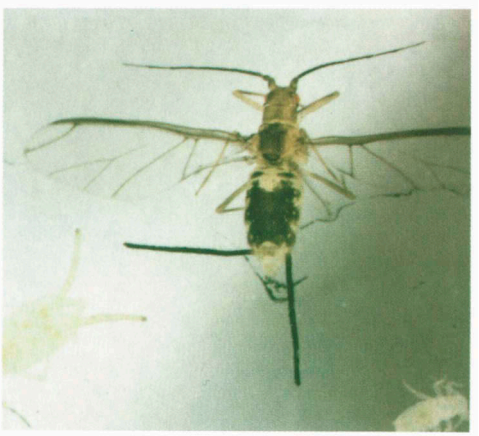

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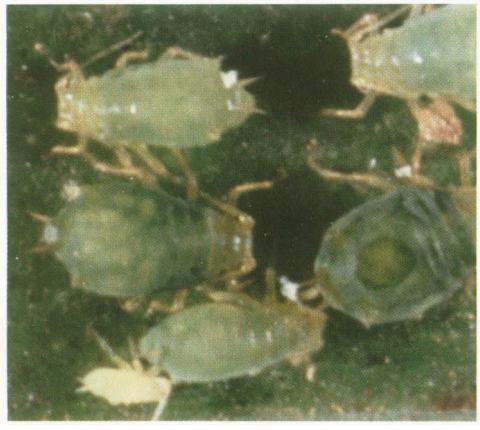

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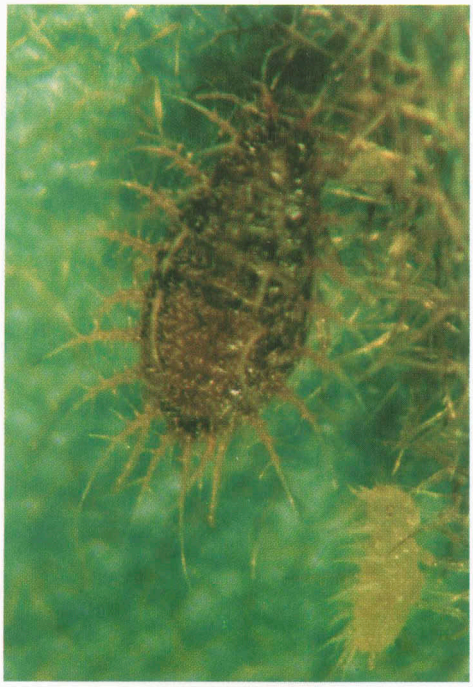

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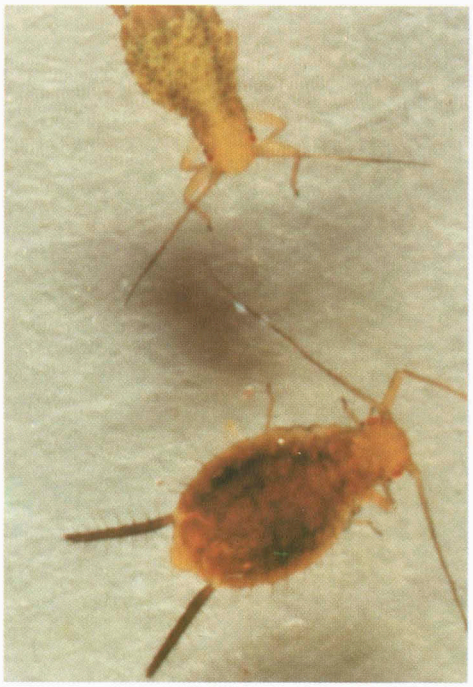

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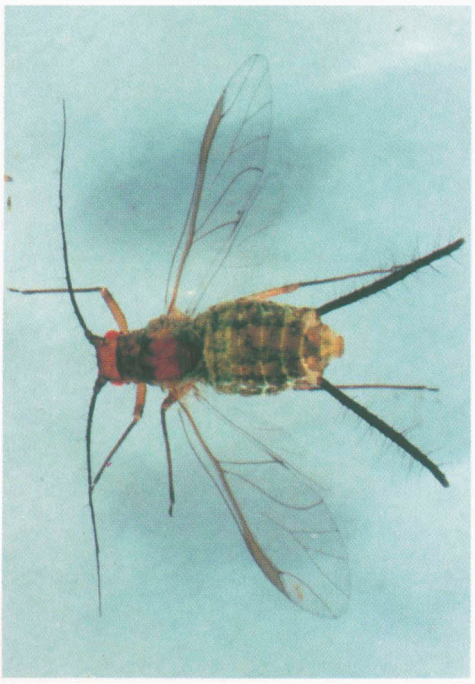

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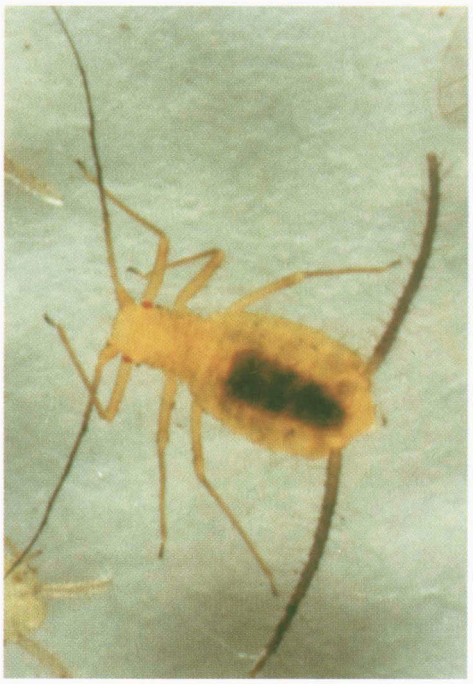

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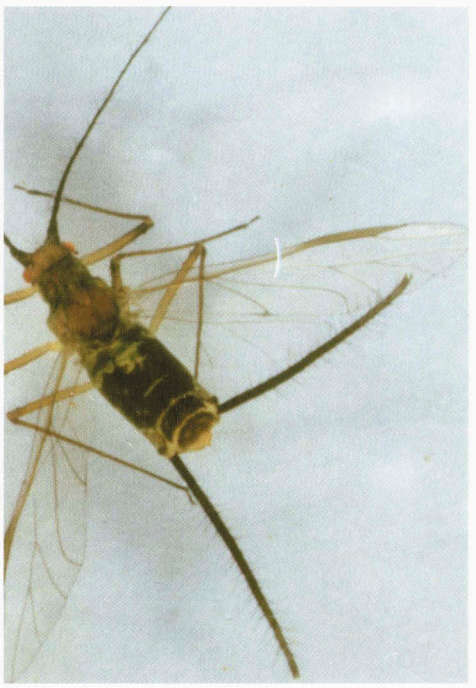

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Pl. 31. *Mollitrichosiphum tenuicorpus* (Okajima)

Pl. 32. *Mollitrichosiphum tenuicorpus* (Okajima)

Captions to colour plates

Pl. 1. *Cervaphis schouteniae* van der Goot, 1917, apterous viviparous ♀ on a leaf of *Microcos tomentosa* J.E. Smith. The aphids are white or pale yellow, with on the middle of each segment a pale brown spot, which together form a line in length. The long branched processi and the siphunculi are white, extending far from the body. The siphunculi are very pale brown. Magnification × 24.
Pl. 2. *Eutrichosiphum glabrum* spec. nov., apterous viviparous ♀♀ on leaf of *Quercus glauca* Thunb. Head, thorax and abdomen pale brownish yellow, on the pronotum with a pleural orange spot; on the mesonotum and metanotum and on the five anterior abdominal segments an orange transversal band; on the sixth abdominal segment pleurally to the siphunculi only one orange spot. Eyes red, the ocular tubercle is seen as a black spot. Antennae pale brownish orange, but around the distal rhinarium and the end of the processus terminalis black. Legs almost colourless, the tarsi black. Siphunculi brownish orange, the distal 0.2-0.7 black. Magnification × 17.
Pl. 3. *E. heterotrichum* (Raychaudhuri, 1956), apterous viviparous ♀♀ on a shoot of *Lithocarpus glaber* (Thunb.) Makino. Head orange brown, distal part of the pronotum, the mesonotum, metanotum and abdomen almost black. Eyes red. Antennae pale brown, the processus terminalis black. Legs pale brown or orange brown, the tarsi slightly darker. Siphunculi black. Cauda grey or blackish. The body of the larvae dark greenish black with a darker spot between the siphunculi. Magnification × 20.
Pl. 4. *E. nigrum* spec. nov., apterous viviparous ♀♀ on a leaf of *Lithocarpus Bennettii* (Miq.) Rehd. The body shiny black, sometimes somewhat spotted, on thorax and abdomen some transparant spots. The base of the antennae and the fore legs slightly paler. Siphunculi less shiny than the body, brownish black or dark greenish black. Smallest larvae also black, but head, thorax and legs paler. Magnification × 18.
Pl. 5. *E. pasaniae* (Okajima, 1908), apterous viviparous ♀ on a leaf of *Castanopsis acuminatissima* (Bl.) Rehd. Head anterior to the eyes dirty white or brown, thorax and abdomen olive-green, marbled brown or almost black, dull or semi-gloss. Eyes red. Antennae, the base and the end black, in the middle pale brown. Legs pale brown, the tarsi darker. Siphunculi black. Cauda black. Smallest larvae yellowish with greyish margins and four transversal rows of greyish spots on the abdomen; head antennae, legs and siphunculi grey. Later larval stages dirty green. Magnification × 20.
Pl. 6. *E. pasaniae*, alate viviparous ♀. Head grey or greyish brown. Abdomen marbled black. Femora pale brown, distally darker, tibiae basal part white or brown, the distal end darker, grey or dark grey as the tarsi. Eyes red. Antennae black, but segment III paler, and segments IV and V sometimes very pale grey, and the processus terminalis white. Siphunculi black, the end paler, sometimes greyish brown. Cauda black. Pterostigma black. Photographed some seconds after immersing in alcohol. Magnification × 20.

Pl. 7. *E. sinense* Raychaudhuri, 1956, apterous viviparous ♀♀. Head and thorax pale yellowish brown, mixed with pale green, the abdomen pale green or green with some brown. Eyes red. Antennae pale brown or whitish, the distal part of segments III, IV and V grey or even blackish. Legs pale brown, the distal part of the tarsi grey. The basal 0.2-0.7 of the siphunculi pale brown or brown, the distal part gradually darker, turning to black. Cauda same colour as the abdomen. First stage larvae pale green with six transverse rows of gey spots, the head paler green. Later larval stages bright green. Photographed some seconds after immersing in alcohol. Magnification × 20.
Pl. 8. *Greenidea rappardi* Raychaudhuri, 1956, apterous viviparous ♀♀ on a branch of *Scurrula* spec. Shiny brown, the brown of head, thorax and abdominal segment of the siphunculi paler. Eyes red, ocular tubercle black. Antennal segments I-III the same colour as the head, but the distal end of segment III darker, and the rest of the antennae black. Legs pale orange-brown. Siphunculi pale orange-brown, the distal 0.2 black. Cauda brownish yellow, paler than the posterior abdominal segments. Smallest larvae yellow, the margins bright green, the siphunculi greyish brown. Larger larvae green or the middle pale brown, sometimes with grey spots, and a large spot between the siphunculi. Magnification × 16.
Pl. 9. *G. (Trichosiphum) anonae* (Pergande, 1906), apterous viviparous ♀ on a leaf of *Annona muricata* Linnaeus. Head and prothorax brown, metathorax fading into black, the abdomen shiny black. Eyes

red, the ocular tubercle black. Antennal segments I-III brown, the rest black. Legs rather pale brown, the tarsi darker. Siphunculi black, but the base somewhat brownish. Cauda pale brown. Larvae green, the head pale brown, the body with rows of brown spots, and a rectangular brown spot between the siphunculi. Magnification × 20.

Pl. 10. *G. (Trichosiphum) flacourtiae* van der Goot, 1917, apterous viviparous ♀ on leaf of *Distylium stellare* O.K. Head pale brown, abdomen shiny brown. Eyes red, ocular tubercle black. Antennal segments I-III brown, but segment III distally blackish, the base of segment IV brown, the rest of the antennae black. Basal half of the siphunculi brown, the rest black. Cauda pale brown. Larvae green abdomen, with rows of dots and a larger brown spot anterior to the siphunculi in the middle. Magnification × 20.

Pl. 11. *G. (Trichosiphum) fulva* spec. nov., apterous viviparous ♀, on a leaf of *Bridelia monoica* (Lour.) Merr. Head, thorax and abdomen wholly yellow, pale brown or dirty whitish, with red points, the eyes of internally present embryos. Eyes red, ocular tubercle black. Antennae yellow, last segment around the rhinarium black or grey, processus terminalis grey. Legs whitish yellow, the end of the second tarsal segments black. Siphunculi pale brown or orange brown usually with black ends. Cauda white or yellow. Magnification × 20.

Pl. 12. *G. (Trichosiphum) fulva*, alate viviparous ♀ (and apterous viviparous ♀, see Pl. 11). Head and thorax pale orange brown. Eyes red, ocular tubercles black. Antennal segments I and II and the basal 0.1 of segment III same colour as the head, the rest black. Legs orange brown, the tibiae and tarsi darker, especially the distal part of the tibiae. Abdomen yellow with about five, not sharply bordered, pale grey transverse bands. Siphunculi black. Cauda yellow. Prostigma pale grey. Photographed some seconds after immersing in alcohol. Magnification × 18.

Pl. 13. *G. (Trichosiphum) nigricans* spec. nov., apterous viviparous ♀ ♀. On sprout of *Syzygium syzygioides* (Miq.) Amsh. Head pale brown, body shiny dark brown or blackish brown. Eyes red. Antennal segments I, II and the basal part of segment III pale brown, the rest of the antennae black. Legs pale brown, the tarsi dark grey. Siphunculi black. Cauda dirty white or pale brown. Larvae green with brown hairs; head and cauda pale brown; siphunculi of smallest larvae grey, in larger larvae black, a somewhat brown spot anterior to the siphunculi and a median spot faintly observable or lacking. Magnification × 20.

Pl. 14. *G. (Trichosiphum) pallidipes* spec. nov., apterous viviparous ♀. Head, thorax, margins of the abdomen, abdominal segments VII and VIII, and the cauda pale brown; central area of the abdomen shiny dark brown. The head and thorax sometimes with a greenish tinge. Eyes red, ocular tubercle black. Antennal segments I, II and III as the head, the end of segment III and the rest of the antennae darker, brown or blackish, the processus terminalis paler than the base. Legs pale brown, distal part of the second tarsal segments blackish. Siphunculi brown, the base paler, the distal part darker. Larvae green, larger larvae with grey spots; antennae with pale brown, the basal part of the last segment paler than the rest; siphunculi brown, slightly darker towards the end. Photographed some seconds after immersing in alcohol. Magnification × 20.

Pl. 15. *G. (Trichosiphum) psidii* van der Goot, 1917, apterous viviparous ♀ on a leaf of *Eucalyptus torelliana* F. v. Muell. Head and thorax pale brown, abdomen shiny brown, frequently two darker transverse bands on the middle of the abdomen and a dark patch in the middle on segments V-VII, with a paler patch behind (see fig. 328). Eyes red, the ocular tubercles dark red. Antennae pale brown, the part with the rhinaria on segments V and VI darker. Legs pale brown. Siphunculi base and end brown or black, darker than the middle part. Cauda pale brown or whitish. Smallest larvae whitish, later stages anterior part of the abdomen brown with green, the posterior part brown or orange. Magnification × 20.

Pl. 16. *G. (Trichosiphum) psidii*, alate viviparous ♀. Head, mesothorax, and area on the middle of tergites I and II, and an area anterior to the base of the siphunculi, the cauda and an area antero-laterally to the cauda fairly pale brown; the prothorax brown with a green hue. Antennae, siphunculi, abdomen, knees, the distal ends of the tibiae and the tarsi black. Eyes red, ocular tubercles darker red. Pterostigma bownish grey. Photographed some seconds after immersing in alcohol. Magnification × 17.

Pl. 17. *Greenideoida elongata* van der Goot, 1917, apterous viviparous ♀ on the lower side of a leaf of

Bridelia monoica (Lour.) Merr. Head, thorax and abdomen white or pale yellow. Eyes red, the ocular tubercles slightly darker. Antennae white with three black rings, namely at the distal 0.1 of segment III, and around the rhinaria of segments IV and V; the end of the processus terminalis also black. Legs white, the tarsi darker. Siphunculi pale brown, gradually darker towards the distal part, the end black. Magnification × 16.

Pl. 18. *G. elongata*, alate viviparous ♀. Head and prothorax grey, mesothorax brownish grey, abdomen in the middle anteriorly and posteriorly a whitish yellow spot, and the area between these spots pale to dark grey or almost black. Around the siphunculi and anterior to this three whitish yellow spots. Eyes red. Antennae black. Legs grey. Siphunculi black. Cauda whitish yellow. Rostrum white with black end. Pterostigma dark grey. Photographed some seconds after immersing in alcohol. Magnification × 17.

Pl. 19. *Mollitrichosiphum (Metatrichosiphon) syzygii* spec. nov., apterous viviparous ♀♀. Head and thorax pale brown or brown, margins of the abdomen and the posterior part of the abdomen pale brown, on the middle of the abdomen a shiny brown patch, which is sometimes lacking . Eyes red, ocular tubercles black. Antennal segments I-III the same colour as the head, segment V and the distal part of segment IV darker. Legs the same colour as the head. Siphunculi grey or brown, usually darker than the lateral sides of the abdomen. Also smaller specimens occur with relatively shorter siphunculi, with a shiny dark brown or brownish black abdomen. Larvae white, later dirty yellow or green with grey spots, with a hair in the centre of each spot. Photographed some seconds after immersing in alcohol. Magnification × 17.

Pl. 20. *Pentatrichosiphum luteum* Basu, 1969, apterous viviparous ♀ on the lower side of a leaf of *Litsea amara* Bl. Head, thorax and abdomen yellow or yellowish white. Eyes red, ocular tubercles black. Antennae colourless, with three grey to black rings, namely the part with the rhinaria of the penultimate and last segment, and the distal part of the processus terminalis. Siphunculi colourless, but just anterior to the flange greyish black or violet red. Cauda yellowish white. Magnification × 16.

Pl. 21. *Schoutedenia lutea* (van der Goot, 1917), apterous viviparous ♀ on the lower side of a leaf of *Securinega virosa* (Willd.) Pax & Hoffm. Wholly yellow. Eyes red. Antennae same colour as the head, but the end of antennal segments IV and V black. Tarsi black. Siphunculi the same colour as the body. Processi on tergite VII yellow or yellowish white. Magnification × 20.

Pl. 22. *S. lutea*, alate viviparous ♀. Head brown or grey. Prothorax pale brown. Mesothorax brown, Abdomen yellow. Eyes red. Antennae black. Legs black, base of the femora sometimes paler. Siphunculi grey. Processi on tergite VII black. Veins of the fore wing bordered brown. Photographed some seconds after immersing in alcohol. Magnification × 20.

Pl. 23. *S. viridis* (van der Goot, 1917), apterous viviparous ♀♀ on a branch of *Breynia microphylla* (Kurz) M.A. Head pale brown or yellow; abdomen green or yellow, sometimes marbled, the green may be rather yellow or distinctly green. Eyes red. Antennal segments I, II and the basal half of segment III whitish, the rest grey to black. Legs dirty yellow or pale brown. Siphunculi grey brown. Processi on tergite VII pale brown. Cauda yellowish. Larvae dirty yellow when small, the larger specimens gradually with more green or remaining yellow. Magnification × 20.

Pl. 24. *S. viridis*, alate viviparous ♀. Head brown or grey. Mesonotum brown or black. Abdomen yellow with green. Eyes dark red. Antennae black, the last segment sometimes paler. Legs grey or black, the base of the femora sometimes paler. Siphunculi and processi on tergite VII black. Last stage larvae sometimes more green than the apterae, on the thorax strikingly green at the base of the wing pads. Photographed some seconds after immersing in alcohol. Magnification × 20.

Pl. 25. *Cervaphis rappardi* Hille Ris Lambers, 1956, apterous viviparous ♀ on a leaf of *Erycibe grandiflora* Adelb., with three-furcate hairs on the leaf. The aphid is brownish with some green on the anterior part of the body, and presumably usually darker than *C. schouteniae*. All around the body the branched pale brown processi are far extending, as are the long pale brown siphunculi. The body is speckled with short, pale brown unbranched processi. Even the long pale brown pleural processi of the metathorax and abdominal segment II are visible, running parallel to the lateral sides of the body; but these processi may be very much reduced in size (Hille Ris Lambers, 1956: 133). Magnification × 18.

Pl. 26. *Greenidea ficicola* Takahashi, 1921, apterous viviparous ♀. The median processus of the cauda is a characteristic which distinguishes the genus *Greenidea* from other genera of Greenideini but is frequently only observable by microscope. Head and prothorax brownish yellow or brown. Eyes red, the ocular tubercle darker. Colour of the antennae same as the head but distal part grey or black. Legs brownish yellow, the tarsi near the claws black. The abdomen shiny brown, the borders, and the segment between the siphunculi paler. Siphunculi brown or black, the basal 0.2 paler. Cauda pale brown. Larvae pale brown, the thorax and abdomen with green, on each segment of the abdomen six grey spots each with a hair in the centre. Photographed some seconds after immersing in alcohol. Magnification 20 ×.
Pl. 27. *G. ficicola*, alate viviparous ♀. Head pale brown, pronotum and mesonotum brown, darker than the head. Eyes red, ocular tubercle darker. Antennae black. Abdomen dark green or black, and only the transverse borders of the segments green; around the siphunculi white. Legs brown, the knees, the distal part of the tibiae and the tarsi black. Cauda pale brown. Pterostigma brownish grey or brownish black. Photographed some seconds after immersing in alcohol Magnification × 16.
Pl. 28. *G. maculata* spec. nov., apterous viviparous ♀. Head and borders of the body orange brown, the middle of the abdomen brown. Eyes red. Antennal segments I, II and the basal 0.7 of segment III orange brown, the rest of the antennae black. The basal 0.1 of the siphunculi orange brown, the rest black. The long antennae and the cauda process are distinctive characters in life from *Mollitrichosiphum (Metatrichosiphon) syzygii*. Photographed after immersing in lactic acid. Magnification 20 ×.

Pl. 29. *G. magna* spec. nov., apterous viviparous ♀ on a branch of *Castanopsis acuminatissima* (Bl.) A.DC. The body pale green, green or brownish, the head paler; on the distal abdominal segments in the middle a brown spot. Eyes red, ocular tubercle black. Antennal segments I-IV brown, the rest black. Femora whitish, tibiae and tarsi brown or black. Siphunculi pale brown or brown, the distal end black. Cauda orange brown or brown. Photographed some seconds after immersing in alcohol. Magnification × 18.
Pl. 30. *G. magna*, alate viviparous ♀. Head and mesonotum brown. Abdomen green,and between the siphunculi and each of the three segments anterior to this with a blackish brown spot, a green transverse line between the segments in the middle, the lateral sides black, around the siphunculi white. Eyes red, the ocular tubercle darker. Antennae black. Base of the femora brown, the rest of the legs black. Siphunculi black, but distally dark grey. Cauda pale orange brown. Pterostigma greyish brown. Photographed some seconds after immersing in alcohol. Magnification × 16.
Pl. 31. *Mollitrichosiphum tenuicorpus* (Okajima, 1908), apterous viviparous ♀ on the lower side of *Castanopsis cuspidata* Schottky. Head pale brown. Prothorax, mesothorax and metathorax pale brown with a green line along the lateral sides. Abdomen pale brown, with a green line along the lateral sides and one in the middle; sometimes mesothorax, metathorax and abdomen greyish green. Eyes red, ocular tubercles black. Antennal segments I, II and the base of segment III pale brown, the rest of the antennae blackish or paler, and the processus terminalis grey. Legs brown, the tarsi black. The base of the siphunculi brown or blackish, the rest black, or the end of the siphunculi is slightly paler. Cauda greyish green. Smallest larvae with the head,body and siphunculi white, with some yellow anterior to the siphunculi, and only small green spots; antennae and legs pale brown. Magnification × 17.
Pl. 32. *M. tenuicorpus*, alate viviparous ♀ on the lower side of a leaf of *Castanopsis cuspidata* Schottky. Head, prothorax and mesothorax brown, the lateral sides of prothorax and mesothorax and the base of the wings green. Abdomen black, near to the base of the siphunculi green. Eyes red, ocular tubercles black. Antennal segments I and II brown, the rest of the antennae black. Legs brown, paler than the head, but the end of the tibiae black. Pterostigma black. Magnification × 17.

Introduction

This is the fourth part of the series on the aphids of Java. The first part was published in 1985 (Noordam & Hille Ris Lambers, 1985), the second part in 1986 (Noor-

dam, 1986), and the third part in 1991 (Noordam, 1991). Thirty-three species of Greenideinae are described in this paper, almost one fifth of the Javanese aphid fauna. By the presence of processes on the body, the genera *Cervaphis* and *Schoutedenia* are separated from all other Javanese genera, all belonging to the tribe Greenideini, which only have processes on the body in the first stage larvae. *Cervaphis* includes three Javanese species, living on hairy woody plants of Sterculiaceae, Tiliaceae and Convolvulaceae. *Schoutedenia*, of which genus two species are described from Java, lives on shrubs or trees of Euphorbiaceae with glabrous leaves. There is a difference in opinion on whether one or more of the five species described are synonyms, see Ghosh, Ghosh & Raychaudhuri (1972), Remaudière (1972), and in the current publication the discussion on *S. lutea*. The 28 other Javanese species belong to six genera of the tribe Greenideini which are striking by their spindle-shaped or cylindrical siphunculi with numerous hairs. They live on woody plants, 13 species on Fagaceae, the other species on Annonaceae, Euphorbiaceae, Hamameliaceae, Lauraceae, Loranthaceae, Moraceae, Myrtaceae, Sabiaceae and Theaceae.

Measurements

Measurements of antennae, rostrum, stylets, femora, tibiae, tarsi and hairs were done in the same way as described in the third part (Noordam, 1991: 6).

Keys to the genera

Key to the genera based on apterae

1. Abdomen next to siphunculi with two or more processes with one or more hairs. Eyes with three facets. First tarsal segments with three or five hairs. Siphunculi distally with usually four hairs and over its length about three. Cervaphidini 2
- Abdomen without processes in adult specimens (first stage larvae with tubercles on abdominal segments VII and VIII). Eyes with many facets. First tarsal segments with five or seven hairs. Siphunculi with numerous hairs. Greenideini 3
2. Siphunculi short, truncate cones. Only one pair of processi on tergite VII. Dorsal side of body with a network observable at magnifications above 100. Cauda with six hairs, without a median processus. First tarsal segments with three hairs. Antennae 0.51-0.78 times as long as body, and 1.8-3.2 times as long as width of head across eyes, length of hairs on segment III, 8-18 µ. Ultimate rostral segment 81-126 µ long, 0.73-1.00 times as long as second tarsal segment of hind leg ..... ***Schoutedenia*** van der Goot
- Siphunculi cylindrical, 334-653 µ long. Body dorsally smooth, with many branched and unbranched processi. Cauda with four hairs, and a median processus, 33-63 µ long. First tarsal segments with five hairs. Antennae 0.21-0.39 times as long as body, and 0.86-1.53 times as long as width of head across eyes, length of hairs on segment III, 55-84 µ. The ultimate rostral segment 155-223 µ long, 1.89-2.53 times as long as second tarsal segment of hind leg ..... ***Cervaphis*** van der Goot
3. Cauda with a median processus. Siphunculi with a network on basal part only, or

over its whole length except on a small distal part. First tarsal segments with seven hairs 4
- Cauda without a median processus. Siphunculi without a network. First tarsal segments with five or seven hairs 5
4. Network of siphunculi over its whole length, except on a small distal part, which is provided with transverse rows of spinulae ..... ***Greenidea (Greenidea)*** Schouteden
- Network of siphunculi only on basal part of siphunculi, distally to this network siphunculi with spinulae, which are not arranged on a distinct network ..... ***Greenidea (Trichosiphum)*** Pergande
5. Between eyes dorsally on head two sturdy hairs, 27 µ long, four tiny hairs, 5-7 µ long, not included. Antennae with four segments, processus terminalis 59 µ long, hairs over its length are lacking. First tarsal segments with five hairs. Tibia of hind leg 240 µ long, 0.70 times as long as width of head across eyes ..... ***Mesotrichosiphum*** Calilung
- Between eyes dorsally on head 4-16 hairs, but if two, then antennae with five segments, and processus terminalis 216-301 µ long, hairs over its length number 0-16. First tarsal segments with 5-7 hairs. Tibia of hind leg 342-1816 µ long, 1.08-2.38 times as long as width of head across eyes 6
6. First tarsal segments with five hairs. Antennae with five segments. Length of siphunculi 634-1555 µ 7
- First tarsal segments with seven hairs, but if with five hairs, then at same the time antennae with six segments, and length of siphunculi 224-346 µ long 8
7. Antennae 1.22-1.77 mm long, 0.67-0.87 times as long as body, and 3.8-4.8 times as long as width of head across eyes. Many hairs short, e.g. of antennal segment IV, 16-51 µ, of segment V, 10-29 µ, and of tibia of hind leg 18-33 µ. Cauda with 5-7 hairs. Ultimate rostral segment 90-127 µ long, 0.96-1.16 times as long as second tarsal segment of hind leg; length of stylets 325-423 µ. Head dorsally between eyes with 2-4 hairs ..... ***Greenideoida*** van der Goot
- Antennae 964-1145 µ long, 0.42-0.51 times as long as body, and 2.2-3.1 times as long as width of head across eyes. Hairs long, e.g. of antennal segment IV, 131-161 µ, of segment V, 86-100 µ, and of tibia of hind leg 69-87 µ. Cauda with 8-9 hairs. Ultimate rostral segment 190-221 µ long, 1.75-1.96 times as long as second tarsal segment of hind leg; length of stylets 720-770 µ. Head dorsally between eyes with six hairs ..... ***Pentatrichosiphum*** Basu
8. Hind tibiae without transverse ridges. Marginally and ventrally spinulae of 1-8 µ long may be present on abdominal segments I-VII, but an extensive area with sharp or blunt spinulae 4-10 µ long ventrally on segments III-IV is lacking ..... ***Eutrichosiphum*** Essig & Kuwana
- Hind tibiae with transverse ridges (figs. 384, 413, 433). Ventrally on segments II-VI an extensive area with sharp or blunt spinulae (figs. 387, 417, 436), 4-10 µ long, also present in median area of venter 9
9. Antennal segment III with 45-74 hairs, last antennal segment with 4-7 hairs; hairs directed outwards only slightly shorter than hairs pointing inwards. Siphunculi cylindrical, 1.30-2.03 mm long, 0.65-0.80 times as long as body, length 9.0-15.0 times its width. Length of stylets 861-1090 µ ..... ***Mollitrichosiphum (Mollitrichosiphum)*** Suenaga
- Antennal segment III with 9-19 hairs, last antennal segment with three hairs;

hairs directed outwards distinctly longer than hairs pointing inwards. Siphunculi spindle-shaped, 689-900 µ long, 0.25-0.47 times as long as body, length 4.1-8.1 times its widest diameter. Length of stylets 570-755 µ ..... ***Mollitrichosiphum (Metatrichosiphon)*** Raychaudhuri

Key based on alatae

1. Head posteromedial to antennae with a tubercle, 20-43 µ long (*Cervaphis*), or on tergite VII two tubercles, 143-247 µ long (*Schoutedenia*), siphunculi 437-574 µ long (*Cervaphis*), or siphunculi truncated cones (*Schoutedenia*). Hind wing without oblique veins 2
- Tubercles are lacking. Siphunculi 606-2714 µ long. Hind wing with oblique veins, or (*Greenideoida*) oblique veins are lacking 3
2. Head posteromedial to antennae with a tubercle. Antennal segment III with 7-12 rhinaria, segment IV with only a primary rhinarium. Siphunculi 437-574 µ long. Cauda with six hairs. First stage larvae on thoracic and abdominal segments with four bifurcate hairs on the middle area of each of segments. Veins of fore wing not bordered with brown ..... ***Cervaphis*** van der Goot
- Tubercles on head lacking, abdominal segment VII with two tubercles. Antennal segment III with 18-47 rhinaria, segment IV with 2-12 rhinaria. Siphunculi truncated. Cauda with four hairs. First stage larvae on thoracic and abdominal segments with two unbranched hairs on middle of each of segments. Veins of fore wing bordered with brown ..... ***Schoutedenia*** van der Goot
3. First tarsal segments of all legs with five hairs. Antennae with five segments 4
- First tarsal segments of all legs with seven hairs. Antennae with five or six segments 5
4. Media of fore wing once branched, and hind wing without oblique veins. Antennal segment IV, 236-326 µ long, 0.52-0.59 times as long as segment V; segment V, 1.84-1.99 times as long as processus terminalis. Processus terminalis over its length with 2-3 hairs ..... ***Greenideoida*** van der Goot
- Media of fore wing twice branched, and hind wing with one oblique vein. Antennal segment IV, 153-196 µ long, 0.33-0.38 times as long as segment V; segment V, 1.45-1.53 times as long as processus terminalis. Processus terminalis over its whole length without hairs ..... ***Pentatrichosiphum*** Basu
5. Tibiae of hind legs with 16-80 transverse ridges which are lacking on tibiae of fore and mid legs. Marginal and ventral part of abdomen with denticles 6
- Transverse ridges are lacking on tibiae of hind legs. Spinulose imbrications or spinulae may be present but then on all legs 7
6. Antennal segment III, 1.90-2.54 times as long as segment VI. Longest hair of antennal segment IV, 180-248 µ. Ultimate rostral segment 240-290 µ long, 1.92-2.18 times as long as the second tarsal segment of hind leg. Length of basal hair of hind tibia 129-208 µ. Hind tibia with 16-26 transverse ridges ..... ***Mollitrichosiphum (Mollitrichosiphum)*** Suenaga
- Antennal segment III, 1.00-1.12 times as long as segment VI. Longest hair of antennal segment IV, 127-145 µ. Ultimate rostral segment 167-180 µ long, 1.54-1.59 times as long as second tarsal segment of hind leg. Length of basal hair of hind tibia 72-80 µ. Hind tibia with 65-80 transverse ridges ..... ***Mollitrichosiphum (Metatrichosiphon)*** Raychaudhuri

7. Cauda with an apical process, 5-57 μ long. Antennal segment III, 0.61-0.95 times as long as segment VI. Length of processus terminalis 350-1027 μ. Siphunculi with a reticulum which is only lacking at apex; apex with spinulae. Subgenus *Trichosiphum* is not distinguishable in alatae from the genus ..... ***Greenidea*** Schouteden
- Cauda without an apical process. Antennal segment III, 1.30-2.89 times as long as the last antennal segment (V or VI). Length of processus terminalis 291-299 μ. Siphunculi with a reticulum on base only or a reticulum is lacking ..... ***Eutrichosiphum*** Essig & Kuwana

Keys to the species

Key based on apterae of *Cervaphis*

1. Length of frontal processes including apical hair 417-551 μ, 0.86-0.97 times as long as antennae, and 1.39-1.50 (in one specimen 1.00) times as long as hind tibiae. Dorsally on head between eyes 35-41 processes. On *Schoutenia ovata* ..... ***Cervaphis echinata*** Hille Ris Lambers
- Length of frontal processes including apical hair 157-303 μ, 0.45-0.59 times as long as antennae, and 0.94-1.24 times as long as hind tibiae. Dorsally on head between eyes 16-24 or 40-60 processes 2
2. Dorsally on head between eyes 16-24 processes. Length of antennae 413-614 μ, 0.32-0.39 times as long as body, 1.19-1.53 times as long as width of head across eyes. Dorsal hairs on abdomen more or less acute, lanceolate or tip bifurcate. On *Erycibe grandiflora, Guazuma ulmifolia, Microcos tomentosa, Pterospermum javanicum, Schoutenia ovata, Sterculia villosa* ..... ***Cervaphis schouteniae*** van der Goot
- Dorsally on head between eyes about 40-60 processes. Length of antennae 310-354 μ, 0.21-0.29 times as long as body, 0.86-0.94 times as long as width of head across eyes. Dorsal hairs on abdomen obovate with rounded tips. On *Erycibe, Nephelium, Pterospermum, Theobroma* ..... ***Cervaphis rappardi*** Hille Ris Lambers

Key based on apterae of *Eutrichosiphum*

1. First tarsal segments with five hairs. Length of body 1.3-1.7 times as long as it is wide. Last antennal segment 2.2-2.5 times as long as processus terminalis. Length of siphunculi 0.7-0.9 times as long as width of head across eyes; length of dorsoapical hair of hind tarsus 23-33 μ long. Femora and tibiae black, but distal part of tibiae, and tarsal segments pale brown or colourless. On *Lithocarpus Bennettii* and *Castanopsis javanica* ..... ***Eutrichosiphum nigrum*** spec. nov.
- First tarsal segments with seven hairs. Length of body 1.6-2.4 times as long as it is wide. Last antennal segment, 1.4-2.0 times as long as processus terminalis. Length of siphunculi 1.1-2.2 times as long as width of head across eyes; but if 0.8-1.0 times as long as in *E. pullum* then dorsoapical hair of hind leg 12-16 μ long 2
2. Antennae with six segments. Length of ultimate rostral segment 362-417 μ long, 2.90-3.48 times as long as second tarsal segment of hind leg; length of stylet 1.28-1.49 mm. Abdominal segment VII with over 20 hairs of various lengths. On *Lithocarpus* and *Quercus* ..... ***Eutrichosiphum heterotrichum*** Raychaudhuri

- Antennae with five or six segments. Length of ultimate rostral segment 152-275 μ long, 1.64-2.70 times as long as second tarsal segment of hind leg; length of stylets 530-927 μ. Abdominal tergite VII with usually four, but at most six hairs 3
3. Siphunculi evenly pale, paler than smoky abdominal dorsum. Marginally, mainly ventrally on thorax and abdomen spinulae; in last stage larvae these spinulae much more distinct, distributed over dorsum of abdomen and thorax ..... ***Eutrichosiphum pallidum*** spec. nov.
- Siphunculi at least distally considerably pigmented, or wholly black 4
4. Abdominal shield strongly pigmented, brown to black. Siphunculi completely black. Abdominal dorsum smooth or spinulose 5
- Abdominal shield very faintly pigmented or pale. Siphunculi gradually darker from their pale base towards apex, or only dark at tip 6
5. Antennal segment III with 7-10 hairs. Each segment of dorsal shield with only four long hairs besides a variable number of small hairs about half as long as four long hairs. Dorsal spinulae on dorsal shield only marginally marginally present. Shield cloudy. Basal hair on hind tibia 16-22 μ long. Siphunculi on distal half part, or even over whole length blackish. On *Castanopsis acuminatissima* and *C. argentea* ..... ***Eutrichosiphum pullum*** spec. nov.
- Antennal segment III with about 15-20 hairs, including some very small ones. Each segment of dorsal shield with some 12 long hairs, and several slightly shorter ones. Dorsal shield all over, with innumerable small spinulae or nodules in shorter or longer transverse rows. Basal hair on hind tibia 29-59 μ long. Siphunculi evenly black. On *Castanopsis, Castanea, Lithocarpus* and *Quercus* ..... ***Eutrichosiphum pasaniae*** (Okajima)
6. Abdominal shield over nearly its whole surface with many short spinulae arranged in a transverse net or in transverse rows. Dorsal abdominal hairs much branched at top and usually thicker there than at base. Abdominal dorsum not with vague brownish transverse bands. Length of body 2.0-2.3 times its width. Antennae 0.46-0.55 times as long as body. On *Castanopsis* and *Lithocarpus* ..... ***Eutrichosiphum sinense*** Raychaudhuri
- Abdominal shield only marginal, with some inconspicuous spinulae or nodules. Dorsal abdominal hairs tapering from base to apex, not wider at tip. Abdominal dorsum often with vague, brownish transverse bands. Body 1.9-2.0 times as long as it is wide. Antennae 0.59-0.66 times as long as body. On *Quercus glauca* ..... ***Eutrichosiphum glabrum*** spec. nov.

Key based on apterae of *Greenidea (Greenidea)*

1. Central area of venter with spinulae. Length of antennal segment IV, 1.20-1.64 times as long as base of segment VI 2
- Central area of venter without spinulae. Length of antennal segment IV, 0.81-1.22 times as long as base of segment VI 3
2. Length of ultimate rostral segment 288-354 μ, 1.91-2.53 times as long as second tarsal segment of hind leg. Length of siphunculi 0.54-0.57 times as long as body; on each transverse line of reticulum of siphunculi about 10 spinulae; spinulae 2-8 μ long. Longest hair of cauda 125-163 μ, of anal plate 168-215 μ. Length of stylets

1.10-1.20 mm. On *Castanopsis* and *Castanea*. Compare *G. (Trichosiphum) castanopsidis* ..... ***Greenidea (G.) magna*** spec. nov.

- Length of ultimate rostral segment 218 µ, 1.72 times as long as second tarsal segment of hind leg. Length of siphunculi 0.80 times as long as body; on each transverse line of reticulum of siphunculi 1-2 spinulae; spinulae 2-3 µ long. Longest hair of cauda 70 µ, of anal plate 125 µ. Length of stylets 794 µ. On *Syzygium antisepticum* ..... ***Greenidea (G.) maculata*** spec. nov.

3. Siphunculi blackish, darker than abdomen. Ultimate rostral segment 172-205 µ long, stylets 751-915 µ. Siphunculi 535-803 µ long, and antennal segment III, 1.43-1.66 times as long as segment V, and 0.55-0.69 times as long as segment VI. Length of processus terminalis 341-598 µ. On *Ficus* and *Streblus* ..... ***Greenidea (G.) ficicola*** Takahashi

- Siphunculi brown (at most apex black), paler than abdomen. Ultimate rostral segment 216-263 µ long, stylets 928-1218 µ long. Values of siphunculi and antennal segments are not in range of values indicated above 4

4. Abdomen darker than basal part of siphunculi. Length of body 1.63-1.94 mm, of siphunculi 594-835 µ, of ultimate rostral segment 216-227 µ, and of stylets 928-966 µ. Length of median process of cauda 22-27 µ. Antennal segment III, 1.13-1.34 times as long as segment V, and 0.40-0.46 times as long as segment VI; length of processus terminalis 590-641 µ. On *Scurrula* ..... ***Greenidea (G.) rappardi*** Raychaudhuri

- Abdomen pale brown, about as dark as siphunculi. Length of body 2.48-3.08 mm, of siphunculi 1.12-1.51 mm , of ultimate rostral segment 234-263 µ, and of stylets 1.07-1.22 mm. Length of median process of cauda 53-76 µ. Antennal segment III, 1.55-1.57 times as long as segment V, and 0.59-0.61 times as long as segment VI; length of processus terminalis 581-936 µ. On *Schima wallichii* ..... ***Greenidea (G.) schimae*** Takahashi

Key based on apterae of *Greenidea (Trichosiphum)*

1. Length of ultimate rostral segment 141-188 µ, 1.25-1.96 times as long as second tarsal segment of hind leg 2

- Length of ultimate rostral segment 204-263 µ, 1.79-2.77 times as long as second tarsal segment of hind leg 4

2. Antennal segment III, 1.69-2.05 times as long as segment IV. Length of dorsoapical hair of second tarsal segment of hind leg 4-6 µ. Length of median process of cauda 12-18 µ. On *Annona muricata* ..... ***G. (Trichosiphum) anonae*** (Pergande)

- Antennal segment III, 2.07-2.79 times as long as segment IV. Length of dorsoapical hair of second tarsal segment of hind leg 20-22 µ. Length of median process of cauda 22-35 µ 3

3. Ultimate rostral segment 1.54-1.74 times as long as second tarsal segment of hind leg. Antennal segment III, 1.58-1.95 times as long as segment V, and 0.56-0.59 times as long as segment VI. Abdomen dorsally in central area without spinulae. On *Syzygium lineatum, S. racemosum,* and *S. syzygioides* ..... ***G. (Trichosiphum) nigricans*** spec. nov.

- Ultimate rostral segment 1.25-1.39 times as long as second tarsal segment of hind leg. Antennal segment III, 2.14-2.31 times as long as segment V, and 0.92-1.01

times as long as segment VI. Abdomen dorsally in central area with some spinulae. On *Syzygium zeylanicum* (syn. *Eugenia spicata).* Not known from Java ..... ***G. (Trichosiphum) eugeniae*** Takahashi

4. Venter of abdomen evenly spinulose, without imbrications; spinulae on anterior venter about 2-4 μ long, on distal part 6-7 μ. Dorsal hairs and hairs of siphunculi brown. Length of process of cauda 45 μ. Stylets 955 μ long. Length of hair on hind tibia 78 μ. Length of last antennal segment 929 μ; processus terminalis with 13 hairs over its length. On *Castanopsis acuminatissima* ..... ***G. (Trichosiphum) castanopsidis*** spec. nov.

- Venter with or without spinulose imbrications, with spinulae of one μ or less. Other characteristics varying 5

5. Pale brown, only claws and distal part of siphunculi darker. Length of median process of cauda 52-76 μ. Length of stylets 629-770 μ. Length of hair on hind tibia 39-47 μ. Length of last antennal segment 626-849 μ; processus terminals with 7-10 hairs over its length. Tiny hairs on head in a transverse row between ocular tubercles are lacking. Larvae without dark sclerites on abdomen. On *Bridelia monoica* ..... ***G. (Trichosiphum) fulva*** spec. nov.

- Body brown, siphunculi brown or black. Length of process of cauda 22-58 μ. Length of stylets 775-1050 μ. Abdomen of larvae with dark sclerites. Tiny hairs in a transverse row on head between ocular tubercles usually present. Other characteristics varying 6

6. Base of siphunculi with network slightly darker than middle part of siphunculi. Length of process of cauda 35-58 μ. Stylets 826-1050 μ long. Length of hair on hind tibia 41-65 μ long. Length of last antennal segment 617-972 μ. The processus terminalis with 6-12 hairs over its length. On *Eucalyptus torelliana, Lagerstroemia, Melaleuca bracteata, M. leucadendra, Psidium guajava, Scurrula philippensis, Syzygium aqueum, S. aromaticum* ..... ***G. (Trichosiphum) psidii*** van der Goot

- Base of siphunculi with network paler than middle part of siphunculi. Other characteristics varying 7

7. Longest hair of antennal segment II, 106-127 μ, of segment III, 104-127 μ, of mesonotum 84-112 μ, of siphunculi 194-212 μ, and dorsally on head between eyes 100-123 μ. Length of distal spine of hind tibia 25-30 μ, of empodial hair 29-32 μ. Length of process of cauda 30-50 μ. Stylets 775-928 μ long. Length of hair on hind tibia 57-67 μ, on abdomen ventrally in middle 57-71 μ. Length of the last antennal segment 664-904 μ; processus terminalis with 7-12 hairs over its length. On *Distylium stellare* ..... ***G. (Trichosiphum) flacourtiae*** van der Goot

- Longest hair of antennal segment II, 65-102 μ, of segment III, 58-96 μ, of mesonotum 43-84 μ, of siphunculi 125-167 μ, and dorsally on head between eyes 55-94 μ. Length of distal spine of hind tibia 20-25 μ, of empodial hair 20-28 μ. Length of process of cauda 33-53 μ. Stylets 833-951 μ long. Length of hair on hind tibia 39-59 μ, on abdomen ventrally in middle 40-61 μ. Length of last antennal segment 465-846 μ; processus terminalis with 6-10 hairs over its length. On *Castanea crenata, Castanopsis argentea, C. javanica, Lithocarpus Bennettii, Quercus glauca* ..... ***G. (Trichosiphum) pallidipes*** spec. nov.

Key based on apterae of *Greenideoida*

1. Body 2.5-3.3 times as long as it is wide. Antennal segment III, 2.24-2.71 times as long as segment IV. Siphunculi 889-1555 µ long, 10.4-17.3 times as long as they are wide. Longest hairs on antennal segment IV, 35-51 µ, on mesonotum 12-17 µ, marginal hairs are longer, on tibia of hind leg 18-23 µ, and length of dorsoapical hairs of second tarsal segment of hind leg 3-6 µ. Dorsal and marginal sides of head, thorax and abdomen with tiny spinulae frequently arranged in transverse lines. On *Bridelia monoica* and *B. minutiflora* ..... ***G. elongata*** van der Goot
- Body 2.0-2.2 times as long as it is wide. Antennal segment III, 1.74-2.02 times as long as segment IV. Siphunculi 634-865 µ long, 6.3-10.8 times as long as they are wide. Longest hair on antennal segment IV, 16-35 µ, on mesonotum 88-106 µ, on tibia of hind leg 25-33 µ, and length of dorsoapical hair of second tarsal segment of hind leg 12-17 µ. The dorsal and marginal sides of body without spinulae. On *Bridelia monoica* ..... ***G. fransseni*** spec. nov.

Key based on apterae of *Mesotrichosiphum*

1. Apical part of siphunculi not reticulated. Dorsal side of hind tibiae with sturdy hairs, 20-25 µ long and four µ wide near base, ventral hairs tiny, about one µ wide. On *Lithocarpus Bennettii* ..... ***M. brevisetosum*** spec. nov.
- Apical part of siphunculi reticulated. On *Premna odorata*. Known only from the Philippines ..... ***M. uichancoi*** Calilung

Key based on apterae of *Mollitrichosiphum*
(including subgenus *Metatrichosiphon*)

1. Length of antennae 1.70-2.55 mm, 0.85-1.00 times as long as body, and 4.4-5.1 times as long as width of head across eyes. Ultimate rostral segment 247-284 µ long. Length of stylets 786-995 µ. Length of siphunculi 1.30-2.03 mm, 9.0-15.0 times as long as widest diameter. Hind tibiae with 17-22 transverse ridges, which are lacking on fore and mid tibiae. On *Castanea crenata, Castanopsis acuminatissima, C. javanica, C. cuspidata, Quercus glauca* ..... ***M. (M.) tenuicorpus*** (Okajima)
- Length of antennae 614-1620 µ, 0.45-0.74 times as long as body, and 2.1-3.2 times as long as width of head across eyes. Ultimate rostral segment 143-229 µ long. Length of stylets 570-936 µ. Length of siphunculi 291-967 µ, 4.1-8.1 times as long as widest diameter. Hind tibiae with 20-100 transverse ridges, which are lacking on other tibiae 2
2. Body 1.8-2.0 times as long as it is wide. Antennal segment III, 0.80-1.26 times as long as the last segment, and 1.10-1.90 times as long as processus terminalis. Last antennal segment 1.44-1.61 times as long as processus terminalis. Lateral frontal prominences and median prominence protruding 0-6 µ. On *Syzygium antisepticum* ..... ***M. (Metatrichosiphon) syzygii*** spec. nov.
- Body 2.0-2.3 times as long as it is wide. Antennal segment III, 1.42-1.68 times as long as the last segment, and 2.70-3.51 times as long as processus terminalis. Last antennal segment 1.82-2.10 times as long as its processus terminalis. Lateral fron-

tal prominences and median prominence protruding 12-18 μ. On *Castanopsis, Quercus* ..... ***M. (Metatrichosiphon) elongatum*** (Takahashi)

Key based on apterae of *Schoutedenia*

1. Length of stylets 450-520 μ, length of ultimate rostral segment 106-126 μ. Processus terminalis 0.15-0.22 times as long as width of head across eyes, and 0.37-0.56 times as long as length of base of segment. On *Phyllanthus emblica*. BMNH, London. India, not known from Java ..... ***S. emblica*** (Patel & Kulkarni)
- Length of stylets 300-420 μ, length of ultimate rostral segment 81-98 μ. Processus terminalis 0.22-0.37 times as long as width of head across eyes, and 0.50-0.95 times as long as length of base of segment 2
2. Length of hairs dorsally on head between eyes 6-9 μ long. Processi on abdominal tergite VII, 270-345 μ long. In 23 out of 30 specimens ratio of antennal segments III to IV plus V is 0.89-1.00. On Euphorbiaceae, Tropical Africa, not on Java. BMNH, London and RMNH, Leiden ..... ***S. bougainvilleae*** Theobald
- Length of hairs dorsally on the head between eyes 10-13 μ long. Processi on abdominal tergite VII, 180-280 μ long. In 81 out of 83 specimens ratio of length of antennal segments III to IV plus V is 0.70-0.88 3
3. Antennal segment III, 2.9-4.2 times as long as processus terminalis, but in 69 out of 78 antennae this ratio is 3.3-4.2. In life yellow or green. On *Sauropus androgynus, Securinega virosa* and other Euphorbiaceae ..... ***S. lutea*** (van der Goot)
- Antennal segment III, 2.2-3.7 times as long as processus terminalis, but in 96 out of 106 antennae this ratio is 2.2-3.2. In life green. On *Breynia cernua, B. microphylla, Glochidion rubrum, Sauropus androgynus* and other Euphorbiaceae .... ***S. viridis*** (van der Goot)

Key based on alatae of *Greenideinae*

1. Head posteromedial to antennae with a tubercle, 20-43 μ long (*Cervaphis*), or on tergite VII two tubercles, 143-247 μ long (*Schoutedenia*) 2
- Tubercles are lacking 7
2. Head posteromedial to antennae with a tubercle 3
- Tubercles on head are lacking, but two tubercles on tergite VII 4
3. Antennal segment III, 1.8-2.5 times as long as segment IV. Longest hairs on antennal segment III, 23-29 μ, on segment IV, 24-31 μ, and on segment V, 16-23 μ. Number of hairs posteriorly dorsally on head 8-11, on tergite IV, 9-12, and on tergite VI, 6-12 ..... ***Cervaphis schouteniae*** van der Goot
- Antennal segment III, 3.2 times as long as segment IV. Longest hair on antennal segment III, 16 μ, on segment IV, 18 μ, and on segment V, 12 μ. Number of hairs posteriorly dorsally on head 17-20; on tergite IV, 32-34; and on tergite VI, 27-29 ....***Cervaphis rappardi*** Hille Ris Lambers
4. Length of stylets 450-540 μ. Processus terminalis 0.17-0.22 times as long as width of head across eyes, and 0.38-0.61 times as long as base of segment. India, not known on Java ..... ***Schoutedenia emblica*** (Patel & Kulkarni)
- Length of stylets 305-460 μ. Processus terminalis 2.2-4.4 times as long as width of

head across eyes, and 0.51-1.00 times as long as base of segment 5

5. Length of hairs dorsally on head between eyes, and on abdominal tergite IV, 7-10 µ. Antennal segment III, 2.3-2.8 times as long as antennal segment IV in 12 out of 18 specimens, and 1.21-1.43 times as long as width of head across eyes in 10 out of 13 specimens. Distance at apex of fore wing between radius and media 1.4 times the shortest distance of radius to media (Fig. 514, distance 1 divided by 2). Tropical Africa, not known on Java ..... ***Schoutedenia bougainvilleae*** Theobald
- Length of hairs dorsally on head between eyes, and on abdominal tergite IV, 10-15 µ. Antennal segment III, 1.7-2.5 times as long as segment IV, and 0.83-1.17 times as long as the width of head across eyes (in 112 out of 115 specimens). Distance at apex of fore wing between radius and media 1.1-1.6 times the shortest distance of radius to media in *S. lutea* (Fig. 514), and 1.5-2.3 times in *S. viridis* (Fig. 515) 6
6. Distance at apex of fore wing between radius and media 1.1-1.6 times the shortest distance between radius and media (Fig. 514, distance 1 divided by 2). Antennal segment III, 0.81-0.95 times as long as antennal segments IV + V, but in 33 out of 38 antennae, 0.86-0.95 times as long. Antennal segment III, 3.6-4.4 times as long as processus terminalis. In life abdomen usually yellow, and thorax of last stage larvae without green patches ..... ***Schoutedenia lutea*** (van der Goot)
- Distance at apex of fore wing between radius and media 1.5-2.3 times the shortest distance between radius and media (Fig. 515, distance 1 divided by 2). Antennal segment III, 0.70-0.93 times as long as antennal segment IV+V, but in 92 out of 98 antennae, 0.70-0.85 times as long. Antennal segment III, 2.7-3.9 times as long as processus terminalis, but in 88 out of 97 antennae, 2.7-3.5 times as long as processus terminalis. In life abdomen greenish, and thorax of the last stage larvae with green patches (pl. 24) ..... ***Schoutedenia viridis*** (van der Goot)
7. First tarsal segments with five hairs. Antennae of five segments 8
- First tarsal segments with seven hairs. Antennae of five or six segments 9
8. Media of fore wing once branched, hind wing without oblique veins. Antennal segment IV, 0.52-0.59 times as long as segment V. Length of hair posteriorly on head 22-37 µ, longest hair of hind tibia 27-35 µ. The processus terminalis over its length with 2-3 hairs. Length of dorso-apical hair of second tarsal segment of hind leg 4-6 µ ..... ***Greenideoida elongata*** van der Goot
- Media of fore wing twice branched, hind wing with one oblique vein. Antennal segment IV, 0.33-0.38 times as long as segment V. Length of hair posteriorly on head 80-118 µ, longest hair of hind tibia 47-65 µ. Processus terminalis over its length without hairs. Length of dorsoapical hair of second tarsal segment of hind leg 14-16 µ ..... ***Pentatrichosiphum luteum*** Basu
9. Hind tibiae with 16-80 transverse ridges which are lacking on fore and mid tibiae. Abdomen ventrally and marginally with denticles. Cauda without a process 10
- Hind tibiae without transverse ridges; imbrications may be present but then also on other legs. Other characteristics varying 11
10. Antennae 2.3-2.8 mm long, 4.75-5.37 times as long as width of head across eyes. Antennal segment III, 1.90-2.54 times as long as segment VI, with 17-26 rhinaria; segment IV without rhinaria. Siphunculi 2.5-3.3 mm long, 0.95-1.18 times as long

as body. Hind tibiae with 16-26 transverse ridges .....
..... ***Mollitrichosiphum (M.) tenuicorpus*** (Okajima)

- Antennae 1.6-1.9 mm long, 3.84-4.18 times as long as width of head across eyes. Antennal segment III, 1.00-1.12 times as long as segment VI, with 13-18 rhinaria; segment IV with 1-4 rhinaria. Siphunculi 1.0-1.2 mm long, 0.48-0.63 times as long as body. Hind tibiae with 65-80 transverse ridges. (See also *M. (Metatrichosiphon) elongatum*, eight rhinaria on antennal segment III, antennal segment III 1.54 times as long as segment VI) ..... ***Mollitrichosiphum (Metatrichosiphon) syzygii*** spec. nov.

11. Cauda with an apical process, 5-57 µ long. Antennal segment III, 0.61-0.95 times as long as segment VI. Processus terminalis 350-1027 µ long. Siphunculi with a reticulum which is only lacking at apex; apex with spinulae 12
- Cauda without an apical process. Antennal segment III, 1.30-2.89 times as long as last antennal segment (segment V or VI). Network on siphunculi varying 20
12. Venter of abdomen in centre with spinulae of 2-7 µ. Antennal segment III, 952-1135 µ long, with 10-18 rhinaria, usually only on basal half of segment. Length of siphunculi 2.47-2.71 mm. Ultimate rostral segment 325-357 µ long; length of stylets 1.24-1.32 mm. Tibia of middle and hind tibiae distally with spinulae 6-16 µ long ..... ***Greenidea (G.) magna*** spec. nov.
- Venter of abdomen without such large spinulae in centre; imbrications with 2-10 spinulae less than one µ may be present in some areas. Length of antennal segment III, 417-897 µ, with 4-31 rhinaria. Length of siphunculi 970-2329 µ. The ultimate rostral segment 163-315 µ long; length of stylets 670-1290 µ long 13
13. Antennal segment III with 4-7 roundish rhinaria. Median process of cauda 5-8 µ long. Dorsoapical hair of second tarsal segment of hind leg six µ long. Processus terminalis over its length with 4-6 hairs ..... ***G. (Trichosiphum) anonae*** (Pergande)
- Antennal segment III with 13-31 rhinaria. Median process of cauda 16-57 µ long. Dorsoapical hair of second tarsal segment of hind leg 14-25 µ long. Processus terminalis over its length with 6-16 hairs 14
14. Length of body 2.27-3.02 mm, 2.6-2.7 times as long as it is wide. Length of antennae 3.30-3.47 mm, of antennal segment IV, 400-504 µ. Antennae with 16-26 rhinaria. Ultimate rostral segment 250-315 µ long; length of stylets 1.09-1.32 mm. Length of process of cauda 40 µ ..... ***Greenidea (G.) schimae*** Takahashi
- Length of body 1, 59-2.41 mm, 1.8-2.6 times as long as it is wide. Length of antennae 1.80-3.03 mm, of antennal segment IV, 244-441 µ; segment III with 13-31 rhinaria. Ultimate rostral segment 204-292 µ long; length of stylets 670-1131 µ. Length of caudal process 16-57 µ 15
15. Number of hairs on pronotum 9-14, of hairs dorsally on head usually 9-12. Length of stylets 670-772 µ. Body dorsally pale brown, siphunculi brown or black ..... ***G. (Trichosiphum) fulva*** spec. nov.
- Number of hairs of pronotum 14-26, on head dorsally 14-19. Length of stylets 810-1131 µ. Body frequently brown with brown hairs 16
16. Antennal segment III with 20-31 rhinaria, some of them not in one row, and sometimes flattened against each other. Length of siphunculi 1.25-1.67 mm 17
- Antennal segment III with 13-20 rhinaria, usually all in one row, and not flattened against each other. Length of siphunculi 1.18-1.93 mm 18
17. Longest hair on antennal segment VI, 22-45 µ, on abdominal tergite VII along

posterior margin 37-39 μ. Length of process of cauda 16-19 μ. Number of hairs on pronotum 14-16 ..... ***Greenidea (G.) rappardi*** Raychaudhuri

- Longest hair on antennal segment VI, 45-88 μ, on abdominal tergite VII, 43-82 μ. Length of process of cauda 29-31 μ. Number of hairs on pronotum 17-24. Antennal segment III, 0.61-0.65 times as long as segment VI, and segment V, 0.33-0.39 times as long as segment VI ..... ***G. (Trichosiphum) psidii*** van der Goot

18. Length of antennae 1.80-2.41 mm, of antennal segment IV, 244-346 μ, and of processus terminalis 425-614 μ. Length of siphunculi 1.18-1.62 mm. Length of process of cauda 22-31 μ. Antennal segment III, 0.69-0.81 times as long as segment VI, and segment V, 0.41-0.45 times as long as segment VI. Number of hairs on pronotum 19-26 ..... ***Greenidea (G.) ficicola*** Takahashi

- Length of antennae 2.73-3.03 mm, of antennal segment IV, 381-441 μ, and of processus terminalis 704-755 μ. Length of siphunculi 1.76-1.93 mm. Length of process of cauda 33-37 μ 19

19. Length of antennae 2.73-2.76 mm; segment III, 708-752 μ long. Ultimate rostral segment 237-243 μ long; length of stylets 900-930 μ. Length of hair on tergite VII 123-147 μ ..... ***G. (Trichosiphum) flacourtiae*** van der Goot

- In only specimen available: Length of antennae 3.03 mm; segment III, 842 μ long. Ultimate rostral segment 292 μ long, 2.52 times as long as second tarsal segment of hind leg. Length of stylets 1.13 mm. Length of hair on tergite VII, 57 μ, but in larvae 123-127 μ; also on other abdominal tergites short, on tergite VIII somewhat longer ..... ***G. (Trichosiphum) pallidipes*** spec. nov.

20. Antennae with six segments; segment III, 5.21-5.26 times as long as segment IV; segment III with 28-39 rhinaria. Number of hairs dorsally on head about 60. Ultimate rostral segment 325-361 μ long, 2.85-2.98 times as long as second tarsal segment of hind leg; length of stylets 1.18-1.20 mm ..... ***Eutrichosiphum heterotrichum*** Raychaudhuri

- Antennae with five segments; segment III, 2.38-5.49 times as long as segment IV; segment III with 7-26 rhinaria. Number of hairs dorsally on head 13-20. Ultimate rostral segment 154-207 μ long, 1.81-2.30 times as long as second tarsal segment of hind leg; length of stylets 475-656 21

21. In the only specimen available: Antennal segment III with 7-9 rhinaria. Processus terminalis over its length with 4-5 hairs. Length of stylets 620 μ. Length of hair on tergite VII, 67 μ, on tergite VIII, 120 μ. Number of hairs on pronotum 18 ..... ***Eutrichosiphum pallidum*** spec. nov.

- Antennal segment III with 12-27 rhinaria. Processus terminalis over its length with 1-3 hairs. Length of stylets 475-656 μ. Length of hair on tergite VII, 39-59 μ, on tergite VIII, 61-92 μ. Number of hairs on pronotum 19-33 22

22. Antennal segment III, 2.73-3.59 times as long as segment IV, and 1.60-1.89 times as long as segment V; segment III with 16-27 rhinaria. Length of ultimate rostral segment 170-207 μ. Pronotum with 23-33 hairs ... ***Eutrichosiphum pasaniae*** (Okajima)

- Antennal segment III, 2.38-2.51 times as long as segment IV, and 1.30-1.46 times as long as segment V; segment III with 12-18 rhinaria. Length of ultimate rostral segment 154-169 μ. Pronotum with 19-25 hairs ..... ***Eutrichosiphum sinense*** Raychaudhuri

Abbreviations

RMNH, Leiden: Nationaal Natuurhistorisch Museum, Leiden;
BMNH, London: Natural History Museum, London;
LUW, Wageningen: Laboratorium Entomologie, Landbouwuniversiteit Wageningen.

Descriptions

Genus *Cervaphis* van der Goot, 1917
(figs. 1-54)

Cervaphis van der Goot, 1917: 148 (type species: *Cervaphis schouteniae* van der Goot, 1917).

Life specimens.— Apterous viviparous female (three species). White, yellow, yellowish green and sometimes pale brown spots in the middle of the body.

Macerated specimens.— Body oval, 1.2-1.7 mm long, 1.7-2.6 times as long as it is wide. The head colourless or pale brown, across the eyes 334-417 µ wide, with two branched processi with a hair on top of each branch; between the eyes 16-60 unbranched processi each with one hair on the top; the hairs are narrow and pointed, stiletto-shaped, ovate or obovate. Antennae with four or five segments, 0.21-0.39 times as long as body, 0.86-1.53 times as long as the width of head across the eyes, with 6-8 hairs up to 55-84 µ long, on a base protruding up to 16-22 µ. The processus terminalis with four apical hairs, but hairs over its length are lacking, the last antennal segment 1.70-2.09 times as long as the processus terminalis; the base of the last segment 0.66-1.03 times as long as the processus terminalis. Eyes with three ommatidia. The ultimate rostral segment 155-223 µ long, 1.89-2.53 times as long as the second tarsal segment of the hind leg, with two basal hairs, four hairs over its length, and two bases of hairs anterior to the last segment, but without a hair; stylets 542-703 µ long. Prothorax fused with the head. On the lateral sides of each of the pronotum, mesonotum and metanotum two branched processi with no hair on the main branch, but distally to the last lateral branch, a base of a hair, the hair not extending outside; the lateral branches each with a hair on top; in the middle of the thoracic segments unbranched processi, each with a hair on top. The legs without imbrications, the distal part of the tibiae without spines, the four distal hairs normal, not bristle-like; first tarsal segments with five hairs. Tergite I at each side one branched processus with a structure as on the thoracic segments, segment II pleurally with one branched processus, and segments III-VII each with at the lateral side, and segments VI and VII at the posterior side a branched processus with a structure as on the thorax; the dorsum of segments I-II with unbranched processi, each with a hair on top. Tergite VIII a plate with coarse spinulae, with 5-10 hairs, the two middle hairs on a process with coarse spinulae, 49-116 µ high, with a hair on top, 20-43 µ long. Siphunculi cylindrical, 334-653 µ long, 0.24-0.47 times as long as the body, 0.89-1.84 times as long as the width of the head across the eyes. Cauda with six hairs, and with a median process, 33-63 µ long. Subanal plate with 9-14 hairs. Subgenital plate with two anterior hairs and 9-15 along the lateral and posterior margins. Gonapophyses indistinct, sometimes on three areas 2-4 circular spots, with a diameter of two µ, but without a hair.

Alate viviparous female (two species).— Body length 1.2-1.8 mm, 2.1-2.8 times as long as it is wide. Head brown, width of the head across the eyes 342-393 µ, posteromedial to the antennae a tubercle 20-43 µ high, each with 6-8 hairs, 10-23 µ long. Antennae with five segments, 734-953 µ long, 0.47-0.64 times as long as the body, and 2.0-2.5 times as long as the width of the head across the eyes, segment III with 7-12 rhinaria over the whole length, segment IV with only a primary rhinarium. Ultimate rostral segment 153-190 µ long, 1.80-1.96 times as long as the second tarsal segment of the hind leg, anterior to the last segment only two bases, without a hair; stylets 495-582 µ long.

Thorax.— Each lateral side of the pronotum with two roundish tubercles with a diameter of about 20 µ, each with 6-7 hairs, 6-8 µ long. Medial vein of the fore wing once branched, hind wing without an oblique vein. All segments of the legs with spinulose imbrications, the distal part of the tibiae ventrally with spines, 10-16 µ long. First tarsal segments with five hairs.

Abdomen.— The lateral sides of each of tergites I-V with a tubercle that is not quite raised, mainly marked by the presence of 10-20 (on tergite II, 5-10) hairs. Hairs on tergite IV, 8-12 µ long, on the middle of the abdomen ventrally 31-53 µ long. Tergite VI medial to the base of the siphunculi a tubercle, and in the middle tergite VII with two tubercles. Tergite VIII with 6-8 hairs. Siphunculi cylindrical, 437-574 µ long, 0.25-0.37 times as long as the body, 1.21-1.52 times as long as the width of the head across the eyes. Cauda with six hairs, and a median process, 6-23 µ long. Gonapophyses three groups are sometimes observable, each with 2-4 circular spots, sometimes with a hair, 2-4 µ long.

First stage larva of apterous viviparous ♀ (*C. schouteniae).*— Body length 449-622 µ. Antennae with four segments. The head medial to the base of the antennae with a process, including the hair of the main branch 102 µ long, with one distal branch and one branch at the base; between the eyes four bifurcate hairs. The ultimate rostral segment 161 µ long. The lateral sides of the thoracic and abdominal segments with the same arrangement of processi as the adult apterae, but all with a hair on the main branch, and side branches almost lacking; on each segment in the middle four unbranched processi, each with a bifurcate hair on top. Siphunculi 49 µ long, without hairs. Tergite VIII with two processi in the middle. Cauda with a median process.

Etymology.— "Cervaphis", an aphid resembling a deer, with its "dorsal processi like the antlers of deer" (van der Goot, 1917: 148).

Cervaphis echinata Hille Ris Lambers, 1956
(figs. 1-12)

Cervaphis echinata Hille Ris Lambers, 1956: 131.

Types.— Cotypes (one slide 10.vi.1948, two slides 12.vii.1950) BMNH, London.

Life specimens.— Apterous viviparous ♀. Yellow or yellowish green.

Macerated specimens (figs. 1-12; described from seven specimens).— Body length 1.22-1.54 mm, 1.8-2.6 times as long as it is wide.

Head.— Head pale brown or almost colourless, across the eyes 334-354 µ wide, protruding in the middle 4-10 µ, anteriorly at each side one hair, about 70-90 µ long,

with a sharp or sometimes bifurcated tip, on a base 10-25 μ high (fig. 3a). Distal and medial to the antennae a branched processus with on top of each branch a hair, which is long, narrow and pointed on the main branch (fig. 3b), wider on the distal side branch with bifurcate tip (fig. 3c), stiletto-shaped on more basal branches (fig. 3d), and ovate on basal branches (fig. 3e); length of the processus including the apical hair 417-504 μ, 0.86-0.97 times as long as the antennae, length of this hair 61-72 μ. Between the eyes 35-41 unbranched processi (fig. 4) with an obovate hair on top; the lateral processi smaller and frequently with stiletto-shaped hairs (fig. 4). Antennae (fig. 2) with four or indistinctly five segments, pale brown, 468-519 μ long, 0.32-0.39 times as long as the body, 1.36-1.47 times as long as the width of the head across the eyes; segments I and II smooth, length of hair on segment II, 41-53 μ; segment III with some smooth imbrications, in four-segmented antennae 216-240 μ long, 1.12-1.25 times as long as the last segment, with 5-7 hairs, 71-84 μ long, on a base up to 22 μ high; segment III in five segmented antennae 161-184 μ long, 2.8-3.5 times as long as IV, and 0.87-0.90 times as long as segment V, with 4-5 hairs; segment IV in five-segmented antennae 53-57 μ long, 0.25-0.32 times as long as segment V, with two hairs, 67-70 μ long; the last segment 179-212 μ long; 1.70-1.88 times as long as the processus terminalis, with one hair, 27-33 μ long. The processus terminalis 98-114 μ long, with four apical hairs, and without hairs over its length. The eyes pale brown, with three ommatidia, ocular tubercles lacking. Ultimate rostral segment (fig. 8) 198-223 μ long, 2.00-2.53 times as long as the second tarsal segment of the hind leg, with two basal hairs, four hairs over its length, about five μ long, and two bases anterior to the last segment, without a hair; stylets 617-665 μ long.

Thorax.— Prothorax the same colour as the head, fused with the head, with at each side two lateral branched processi, the marginal larger than the pleural, the main branch of each processus without an apical hair, but distally to the last lateral branch with a base of a hair, the hair not extending outside; the lateral branches with a stiletto-shaped hair on top, of the distal branches with bifurcate tip; some branches dorsally on the base of the processi with obovate hairs on top. The pronotum with unbranched processi with an obovate hair on top; the marginal sides with smaller unbranched processi, each with a stiletto-shaped hair, and there also spinulae are present. Mesothorax and metathorax each as the prothorax with branched and unbranched processi. The legs pale brown, without imbrications. Tibia of the fore leg 295-334 μ long, 0.83-0.94 times as long as the width of the head across the eyes. Tibia of the hind leg, the distal part without spines, and distal spines are lacking, length of hairs 51-57 μ. First tarsal segments with five hairs (fig. 5), the lateral 51-57 μ long. Second tarsal segment of the hind leg (fig. 6), length of the dorsoapical hair 10 μ, of the lateroapical hair 41-50 μ, and of the empodial hair 31-35 μ, claw sturdy and hooked (fig. 7). Length of segments of the hind leg: femur plus trochanter 314-346 μ, tibia 405-468 μ, 1.26-1.35 times as long as the femur, and 1.17-1.32 times as long as the width of the head across the eyes, first tarsal segment 35-39 μ, second tarsal segment 88-96 μ.

Abdomen.— Abdomen pale brown, segment I at each side one branched processus, pleural processi are lacking, the tergite with unbranched processi, all with hairs as on the prothorax; segment II with only one branched processus pleurally on each side; segments III-VII each with at each side one branched processus (figs. 9a, 9b),

and unbranched processi on the tergites (fig. 10), all with hairs as on the prothorax. Length of branched processi on segment V, 578-630 μ, on segment VI, 551-606 μ, on segment VII, 681-771 μ. Length of hairs on tergite IV, 27-43 μ, length of hairs ventrally on segment IV, 61-78 μ. Tergite VIII an oval plate with coarse spinulae, with 5-8 hairs, the base of the lateral hair 22-23 μ long, length of hair 47-59 μ; base of the two middle hairs with coarse spinulae, 82-94 μ long, the hair 29-41 μ long (fig. 11). Siphunculi pale brown, the base and distal end slightly darker, cylindrical, curved outwards, with smooth imbrications, 574-653 μ long, 0.40-0.47 times as long as the body, 1.72-1.84 times as long as the width of the head across the eyes, and 1.39-1.50 times as long as the tibiae of the hind leg, about 60 μ wide at the base, 30 μ in the middle, at the top narrowed, 18-22 μ wide, the flange 24-27 μ, 1.09-1.39 times as wide as the narrowest part, with 5-7 hairs, four of these on the distal part, 23-32 μ long. Cauda (fig. 12) pale brown, 123-165 μ wide, 33-43 μ long, with six hairs, 106-116 μ long, the median processus 33-52 μ long. Subanal plate with 9-13 hairs, 125-138 μ long. Subgenital plate with two anterior hairs, 80-82 μ long, and 12-13 posterior hairs, 74-78 μ long. Gonapophyses probably three, at most only some circular bases without a hair observable on each one.

Host plant records.— Specimens were collected in Java: *Schoutenia ovata* Korth. (syn. *Actinophora fragrans* Wall. ex R.Br.), Djatipapak, Banjoewangi (50 m), 10.vii.1948, F.W. Rappard; *Schoutenia ovata,* Sambinglo, South-Banjuwangi (50 m), 12.vii.1950, F.W. Rappard. Both BMNH, London.

The aphids live on the lower side of young leaves.

Alatae were not present.

Etymology.— "Echinata", furnished with spines or bristles.

Cervaphis rappardi Hille Ris Lambers, 1956
(figs. 13-33)

Cervaphis rappardi Hille Ris Lambers, 1956: 132.

Types.— Syntypes (7 slides, Lowokwaroe-Malang, 29.x.1951, Rappard), BMNH, London.

Apterous viviparous female.— In life (pl. 25): Yellow or yellowish green with pale brown. Sometimes a brown line in length on the abdomen. Eyes red. Larvae pale green (notes by Dr F.W. Rappard).

Macerated specimens (figs. 13-24; described from 10 specimens).— Body 1.22-1.65 mm long, 1.7-1.9 times as long as it is wide.

Head.— Head pale brown, across the eyes 362-409 μ wide, protruding in the middle 0-14 μ, anteriorly usually at each side one hair, 60-76 μ long, with a sharp tip, on a base about 10-μ high (fig. 14). Posteromedially to the antennae a branched processus with on top of each branch a hair, which is long, narrow and pointed on the main branch, wider on the distal side branch with bifurcate tip, stiletto-shaped on more basal branches and ovate on basal branches (fig. 15); length of the processus including the apical hair 157-379 μ, 0.47-0.76 times as long as the antennae, length of this hair 47-65 μ. Between the eyes 40-60 unbranched processi (fig. 16a) with an obovate hair on top; the lateral processi smaller and frequently with stiletto-shaped

hairs. Antennae (fig. 17) with three or indistinctly four segments, pale brown, 310-527 μ long, 0.21-0.34 times as long as the body, 0.86-1.29 times as long as the width of the head across the eyes; segments I and II smooth, length of hair on segment II, 41-55 μ; segment III with some smooth imbrications, in antennae assumed to be four-segmented 137-263 μ long, 1.10-1.42 times as long as the last segment, with 6-7 hairs, 55-78 μ long, on a base up to 22 μ high; segment IV, 114-188 μ long, 1.64-1.89 times as long as the processus terminalis, with one hair, 29-33 μ long. The processus terminalis 63-103 μ long, with four apical hairs, and without hairs over its length. The eyes pale brown, with three ommatidia, ocular tubercles lacking. Ultimate rostral segment (fig. 21) 155-216 μ long, 1.89-2.40 times as long as the second tarsal segment of the hind leg, with two basal hairs, four hairs over its length, about six μ long, and two bases anterior to the last segment, without a hair; stylets 542-679 μ long.

Thorax.— Prothorax the same colour as the head, fused with the head, with at each side two branched processi; the lateral larger than the pleural, the main branch of each processus without an apical hair, but distally to the last lateral branch, a base of a hair, the hair not extending outside; the lateral branches with a stiletto-shaped hair on top, on the distal branches with bifurcate tip; some branches dorsally on the base of the processi, with obovate hairs on top. The pronotum with (more numerous than in *C. echinata* and *C. schouteniae*) unbranched processi, with an obovate hair on top (fig. 16b); the marginal sides with smaller unbranched processi, each with a stiletto-shaped hair, and spinulae are also present. The lateral sides of mesothorax and metathorax with a pale brown sclerite with coarse blunt spinulae; mesothorax and metathorax each as the prothorax with branched and unbranched processi. The legs pale brown, without imbrications. Tibia of the fore leg 202-306 μ long, 0.55-0.75 times as long as the width of the head across the eyes. Tibia of the hind leg, the distal part without spines, and distal spines are lacking, length of hairs 49-57 μ. First tarsal segments with five hairs (fig. 18), the lateral 41-55 μ long. Second tarsal segment of the hind leg (fig. 19), length of the dorsoapical hair 8-12 μ, of the lateroapical hair 43-49 μ, and of the empodial hair 28-33 μ, claw sturdy and strongly hooked (fig. 20). Length of segments of the hind leg: femur plus trochanter 248-336 μ, tibia 283-417 μ, 1.12-1.30 times as long as the femur, and 0.77-1.02 times as long as the width of the head across the eyes, first tarsal segment 31-40 μ, second tarsal segment 78-90 μ.

Abdomen.— Abdomen lateral sides of each of segments I, III-VII with a pale brown sclerite with coarse blunt spinulae. The tergum of segments I-VII and the processi pale brown, a distinct furrow between metanotum and tergite I, and between tergite I and II, but tergites II-VII one plate. Tergite I at each side one branched processus, pleural processi are lacking, the tergite with more numerous unbranched processi than in *C. echinata* and *C. schouteniae;* segment II with only one branched processus pleurally on each side; segments III-VII each, at each side, with one branched processus and unbranched processi on the tergites, all with hairs as on the prothorax (fig. 22). Length of branched processi on segment V, 330-645 μ; on segment VI, 354-645 μ, and on segment VII, 464-724 μ. Tergite VIII an oval plate with coarse spinulae, with 8-10 hairs (fig. 23), the lateral on a smooth processus, 21-31 μ high, the hair 25-49 μ long (fig. 23b); the two middle hairs on a processus with coarse spinulae (fig. 23a), 53-116 μ high, the hair 20-43 μ long. Length of hairs on tergite IV (figs. 23c, d), 23-43 μ, length of hairs ventrally on segment IV, 57-72 μ. Siphunculi pale brown,

curved outwards, with smooth imbrications, 334-488 μ long, 0.24-0.33 times as long as the body, 0.89-1.22 times as long as the width of the head across the eyes, and 1.16-1.24 times as long as the tibiae of the hind leg, about 50-75 μ wide at the base, 30-35 μ in the middle, at the top narrowed, 18-22 μ wide, the flange 22-30 μ, 1.10-1.50 times as wide as the narrowest part, with 5-7 hairs, four of these on the distal part, 18-33 μ long. Cauda (fig. 24) pale brown, 120-159 μ long (the median processus not included), with six hairs, 98-137 μ long; the median processus 41-63 μ long, with spinulae. Subanal plate with 10-14 hairs, 118-167 μ long. Subgenital plate with two anterior hairs, 80-82 μ long, and 10-15 posterior hairs, 63-80 μ long. Gonapophyses not distinct.

Life specimens.— Alate viviparous ♀. Body olive green, head and thorax slightly darker. Eyes brownish red (notes by Dr F.W. Rappard).

Macerated specimens (figs. 25-32; described from 2-3 specimens from *T. cacao* flowers, one of these from New Britain, J.J.H. Szent-Ivany and L. Smee, 23.ii.1960, BMNH, London).— Body length 1.57-1.77 mm, 1.9-2.3 times as long as it is wide.

Head.— Head (fig. 25) brown, around the ocelli darker, smooth. Width of the head across the eyes 362-385 μ, the frons protruding eight μ, with one hair at each side, 15-20 μ long, antennal tubercles lacking, but posteromedial to the antennae a tubercle, 25-31 μ high, with 8-11 hairs, 10-12 μ long; between the eyes 17-20 hairs, 10-14 μ long (fig. 29a), other posterior hairs lacking. Antennae (fig. 26) brown, the processus terminalis paler; antennae with five segments, 834-908 μ long, 0.47-0.54 times as long as the body, and 2.3-2.4 times as long as the width of the head across the eyes; segments I and II dorsally and ventrally with smooth and spinulose imbrications, length of hair on segment II, 14-16 μ; segment III with smooth imbrications, mainly dorsally, 358-393 μ long, 2.7-3.2 times as long as segment IV, 1.32-1.33 times as long as segment V, 0.91-0.95 times as long as segments IV+V, and 2.37-2.67 times as long as the processus terminalis, and segments III+IV, 1.30-1.38 times as long as the width of the head across the eyes, with 8-11 elliptical or roundish rhinaria over the whole length, protruding about 10 μ, with 5-7 hairs, 16 μ long; segment IV with smooth imbrications, 111-137 μ long, 0.41-0.53 times as long as segment V, with only a primary rhinarium, 25-30 μ wide, with two hairs, 18-20 μ long; segment V with smooth imbrications, 251-295 μ long, 1.79-1.83 times as long as the processus terminalis, the base with one hair, 12-18 μ long; the processus terminalis 137-163 μ long, with four apical hairs, and zero over its length. The eyes colourless, the ocular tubercle pale brown, diameter of the ommatidia of the ocular tubercle 18-20 μ. Ultimate rostral segment (fig. 31) 153-157 μ long, 1.78-1.82 times as long as the second tarsal segment of the hind leg, with two basal hairs, four hairs over its length, six μ long, and two bases anterior to the last segment, without a hair; stylets 495-507 μ long.

Thorax.— Thorax pale brown, each lateral side with two roundish tubercles 14-20 μ long, each with about six hairs, six μ long; spread over the surface about 45 hairs, 10 μ long. Mesothorax brown, length of hairs 12 μ. Medial vein of the fore wing (fig. 31) once branched, hind wing without oblique vein. Femora pale brown, tibia and tarsi almost colourless, all segments with some spinulose imbrications. The tibia of the fore leg 456-574 μ long, 1.26-1.49 times as long as the width of the head across the eyes. Distal part of the tibiae ventrally with spines, 14-18 μ long, some of them also at the distal end; length of hairs of the hind tibia 37-42 μ long. First tarsal segments

with five hairs, the lateral of the hind leg 35-37 μ long (fig. 28). Length of dorsoapical hair of the second tarsal segment of the hind leg (fig. 30) 10-16 μ, the lateroapical hair 35-37 μ long, the empodial hair 22-25 μ. Length of the segments of the hind leg: femur plus trochanter 464-472 μ, tibia 653-685 μ, 1.45-1.48 times as long as the femur, and 1.78-1.89 times as long as the width of the head across the eyes, first tarsal segment 29-31 μ, second tarsal segment 84-88 μ.

Abdomen (fig. 32).— Tergites I-V smooth, each at the lateral sides with a tubercle that is not quite raised, mainly marked by the presence of about 20 (on tergite II, 5-10) hairs. Tergites I and II in the middle with a narrow transverse pale brown plate with 32-34 and 27-32 hairs respectively, and in between the segments with pale brown muscular plates. Tergites III-V one pale brown plate, each with about 30 hairs, on tergite IV, 32-34, 10-12 μ long, on the middle of the abdomen ventrally 53-55 μ long (fig. 29c). The middle of tergite VI anteromedial to the siphunculi with 27-29 hairs; the tubercles just medial to the base of the siphunculi with hairs. Tergite VII in the middle with 9-12 hairs, and posterior to these the two tubercles recognizable only by presence of about 15 hairs on each one (fig. 29d). Tergite VIII with transverse rows of concentric spinulose imbrications, with 8-10 hairs, 23 μ long (fig. 29e). Siphunculi brown, paler to the end, with spinulose imbrications, the spinulae one μ long; length 437-488 μ, 0.25 times as long as the length of the body, at the base 74-78 μ wide, the cylindrical part 28-31 μ wide and the narrowest part at the top 20 μ wide, the flange 1.30-1.45 times as wide as the narrowest part. Cauda colourless, 161 μ wide, with six hairs, 78-86 μ long. Subanal plate colourless, with 11-18 hairs, 78-96 μ long. Subgenital plate with two anterior hairs, 53-59 μ long, and 15-18 posterior hairs, 57-67 μ long. Gonapophyses three, the lateral with two hairs, the middle with 3-4 hairs, 8 μ long.

First stage larva of apterous viviparous ♀ (fig. 33; description of one specimen): Body length 527 μ, 2.1 times as long as it is wide. Head across the eyes 220 μ wide, with six hairs on the frons, two of them ventrally; medial to the base of the antennae a process with a main branch, one distal branch, and one branch at the base, 108 μ long, the hair of the distal branch included, which is 49 μ long. Between the eyes four bifurcate hairs, e.g. 33 μ long, on a process 25 μ long. Antennae with three segments, 204 μ long, segment III, 149 μ long, the processus terminalis 51 μ long. The ultimate rostral segment 143 μ long. The thoracic segments each at the lateral sides with a process with, at most, a tiny apical branch, the main branch with a hair with bifurcate tip; pleurally each segment with a process 94-106 μ long, the apical bifurcate hair included; in the middle the pronotum with two anterior and two posterior processi. The mesonotum with three, and the metanotum with four processi. Abdominal segments I-VII at the lateral sides each with one processus, with only a tiny distal side branch without a hair at the distal end, the hair at the main branch with a bifurcate tip; the process on segment II is equal to the lateral processi on the other segments, but placed slightly more pleurally; each of segments I-VI dorsally with four bifurcate hairs, each on a process 20-33 μ long; length of the process of segment VII, 165 μ, the hair not included; length of the distal hair 16 μ. Siphunculi colourless, without spinulae or hairs, 51 μ long and 55 μ wide. Tergite VIII an oval plate with spinulae, in the middle with two processi, 47 μ long, the bifurcate hair included. The cauda with two hairs, 55 μ long.

Host plant records.— Specimens were collected in Java: *Nephelium lappaceum* Lin-

naeus, Bondowoso (300 m), 12.x.1948; *Theobroma cacao* Linnaeus, Lowokwaroe, Malang (450 m), 25.v.1951, 25.x.1951; all F.W. Rappard, BMNH, London; *Erycibe grandiflora* Adelb., Bogor Keb. R., 14.xi.1976, D. Noordam, RMNH, Leiden.

The aphids live on the lower side of leaves (*Erycibe*), between and in flowers and on young fruits (*Nephelium, Theobroma*).

Alatae or larvae of alatae were present in Java 12.x.1948; 25.x.1951; 17.xi.1951.

Etymology.— "Rappardi", name given by Hille Ris Lambers (1956) to commemorate Dr F.W. Rappard, of the Forestry Service of Indonesia, who collected this aphid for the first time.

Cervaphis schouteniae van der Goot, 1917
(figs. 34-54)

Cervaphis schouteniae van der Goot, 1917: 148.
Cervaphis cambodiensis Takahashi, 1941: 9; Hille Ris Lambers 1956: 136 (synonymy).

Types.— Lectotype apterous viviparous ♀ from *Guazuma* spec., Pasoeroean, Java, 5.vi.1913, P. v.d. Goot, det. on slide *Cervaphis elaeagni*, det. P. v.d. Goot, no. 48-1-1. Paralectotypes 18, one on the same slide as the lectotype, the others on slides 48-2-48-8, with same data as the lectotype. Lectotype and paralectotypes LUW, Wageningen.

Life specimens.— Apterous viviparous ♀ (pl. 1). White, pale yellow or green; on each segment on the middle a pale brown spot, these spots form together a line in length. Antennae white. Siphunculi pale brown, the end grey. End of the branched processi white. Hairs of the cauda white. Eyes red.

Macerated specimens (figs. 34-42; described from nine specimens).— Body length 1.30-1.69 mm, 1.7-2.1 times as long as it is wide.

Head.— Head very pale brown, across the eyes 346-417 μ wide, protruding in the middle 0-10 μ, anteriorly at each side one hair, 61-82 μ long, with a sharp tip or sometimes the tip bifurcate, on a base about 15 μ high (fig. 38a). Posteromedially to the antennae a branched processus with a hair on top of each branch, which is long, narrow, pointed or blunt on the main branch, wider and stiletto-shaped with sometimes a bifurcate tip on side branches, and obovate and shorter on a few basal branches (fig. 38b, c, d); length of the processus including the apical hair 240-326 μ, 0.45-0.58 times as long as the antennae, length of this hair 35-52 μ. Between the eyes 16-27 unbranched processi (fig. 40) with a stiletto-shaped hair on top, the tip usually bifurcate; some small hairs with pointed tips or, exceptionally, an obovate hair (fig. 40). Antennae (fig. 35) very pale brown, with four segments, 413-614 μ long, 0.32-0.39 times as long as the body, 1.19-1.53 times as long as the width of the head across the eyes; segments I and II smooth, length of hair on segment II, 39-55 μ; segment III with some smooth imbrications, 186-299 μ long, 1.04-1.41 times as long as segment IV, with 5-7 hairs, 61-84 μ long, on a base up to 16 μ high; segment IV, 155-235 μ long, 1.79-2.09 times as long as the processus terminalis, with one hair, 20-31 μ long. The processus terminalis 74-129 μ long, with four apical hairs, and without hairs over its length. The eyes almost colourless, with three ommatidia, ocular tubercles lacking. Ultimate rostral segment (fig. 42) 194-220 μ long, 1.89-2.10 times as long as the second tarsal segment of the hind leg, with two basal hairs, four hairs over its length,

about six µ long, and two bases anterior to the last segment, without a hair; stylets 620-703 µ long.

Thorax.— Prothorax the same colour as the head, fused with the head, with two laterally branched processi at each side, the lateral larger than the pleural, the main branch of each processus without an apical hair, but distally to the last lateral branch, a base of a hair, the hair not extending outside; the lateral branches with a stiletto-shaped hair on top, on the distal branch frequently bifurcate; sometimes on the base of the processi a branch with an obovate hair on top. The pronotum with , in the middle, large radiating unbranched processi (fig. 40), with a stiletto-shaped, frequently bifurcate hair on top; around these processi, and also more pleurally, smaller processi with a small stiletto-shaped hair. The lateral sides of mesothorax and metathorax with a colourless sclerite with coarse blunt spinulae; mesothorax and metathorax each as the prothorax with branched and unbranched processi. The legs very pale brown, without imbrications. Tibia of the fore leg 293-409 µ long, 0.85-1.02 times as long as the width of the head across the eyes. Tibia of the hind leg, the distal part without spines, and distal spines are lacking, length of hairs 48-64 µ. First tarsal segments with five hairs (fig. 36), the lateral 49-59 µ long. Second tarsal segment of the hind leg (fig. 37), length of the dorsoapical hair 10-14 µ, of the lateroapical hair 39-50 µ, and of the empodial hair 29-38 µ, claw sturdy and strongly hooked. Length of segments of the hind leg: femur plus trochanter 287-389 µ, tibia 401-535 µ, 1.34-1.63 times as long as the femur, and 1.14-1.34 times as long as the width of the head across the eyes, first tarsal segment 35-44 µ, second tarsal segment 92-110 µ.

Abdomen.— Abdomen lateral sides of usually only each of segments I and III with a colourless sclerite with coarse blunt spinulae. The tergum of segments I-VII and the processi colourless or very pale brown, a distinct furrow between metanotum and tergite I, and between tergites I and II, but tergites II-VII one plate. Tergite I at each side one branched processus, pleural processi are lacking, the tergite with unbranched processi, less numerous than in *C. echinata* and *C. rappardi*; segment II with only one branched processus pleurally on each side; segments III-VII each with, at each side, one branched processus, and on the tergites unbranched processi, all with hairs as on the prothorax (fig. 39), but the main branch with a base of a hair, but without a hair (fig. 34a). The tergites with unbranched processi with large or small bases and hairs (fig. 40). Ventral hairs slender, pointed or bifurcate (fig. 40). Length of branched processi on segment V, 386-480 µ; on segment VI, 346-449 µ, and on segment VII, 456-574 µ. Tergite VIII an oval plate with coarse spinulae, with 6-9 hairs, the base of lateral hair 16-29 µ long, length of the hair 40-61 µ; base of the two middle hairs with coarse spinulae, 49-88 µ long, the hair 35-40 µ long. Siphunculi colourless or very pale brown, the distal 40 µ pale brown, cylindrical, usually slightly curved outwards, with smooth imbrications, 409-598 µ long, 0.31-0.37 times as long as the body, 1.11-1.43 times as long as the width of the head across the eyes, and 0.94-1.11 times as long as the tibiae of the hind leg, e.g. 70 µ wide at the base, 35 µ in the middle, narrowed at the top, 23-26 µ, the flange 31-33 µ, 1.13-1.43 times as wide as the narrowest part, with 6-7 hairs, four of them on the distal part, 33-49 µ long. Cauda (fig. 41) colourless, 137-184 µ wide, 31-49 µ long, with six hairs, 88-108 µ long, the median processus with spinulae, 33-47 µ long. Subanal plate with 11-14 hairs, 104-153 µ long. Subgenital plate with two anterior hairs, 69-92 µ long, and 9-13 posterior

hairs, 74-108 μ long. Gonapophyses usually not observable, but sometimes three groups of 2-4 circular spots with a diameter of two μ visible, but never with a hair.

Life specimens.— Alate viviparous ♀. Head and thorax brownish yellow. Abdomen pale yellow. Eyes red. Antennae black. Legs grey, the tibiae distally and the tarsi darker. Siphunculi black. Pterostigma with black margins on the lower side, veins black (van der Goot, 1917: 151).

Macerated specimens (figs. 43-52; described from eight specimens).— Body length 1.24-1.59 mm, 2.1-2.8 times as long as it is wide.

Head.— Head (fig. 43) brown, around the ocelli darker, smooth. Width of the head across the eyes 342-393 μ, the frons protruding 0-12 μ, with one hair at each side (fig. 48), 14-23 μ long, antennal tubercles are lacking, but posteromedial to the antennae a tubercle, 20-43 μ high, with 6-8 hairs, 15-23 μ long; between the eyes 6-11 hairs, 16-23 μ long, other posterior hairs lacking. Antennae (fig. 49) brown, the processus terminalis slightly paler; antennae with five segments, 734-953 μ long, 0.53-0.64 times as long as the body, and 2.0-2.5 times as long as the width of the head across the eyes; segments I and II dorsally and ventrally with some smooth and spinulose imbrications, length of hair on segment II, 14-20 μ; segment III with smooth imbrications, mainly dorsally, 252-365 μ long, 1.8-2.5 times as long as segment IV, 0.94-1.13 times as long as segment V, 0.61-0.76 times as long as segments IV+V, and 1.70-2.16 times as long as the processus terminalis, and segments III+IV, 1.10-1.40 times as long as the width of the head across the eyes, with 7-12 elliptical or roundish rhinaria over the whole length, protruding about 10 μ, with 5-7 hairs, 23-29 μ long; segment IV with smooth imbrications, 131-170 μ long, 0.44-0.56 times as long as segment V, with only a primary rhinarium, 26-35 μ wide, with two hairs, 24-31 μ long; segment V with smooth imbrications, 232-342 μ long, 1.67-1.95 times as long as the processus terminalis, the base with one hair, 16-23 μ long; the processus terminalis 139-188 μ long, with four apical hairs, and zero over its length. The eyes colourless, the ocular tubercle brown, diameter of the ommatidia of the ocular tubercle 16-20 μ. Ultimate rostral segment (fig. 46) 167-190 μ long, 1.80-1.96 times as long as the second tarsal segment of the hind leg, with two basal hairs, four hairs over its length, about eight μ long, and two bases anterior to the last segment, without a hair; stylets 503-582 μ long.

Thorax.— Prothorax pale brown, each lateral side with two roundish tubercles with a length of e.g. 16-27 μ or a diameter of about 20 μ, each tubercle with 6-7 hairs, 6-8 μ long; spread over the surface 13-17 hairs, about 12 μ long. Mesothorax brown, length of hairs (fig. 48) 14-20 μ. Medial vein of the fore wing (fig. 44) once branched, hind wing without oblique vein. Legs pale brown or brown, the femora usually slightly darker than the tibiae and tarsi, all segments with spinulose imbrications. The tibia of the fore leg 496-669 μ long, 1.45-1.78 times as long as the width of the head across the eyes. Distal part of the tibiae ventrally with spines, 10-16 μ long, some of them also at the distal end, 12-16 μ long; length of hairs of the hind tibia 37-45 μ long. First tarsal segments with five hairs, the lateral of the hind leg 37-43 μ long (fig. 45). Length of dorsoapical hair of the second tarsal segment of the hind leg (fig. 45) 10-16 μ, the lateroapical hair 37-45 μ, the empodial hair 22-29 μ. Length of the segments of the hind leg: femur plus trochanter 386-519 μ, tibia 637-822 μ, 1.56-1.75 times as long as the femur, and 1.86-2.17 times as long as the width of the head across the eyes, first tarsal segment 27-35 μ, second tarsal segment 90-103 μ.

Abdomen (fig. 50).— The lateral sides of each segment with an area with spinulae (fig. 52), two µ long, the areas colourless but on the distal segments pale brown. Tergites I-V smooth, each at the lateral sides with a tubercle that is not quite raised, (fig. 52), mainly marked by the presence of 10-15 (on tergite II about five) hairs. Tergites I and II in the middle with a narrow transverse pale brown plate with 11-17 and 8-13 hairs respectively, and in between the segments with pale brown muscular plates. Tergites III-V one pale brown plate, each with 7-12 hairs, on tergite IV, 8-12 µ long, in the middle of the abdomen ventrally 31-53 µ long (fig. 48). Tergite VI medial to the base of the siphunculi with a tubercle with about eight hairs, the middle of the tergite with 6-12 hairs. Tergite VII in the middle with 1-4 hairs, and posterior to these two tubercles each with 5-9 hairs. Tergite VIII with transverse rows of spinulose imbrications, with 6-8 hairs (fig. 48), 20-42 µ long. Siphunculi brown, paler to the end, cylindrical, usually slightly curved outwards, with smooth or spinulose imbrications, the spinulae 1-3 µ long; length 449-574 µ, 0.32-0.37 times as long as the body, 1.27-1.52 times as long as the width of the head across the eyes, and 0.65-0.71 times as long as the tibiae of the hind leg, 63-96 µ wide at the base, 27-31 µ in the middle, at the distal 50 µ, slightly widened to 31-43 µ, the narrowest distal part 22-25 µ wide, the flange 29-32 µ, 1.24-1.39 times as wide as the narrowest distal part. Cauda (fig. 51) colourless, 137-186 µ wide, with six hairs, 65-74 µ long. Subanal plate colourless with 10-13 hairs, 63-84 µ long. Subgenital plate with two anterior hairs, 30-61 µ long, and 10-15 posterior hairs, 53-82 µ long. Gonapophyses three groups sometimes observable, each of 2-4 circular spots with a diameter of two µ, sometimes with a hair, 2-4 µ long.

First stage larva of apterous viviparous ♀ (fig. 53, 54; description of eight specimens).— Body length 449-630 µ, 2.1-2.4 times as long as it is wide. Head across the eyes 196-230 µ wide, with six hairs on the frons, some of them ventral; medial to the base of the antennae a process with a main branch, one distal branch and one at the base, 98-131 µ long, the hair of the main branch included, which is 37-43 µ long. Between the eyes four bifurcate hairs (fig. 54a), e.g. 29 µ long, on a process 10 µ long. Antennae with four segments (one specimen with three segments), 196-230 µ long, segment III, 57-61 µ long, segment IV, 93-106 µ long, the processus terminalis 51-58 µ long. The ultimate rostral segment 157-170 µ long. The thoracic segments each at the lateral sides with a process with a tiny apical process with a tiny apical branch (but two specimens with an apical segment about 50 µ long) and an apical bifurcate hair; pleurally each segment with a process 104-157 µ long, the apical unbranched or bifurcate hair included; in the middle the pronotum with two anterior and two posterior processi, the mesonotum and metanotum each with four processi, of the mesonotum 22-33 µ long, the apical hair not included (fig. 54b). Abdominal segments I-VII at the lateral sides each with one processus with only a tiny distal side branch without a hair at the distal end, the hair at the main branch with a bifurcate tip (fig. 54d); the process on segment II is the same as the lateral processi on the other segments, but placed slightly more pleurally; each of segments I-VI dorsally with four bifurcate hairs (fig. 54c), each on a process, on segment IV, 16-20 µ long, the apical hair not included (the lateral are smaller); length of the process of segment VII, 145-185 µ, length of the distal hair 16-22 µ. Siphunculi colourless, without spinulae or hairs, 49-55 µ long and 30-33 µ wide. Tergite VIII an oval plate with spinulae, in the middle

with two processi, 27-53 μ long, the bifurcate hair included. Cauda with two hairs, 45-49 μ long, and a median process, about six μ long.

Host plant records.— Specimens were collected in Java in the places and dates indicated, while the collectors are indicated by numbers between parentheses: van der Goot (1917), (1), LUW, Wageningen or lost; F.W. Rappard (2) and Verbeek (3), both BMNH, London; D. Noordam (4), RMNH, Leiden: *Schoutenia ovata* Korthals (syn. *Actinophora fragrans* Wall. ex R. Br., name on the slide *Elaeagnus* spec.), Kepoeh (100 m), 15.xii.1912, (1); *Guazuma ulmifolia* Lmk. var. *tomentosa* K. Schum., Pasoeroean, 5.vi.1913, name on the slide *Cervaphis elaeagni* (1); other collections of van der Goot (1917) material lost, and identity of the species considered doubtful; *Schoutenia ovata* Korthals, Sambinglo, Banjoewangi (50 m), 8.xi.1949, 12.vii.1950 (2); *Schoutenia ovata* Korthals, Z.Banjuwangi, 11.ix.1950, (2) ; *Pterospermum javanicum* Jungh., Malang (450 m), 7.vii.1951, 4.xi.1951, 7.xi.1951 (2); *Schoutenia ovata* Korthals, Margasari, 18.ix.1928, (3); *Guazuma ulmifolia* Lamk., Bogor, 25.x.1975, (4); *Microcos tomentosa* J.E. Smith, Bogor, 25.x.1975, 9.v.1976, 26.xii.1976, 18.xi.1977, (4); *Sterculia villosa* Roxb., Bogor Keb. R., 26.x.1975, (4); *Microcos ceramensis* Burr., Bogor Keb. R., 25.ix.1976, (4); *Erycibe grandiflora* Adelb., Bogor Keb. R., 14.xi.1976, (4).

The aphids live on the lower side of the leaves, preferably on the youngest parts, on youngest shoots and between young flower buds; the plants stellately pubescent when young.

Alatae or larvae of alatae were present 8.xi.1949, 12.vii.1950, 11.ix.1950, 25.x.1975, 21.iii.1976, 9.v.1976, 18.xi.1977.

Etymology.— "Schouteniae", of *Schoutenia*, a genus of the Tiliaceae.

Genus *Eutrichosiphum* Essig & Kuwana, 1918
(figs. 55-151)

Eutrichosiphum Essig & Kuwana, 1918: 97 (type species: *Trichosiphum pasaniae* Okajima, 1908).

Life specimens (seven species).— Apterous viviparous ♂. Head whitish yellow, brown or black. Abdomen yellowish, brown, green or black. Siphunculi pale brown, brown or black.

Macerated specimens.— Body 1.16-2.97 mm long, 1.3-2.4 times as long as it is wide. The head colourless, pale brown or brown, width across the eyes 267-670 μ, the frons straight or protruding, with regard to the sides, 2-27 μ; the frons and between the eyes with numerous hairs in *E. heterotrichum* but in the other species dorsally the frons with 4-10 hairs, and between the eyes 4-22 hairs, and posterior hairs 0-7; length of hairs between the eyes 53-125 μ, but sometimes also tiny hairs, 4-16 μ long, the tips of the hairs pointed or the tips widened, with 2-5 teeth. Antennae with 5-6 segments, 527-1658 μ long, 0.39-0.66 times as long as the body, 1.7-3.2 times the width of the head across the eyes; antennal segment III, 4.5-5.4 times as long as segment IV, the last segment 187-449 μ long, 1.42-2.55 times as long as the processus terminalis; length of hair on antennal segment III, 45-123 μ, the processus terminalis with four apical hairs and 1-5 over its length. Eyes with numerous ommatidia, and an ocular tubercle with three ommatidia. Ultimate rostral segment 152-417 μ long, 1.64-3.48 times as long as the second tarsal segment of the hind leg; length of stylets 530-1495

μ long. The prothorax fused with the head, with 8-33 hairs, but in *E. heterotrichum* numerous hairs. Tibia of the fore leg 251-724 μ long, 0.77-1.43 times as long as the width of the head across the eyes. Tibia of the hind leg without coarse imbrications. First tarsal segments with seven hairs, but in *E. nigrum* with five. The tergites of abdominal segments II-VII one plate with, on each segment, hairs in one to several transverse rows, on tergite IV, 38-137 μ long, and ventrally in the middle of the abdomen, 27-130 μ long; dorsally and ventrally smooth or with spinulae, but an extensive area with sturdy spinulae ventrally in the middle is lacking; the tips of the hairs are pointed or with 2-5 teeth. Tergite VII with 2-4 hairs, tergite VIII with two, on tergite VIII, 63-170 μ long. Siphunculi almost cylindrical or spindle-shaped, 224-1007 μ long, 0.17-0.46 times as long as the body, 0.7-2.2 times as long as the width of the head across the eyes; the basal part with a few or several spinulose imbrications which e.g. in *E. heterotrichum* and *E. sinense* add up to somewhat of a reticulum; the siphunculus over its length with separate spinulae which in the distal 50-100 μ are closer to each other and frequently in transverse rows, length of the spinulae 4-10 μ; the siphunculi with numerous hairs over their whole length, 103-202 μ long, with a flange, 1.0-1.4 times wider than the narrowest distal part. Cauda with broadly rounded posterior margin, with 6-11 hairs, 59-185 μ long, without a median processus. Subanal plate with 10-25 hairs, 72-218 μ long. Subgenital plate with 2-20 anterior hairs, 27-134 μ long, and 4-18 posterior hairs, 47-181 μ long. Gonapophyses three, the lateral with 1-4 hairs, the middle with 2-6, 8-29 μ long.

Life specimens.— Alate viviparous ♂ (four species). Head greyish brown or brown, the abdomen yellow, green or black. The pterostigma grey or black.

Macerated specimens.— Body length 1.14-2.63 mm, 2.1-2.7 times as long as it is wide. Head pale brown or brown, width of the head across the eyes 231-567 μ, with 2-16 hairs between the paired ocelli, 55-112 μ long. Antennae with five, but in *E. heterotrichum* with six segments, 928-1895 μ long, 0.62-0.98 times as long as the body, and 2.6-3.8 times as long as the width of the head across the eyes, segment III with 7-39 rhinaria, secondary rhinaria on the other segments lacking; segment IV, 136-169 μ long; the processus terminalis 291-299 μ. Ultimate rostral segment 154-361 μ long, 1.81-2.98 times as long as the second tarsal segment of the hind leg; stylets 475-1200 μ long. Medial vein of the fore wing twice branched, hind wing with two oblique veins. First tarsal segments with seven hairs. Length of the lateroapical hair of the second tarsal segment of the hind leg 10-23 μ. Hairs of tergite IV, 20-88 μ long, ventrally on the middle of the abdomen 40-94 μ. Siphunculi pale brown, brown or black, 606-1595 μ long, 0.38-0.60 times as long as the body, and 1.1-2.2 times as long as the width of the head across the eyes, 8.2-13.5 times as long as the widest part, with transverse linear imbrications and reticulation over its whole length except the distal 100 μ (*E. heterotrichum, E. pasaniae*), or only the basal 25-100 μ reticulated (*E. pallidum, E. sinense*), the imbrications with a few tiny spinulae; the distal part with transverse rows of numerous spinulae, these spinulae 2-11 μ long; with numerous hairs, 127-248 μ long. Cauda with 6-8 hairs, 51-157 μ long. Subanal plate with 10-22 hairs, 69-186 μ long. Subgenital plate with 2-15 anterior hairs, 47-118 μ long, and with 6-20 posterior hairs, 53-140 μ long. Gonapophyses three, the lateral with 2-6, the middle with 4-8 hairs, 8-31 μ long.

First stage larva of apterous viviparous female (six species).— Body length 511-

1275 µ. Antennae with four segments. Eyes with numerous facets are present in *E. heterotrichum*, facets are lacking in *E. pasaniae* and *E. pullum*: in *E. glabrum*, *E. nigrum* and *E. sinense* facets are usually lacking but sometimes one facet is present; ocular tubercles with three ommatidia in all species well-developed. The ultimate rostral segment 137-316 µ long. Tibia of the fore leg 133-285 µ long, 0.57-0.72 times as long as the width of the head across the eyes. Abdominal tergites I-VI each with 6-7 hairs in *E. heterotrichum*, but in the other species with four. Siphunculi on abdominal segment VI, triangular, without spinulae and hairs. Segment VII with a nipple-shaped marginal tubercle and in the middle with two rather flat tubercles, each with a hair on top. Tergite VIII with two nipple-shaped tubercles, each with a hair on top.

Etymology.— "Eutrichosiphum", true Trichosiphum.

Eutrichosiphum glabrum spec. nov.
(figs. 55-62)

Types.— Holotype (apterous viviparous ♀) from *Quercus glauca* Thunb., Bogor Kebun R., Java, Indonesia, no. 932-1-4, 6.ii.1977, D. Noordam. Paratypes: 51 apterae viviparae same locality and host plant as holotype, no. 932, 6.ii.1977; no. 347, 24.v.1975, no. 495, 18.ii.1976; no. 731, 3.ix.1976; no. 893, 23.i.1977; no. 931, 6.ii.1977; no. 1006, 12.viii.1977; no. 1138, 21.xi.1977; no. 1140, 25.xi.1977; no. 1168, 11.xii.1977, and on *Quercus gemelliflora* Bl., no. 948, 27.iii.1977, all D. Noordam. Holotype and paratypes in RMNH, Leiden.

Life specimens.— Apterous viviparous female (pl. 2). Head, thorax and abdomen pale brownish yellow with a pleural orange spot on the pronotum, and an orange transverse band on mesonotum, metanotum and on five anterior segments of the abdomen, and a pleural spot on the sixth segment with the siphunculi. Eyes red, the ocular tubercle seen as a black point. Antennae pale brownish orange, around the distal rhinarium and the end of the processus terminalis black. Legs almost colourless, the tarsi black. The cauda same colour as the body. Siphunculi brownish orange, the distal one fifth to two-thirds black. Larvae pale greenish yellow with pale brown spots in transverse rows.

Macerated specimens (figs. 55-61; described from 12 specimens).— Body length, 1.40-2.10 mm, 1.9-2.0 times as long as it is wide.

Head.— Head pale brown, smooth, the sides of the frons and the middle part protruding 10-20 µ. Head across the eyes 322-433 µ wide. The frons with six hairs, between the eyes a row of four hairs, 65-82 µ long, acute. Antennae (fig. 57) with five segments, pale brown, around the rhinarium of the last segment and the end of the processus terminalis darker, 810-1305 µ long, 0.59-0.66 times as long as the body, 2.5-3.2 times as long as the width of the head across the eyes; segments I and II almost smooth, II-V with smooth imbrications; segment III, 326-614 µ long, 2.3-3.2 times as long as IV, 1.30-1.67 times as long as V, with about 20 hairs, 78-108 µ long; segment IV, 135-193 µ long, 0.47-0.56 times as long as V, with 4-5 hairs; segment V, 251-381 µ long, 1.61-1.79 times as long as the processus terminalis, length of hair on the base of the segment 39-61 µ; the processus terminalis with four apical hairs, and one over its length. Eyes and ocular tubercles pale brown, diameter of the ommatidia of the ocular tubercle 18 µ. Ultimate rostral segment (fig. 58) 152-194 µ long (but in collection

no. 1168 some specimens 116-118 μ long), 1.64-2.40 times as long as the second tarsal segment of the hind leg: stylets 530-679 μ long.

Thorax.— Prothorax the same colour as the head, fused with the head, with 9-11 hairs. Mesothorax and metathorax colourless along the anterior side, the posterior side pale brown, the mesothorax dorsally with 13-21 hairs. Legs evenly pale brown, the second tarsal segment distally slightly darker. Tibia of the fore leg 362-547 μ long, 1.02-1.39 times as long as the width of the head across the eyes. The femora with imbrications with a few spinulae, the tibiae distally with a few imbrications with some spinulae up to two μ long. First tarsal segments with seven hairs (fig. 59). Second tarsal segment of the hind leg (fig. 60) length of dorsoapical hair 12-16 μ, of lateroapical hairs 35-41 μ, and of empodial hairs 19-27 μ. Length of the segments of the hind leg: femur plus trochanter 385-567 μ, tibia 480-708 μ, 1.20-1.30 times as long as the femur, and 1.49-1.78 times the width of the head across the eyes, first tarsal segment 37-41 μ, second tarsal segment 80-98 μ.

Abdomen.— Abdominal margins and dorsum pale brown, on 5-6 segments with a vague transverse darker band. Dorsal body smooth, the hairs on tergite I and VI-VIII in one transverse row, on the other segments sometimes in two rows; the hairs acute, sometimes blunt, and rarely with bifurcated tips (fig. 56), 6-8 μ wide near the base, on tergite IV, 72-102 μ long, on tergite VII two hairs in the middle, 76-108 μ long; on tergite VIII two hairs on a tubercle, 86-117 μ long; ventral hairs 40-57 μ long. Siphunculi pale brown, the apical 0.2-0.6 part brown to black, almost cylindrical and straight, widest on the basal 0.2-0.3 part, 535-873 μ long, 4.9-8.7 times as long as wide at the widest part, 0.37-0.46 times as long as the body, and 1.7-2.2 times as long as the width of the head across the eyes, without reticulations, basally with some spinulose imbrications, over its whole length with separate spinulae, 4-8 μ long, increasing in number to the apex, the apical 70 μ with the spinulae in transverse rows; hairs numerous, 135-170 μ long, up to eight μ wide near the base, usually with thin ends, rarely with bifurcate ends; some hairs no longer than 30 μ; the pore slightly widened, the flange 1-4 μ wide. Cauda (fig. 61) 151-224 μ wide, 36-76 μ long, with a rounded posterior margin, without a process, with 6-8 hairs, 98-138 μ long. Subanal plate with 12-19 hairs, 120-155 μ long. Subgenital plate with 2-4 anterior hairs 55-69 μ long, and 7-11 posterior hairs, 80-120 μ long. Gonapophyses three, the lateral with 2-3 hairs, the middle with 4-5, 10-20 μ long.

First stage larva of apterous viviparous ♀ (fig. 62; description of one specimen).— Body length 732 μ (other specimens 630-803 μ), 2.4 times as long as it is wide. Head across the eyes 236 μ wide, with four anterior hairs, and four hairs in a transverse row between the eyes, 47 μ long. Antennae with four segments, 354 μ long; segment III, 126 μ long, 0.85 times as long as segment IV; segment IV, 149 μ long. Ultimate rostral segment 149 μ long. Tibia of the fore leg 159 μ long, 0.67 times as long as the width of the head across the eyes. Abdominal tergites I-VI each with four hairs, each on a sclerite, hair on tergite VI, 59 μ long. Siphunculi pale brown, on abdominal segment VI, triangular, with rounded tips, 84 μ long, and 55 μ wide at the base, almost smooth, without spinulae and hairs. Segment VII with a marginal tubercle, protruding backwards, nipple-shaped, 51 μ long, 33 μ wide at the base, smooth, and with a hair at the tip, 108 μ long; in the middle two hairs 90 μ long, 80 μ from each other, each on a tubercle, 47 μ wide and 16 μ high, with a smooth surface. Ter-

gite VIII a colourless plate, 94 μ wide with some spinulose imbrications, with two nipple-shaped tubercles, protruding backwards, each 37 μ long, and 27 μ wide at the base, with a hair on top, 126 μ long. The cauda with a broadly rounded posterior margin, with two hairs, 72 μ long.

Host plant records.— The specimens were collected in Java, *Quercus glauca* Thunb., Bogor Keb. R., 24.v.1975, 18.ii.1976, 3.ix.1976, 23.i.1977, 6.ii.1977, 12.viii.1977, 21.xi.1977, 25.xi.1977, 11.xii.1977, and on *Quercus gemelliflora* Bl., Bogor Keb. R., 27.iii.1977, all D. Noordam, RMNH, Leiden.

The aphids live on the lower side of young leaves, sometimes on the upper side, frequently on the midrib of the leaf; also on the youngest part of the stem of a developing sprout.

Alatae: one last stage larva of alatae was present in a collection of 25.xi.1977, and 11.xii.1977.

Etymology.— "Glabrum", smooth referring to the lack of spinulae on the dorsal side of the body.

Eutrichosiphum heterotrichum (Raychaudhuri, 1956) (figs. 63-79)

Holotrichosiphon heterotrichus Raychaudhuri, 1956: 77.
Eutrichosiphum heterotrichum; Eastop & Hille Ris Lambers, 1976: 197.

Types.— Syntypes: seven slides LUW, Wageningen by Raychaudhuri (1956:79) as cotypes, containing 14 specimens, apterous viviparous ♀♀, *Quercus* (pasang), Moeriah, 8.viii.1919 P. v.d. Goot and 12 slides BMNH, London, containing 25 apterous viviparous ♀♀ with the same data.

Raychaudhuri (1956: 77) described this species on the basis of specimens collected on Formosa from *Quercus* spec.; the six-segmented antennae and the presence of both long and short hairs on the siphunculi, and spinulae on the dorsum were characteristics which distinguished *Holotrichosiphon* from *Eutrichosiphum*. In the present publication the name in Eastop and Hille Ris Lambers (1976) is maintained.

Life specimens.— Apterous viviparous ♀ (pl. 3). Head orange brown, distal part of the pronotum, the mesonotum, metanotum and abdomen almost black. Eyes red. Antennae pale brown, processus terminalis black. Legs pale brown or orange brown, the tarsi slightly darker than the tibiae. Siphunculi black. The cauda grey or blackish.

Macerated specimens (figs. 63-70; described from 10 specimens).— Body length 2.1-3.1 mm, 1.6-1.9 times as long as it is wide.

Head.— Head brown, smooth, the sides of the frons and the middle part straight or protruding at most four μ. Head across the eyes 555-670 μ, the frons and the region between the eyes both with numerous hairs, brown, of different lengths, the longest 90-125 μ long, and six μ wide near the base; the shorter hairs of varying lengths, the shortest 10-15 μ long and two μ wide near the base. Antennae (fig. 67) with six segments, pale brown or brown, around the rhinaria and the end of the processus terminalis slightly darker, 1.30-1.66 mm long, 0.52-0.61 times as long as the body, 2.2-2.6 times the width of the head across the eyes; segment I with some spinulose imbrications, segment II smooth, segments III-VI with smooth imbrications; seg-

ment III, 504-685 µ long, 4.2-5.4 times as long as segment IV, 3.3-3.7 times as long as segment V, and 1.28-1.56 times as long as segment VI, with about 40 hairs of different lengths, the longest 86-123 µ; segment IV, 94-151 µ long, 0.64-0.90 times as long as segment V, with 6-9 hairs, 82-112 µ long; segment V, 141-189 µ long, 0.35-0.45 times as long as segment VI, with 8-10 hairs, 84-118 µ long; segment VI, 381-449 µ long, 1.42-1.56 times as long as the processus terminalis, the base with 6-8 hairs, 64-109 µ long; the processus terminalis with four apical hairs, and 5-7 over its length. The eyes pale brown, the ocular tubercle brown, diameter of the ommatidia of the ocular tubercle 22 µ. Ultimate rostral segment (fig. 70) 362-417 µ long, 2.90-3.48 times as long as the second tarsal segment of the hind leg; stylets 1.28-1.49 mm long.

Thorax.— Prothorax the same colour as the head, fused with the head, with numerous brown hairs of different lengths. Mesothorax and metathorax brown, dorsally with numerous hairs of different lengths, the longest 78-108 µ long, and with spinulae dorsally, mainly in the middle area. Legs brown, the basal part of the tibiae slightly darker, the distal end of the tibiae and the first tarsal segments slightly paler than the rest of the legs. The femora with some spinulose imbrications, the tibiae almost smooth, the second tarsal segments with imbrications with a few spinulae. Tibia of the fore leg 535-724 µ long, 0.93-1.16 times as long as the body, 1.3-1.6 times as the width of the head across the eyes. Tibia of the hind leg, hairs 53-84 µ long, basal hair 64-84 µ long with some short hairs 14-18 µ long; distally four bristles, 25-35 µ long, up to six µ wide near the base. First tarsal segments with seven hairs (fig. 68). Second tarsal segment of the hind leg (fig. 69), length of dorsoapical hairs 25-32 µ, of lateroapical hairs 49-59 µ, and of empodial hairs 31-40 µ. Length of the segments of the hind leg: femur plus trochanter 590-803 µ, tibia 770-1085 µ, 1.23-1.37 times as long as the femur, and 1.35-1.68 times the width of the head across the eyes, first tarsal segment 41-53 µ, second tarsal segment 106-127 µ.

Abdomen.— Abdominal margins and central area brown, separated from each other by a paler horseshoe-shaped area resulting from a sclerotic area at the ventral side between margins and central shield. A groove between metanotum and abdominal tergum I, between tergites I and II, VII and VIII, but the margins of the abdomen without segmental borders. Dorsally, spinulae in the middle on segments I-III, and pleurally on segments I-VI. the dorsum with numerous brown hairs of different lengths (fig. 64), the longest 88-123 µ, and up to eight µ wide near the base; the tips of the hairs rigid and sharp. The posterior border of the abdominal shield with over 20 hairs of different lengths. Tergite VIII an elliptical plate, 342-449 µ wide, 60-98 µ long, usually in a vertical position, with spinulose imbrications, with two hairs, 102-170 µ long. Margins of the body brown, with the same type of hairs dorsally; dorsal side of the margins smooth, ventral side with spinulae. The ventral horseshoe-shaped area with spinulae and short, brown sturdy hairs; the enclosed brown broad elliptical shield with spinulae and in the central area fine spinulose imbrications, with hairs of different lengths; in the central area also slender hairs 108-130 µ long, with almost threadlike tips. Siphunculi evenly black, sometimes brown, always darker than the body, curved outwards, 732-1007 µ long, 0.29-0.37 times as long as the width of the head across the eyes; 82-112 µ wide at the base, 120-200 µ at the widest part, which is at or below the middle; siphunculi 4.4-6.5 times as long as the widest part; the basal 20-60 µ with spinulose imbrications in transverse lines or reticulated (fig. 65), the rest

with separate spinulae, numerous and more dense towards the top, 4-10 μ long; with numerous brown hairs of different lengths with sturdy sharp points, the longest 147-202 μ; siphunculi gradually tapering from the middle, without a constriction to the narrowest distal part with a diameter of 68-89 μ, expanding from there to the flange, which is 1.2-1.4 times wider than the narrowest part. Cauda (fig. 70) 232-306 μ wide, 69-99 μ long, with a rounded posterior margin, without a process, with 6-10 hairs, 137-185 μ long, slender and with somewhat threadlike ends. Subanal plate brown, with 19-25 hairs, 143-218 μ long. Subgenital plate brown , e.g. 433 μ wide, 189 μ long with coarse spinulae; anterior hairs 12-20, 78-134 μ long, posterior hairs 11-18, 118-181 μ long. Gonapophyses three, the lateral with 4-5 hairs, the middle with 5-7, 20-29 μ long.

Life specimens.— Alate viviparous ♀. Head and antennal segments I and II brown, thorax dark brown. Base of the femur brown. Eyes red. For the rest black. Pterostigma black.

Macerated specimens (figs. 71-78; described from one specimen, another specimen intermediate to alatae and apterae, not included).— Body length 2.63 mm, 2.1 times as long as it is wide.

Head (fig. 71).— Head pale brown, smooth, width of the head across the eyes 567 μ; dorsally anteriorly 17 hairs, between the paired ocelli 16, and posteriorly 29, the hairs slightly darker than the head, slender with thin ends, the longest hairs 112 μ, the shorter hairs usually 40-50 μ long. Antennae six-segmented, 1.9 mm long, 0.72 times as long as the body, and 3.3 times as long as the width of the head across the eyes; antennal segments I, II, and the basal 0.05 part of segment III, and the processus terminalis paler than the other black parts of the antennae; segments I and II almost smooth; Segment III (fig. 76) over its length with 35-39 transversely elliptical rhinaria, most of them in one line, but some out of the row; segments IV-VI with smooth imbrications, segment V with a smooth rhinarium, segment VI with one smooth rhinarium plus six secondary rhinaria. Antennal hairs acute, segment III with 44 hairs, the longest 123-133 μ, the processus terminalis with four apical hairs and seven over its length, segment III, 881 μ long, 5.2 times as long as segment IV, 4.5 times as long as segment V, and 2.0 times as long as segment VI; segment IV, 169 μ long, 0.86 times as long as segment V; segment V, 196 μ long, 0.44 times as long as segment VI; segment VI, 449 μ long, 1.54 times as long as the processus terminalis, which is 291 μ long. The eyes pale brown, the ocular tubercle brown, diameter of the ommatidia of the ocular tubercle 22 μ. Ultimate rostral segment (fig. 72) 361 μ long, 2.98 times as long as the second tarsal segment of the hind leg; stylets 1.18 mm long.

Thorax.— Prothorax brown, with numerous hairs with pointed ends; the mesothorax brown, with numerous hairs (fig. 78) with pointed ends or with thin ends, 60-150 μ long. Medial vein of the fore wing (fig. 73) twice branched, hind wing with two oblique veins. Legs brown, the dorsal side of the distal part of the femora and of the base of the tibiae darker. The femora smooth. The tibia of the fore leg 920 μ long, 1.62 times as long as the width of the head across the eyes; tibiae smooth, but the middle and hind tibiae on the distal half with spines on the ventral side, 12-16 μ long, distally four bristles, 25 μ long; length of hairs of the hind tibia 135 μ, the basal hair 25 μ. First tarsal segments with seven hairs. Length of the dorsoapical hair of the second tarsal segment of the hind leg (fig. 78) 27 μ, of the lateroapical hair 23 μ, and of the

empodial hair 29 μ. Length of the segments of the hind leg: femur plus trochanter 834 μ, tibia 1.22 mm, 1.46 times as long as the femur, and 2.15 times the width of the head across the eyes, first tarsal segment 43 μ, second tarsal segment 121 μ.

Abdomen.— Marginal sclerites brown, with a colourless area between the segments; tergites I and II colourless with some pale brown areas; tergites III-VII a brown plate, at the sides with segmentally pale brown or colourless areas, smooth without spinulae; ventrally spinulae on anterior segments, 1-3 μ long, and almost colourless. Hairs (fig. 78) on each tergite irregularly arranged in 3-4 transverse lines, slender, with thin ends, on tergite VII some hairs 100-145 μ long, but numerous hairs on tergites I-VII shorter, 20-80 μ; ventral hairs numerous, almost as the dorsal hairs, slender, 15-120 μ long. Tergite VIII a transversely elliptical plate, 370 μ wide, 70 μ long, with spinulose imbrications, with two hairs in the middle, 60 μ from each other, 133-149 μ long. Siphunculi (fig. 77) brownish black, almost cylindrical with the distal 0.4 slightly curved outwards, 1.59 mm long, 0.60 times as long as the body, 2.8 times as long as the width of the head across the eyes; 127 μ wide at the base, 159 μ at the widest part which is at 0.2 of its length; siphunculi 10.3 times as long as the diameter at the widest part and 13.4 times as long as the narrowest part just distal to the base, with a reticulum of transverse linear imbrications, which are lacking only on the distal 100 μ of the siphunculi; on each transverse imbrication are 1-3 spinulae, 2-4 μ long; on the distal 200 μ the spinulae are 9-11 μ long and are densely arranged on the distal 100 μ; siphunculi gradually tapering to the narrowest distal part with a diameter of 88 μ, expanding from there to the flange, which is 1.1 times wider than the narrowest part; with numerous hairs with thin ends, 170-248 μ long. Cauda (fig. 75) 240 μ wide, with a rounded posterior margin, without a process, with eight hairs, the longest 160 μ long. Subanal plate brown, with 22 hairs, 186 μ long. Subgenital plate brown, 433 μ wide, 235 μ long, anteriorly with spinulose imbrications, and coarse spinulae along the posterior margin; anterior hairs 15, 118 μ long, posterior hairs 20, 140 μ long. Gonapophyses three, the lateral with six hairs, the middle presumably with six hairs, 31 μ long.

First stage larva of apterous viviparous ♀ (fig. 79; description of eight specimens).— Body length 850-1275 μ, 2.2-2.7 times as long as it is wide. Head across the eyes 322-413 μ wide, with four anterior hairs in a transverse row between the eyes, 63-78 μ long. Antennae with four segments, 425-598 μ long, segment III, 177-255 μ long, 0.94-1.16 times as long as segment IV; segment IV, 188-230 μ long, 1.46-1.54 times as long as the processus terminalis. The ultimate rostral segment 267-316 μ long. Tibia of the fore leg 200-285 μ long, 0.65-0.72 times as long as the width of the head across the eyes. Abdominal tergites I-VI each with 6-7 hairs, each on a sclerite, on tergite VI, 76-110 μ long. Siphunculi pale brown, on abdominal segment VI, triangular, with narrow tips, 84-122 μ long, and 53-104 μ wide at the base, almost smooth without spinulae and hairs. Segment VII with a marginal tubercle, protruding backwards, nipple-shaped, 61-94 μ long, 27-49 μ wide at the base, with a few smooth imbrications and provided at the tip with a hair, 150-174 μ long; in the middle two hairs, 137-167 μ long, about 90 μ from each other, each on a tubercle, e.g. 70 μ wide and 18 μ high, with an almost smooth surface. Tergite VIII a pale brown sclerite with some spinulae, about two μ long, 104-155 μ wide, with two nipple-shaped tubercles which occupy the greater part of the tergite, and protrude backwards; each tubercle

30-40 μ long (the process of the hair not included), and 23-35 μ wide at the base, with a hair on top, 116-157 μ long. The cauda with a broadly rounded posterior margin, with two hairs, 70-102 μ long.

Host plant records.— The specimens were collected in Java: on *Quercus* (pasang), Moeriah, 8.viii.1919, P. van der Goot, LUW, Wageningen, and at the BMNH, London; *Lithocarpus glaber* (Thunb.) Makino, Bogor Keb. R., 24.v.1975, 28.i.1977, 25.xi.1977; *Lithocarpus dasystachyus* (Miq.) Rehd., Bogor Keb. R., 27.i.1977; *Lithocarpus spicatus* Rehd. & W., Bogor Keb. R., 31.viii.1975, 28.i.1977; *Quercus glauca* Thunb., Bogor Keb. R., 21.xi.1977; all last D. Noordam, RMNH, Leiden.

The aphids live on young, still green stems, also on a two years old branch, and between the scales of a young shoot.

Alatae or last stage larvae of alatae were collected 8.viii.1919, 31.viii.1975, 27.i.1977, 28.i.1977, 21.xi.1977.

Etymology.— "Heterotrichum", with hairs of different lengths.

Eutrichosiphum nigrum spec. nov.
(figs. 80-87)

Types.— Holotype, apterous viviparous ♀ from *Lithocarpus Bennettii* (Miq.) Rehd., Bogor Keb. R., Java, no. 346-1-1, 23.v.1975, D. Noordam. Paratypes: 24 apterous viviparous ♀♀, same host plant and locality as the holotype, no. 346, 23.v.1975; no. 821, 22.xii.1976; no. 892, 23.i.1977; no. 1167, 11.xii.1977, all D. Noordam. Holotype and paratypes, RMNH, Leiden.

Life specimens.— Apterous viviparous ♀ (pl. 4). The body shiny black, sometimes somewhat spotted. The base of the antennae and of the fore leg slightly paler. Siphunculi less shiny than the body, and brownish black or dark greenish black. Smallest larvae also black, but the head, thorax, and the legs paler.

Macerated specimens (figs. 80-86; described from nine specimens).— Body length 1.27-1.66 mm, 1.3-1.7 times as long as it is wide.

Head.— Head brown, smooth, the frons convex in outline, the middle protruding with regard to the sides 9-27 μ; head across the eyes 326-417 μ, dorsally anteriorly one hair at each side and four in the middle; between the eyes with four hairs, posteriorly hairs are lacking; the hairs are brown, sturdy and with acute tips, 55-88 μ long; next to these on the head 10-18 minute hairs, about four μ long. Antennae (fig. 82) with five or six segments, brown, the base of segment III, and the processus terminalis paler, 567-877 μ long, 0.43-0.58 times as long as the body, 1.7-2.4 times the width of the head across the eyes; segment I and II smooth, each with 4-6 hairs; in antennae with five segments, segment III dorsally almost smooth, ventrally the distal half with smooth imbrications 206-364 μ long, 2.2-2.7 times as long as segment IV, 1.10-1.27 times as long as segment V, with 10-15 hairs of different lengths, the longest 45-65 μ; segment IV dorsally and ventrally with smooth imbrications, 86-137 μ long, 0.46-0.54 times as long as segment V, with 3-5 hairs, 45-61 μ long; segment V with smooth imbrications, 187-287 μ long, 2.19-2.55 times as long as the processus terminalis, the base with 4-6 hairs, 33-43 μ long; the processus terminalis with four apical hairs, and one hair over its length. In antennae with six segments, segment III, 263 μ long, 2.9 times as long as segment IV, 2.0 times as long as segment V, and 1.06 times as long as

segment VI; segment IV, 92 μ long, 0.69 times as long as segment V; segment V, 0.54 times as long as segment VI; segment VI as segment V in antennae with five segments. The eyes brown, the ocular tubercle brown or dark brown, diameter of the ommatidia of the ocular tubercle 20-22 μ. Ultimate rostral segment (fig. 83) 174-202 μ long, 2.12-2.41 times as long as the second tarsal segment of the hind leg; stylets 661-747 μ long.

Thorax.— Prothorax the same colour as the head, fused with the head, dorsally the margins at each side with two sturdy hairs, and 3-4 small hairs, in the middle two anterior sturdy hairs and two posterior, and 5-8 minute hairs. Mesothorax and metathorax brown, the margins with a few spinulae, the dorsum smooth, hairs about as on the prothorax, but dorsally one transverse row of six sturdy hairs, 51-71 μ long, the tips of the hairs acute, rarely bifurcated. Legs darker than the body, black or brown, the femora of the fore leg paler than of the other femora, the tibiae distally and the tarsi pale brown, smooth, only the second tarsal segments with distinct smooth imbrications. Tibia of the fore leg 273-435 μ long, 0.83-1.06 times as long as the width of the head across the eyes. Tibia of the hind leg, hairs 47-59 μ long, the basal hair 51-64 μ; distally four bristles, 18-23 μ long, 3-4 μ wide near the base. First tarsal segments (fig. 85) with five hairs. Second tarsal segment of the hind leg (fig. 84) length of the dorsoapical hairs 23-27 μ, of lateroapical hairs 35-43 μ, and of the empodial hairs 20-31 μ. Length of the segments of the hind leg: femur plus trochanter 318-456 μ, tibia 377-574 μ, 1.18-1.30 times as long as the femur, and 1.16-1.41 times the width of the head across the eyes, first tarsal segment 31-37 μ, second tarsal segment 79-87 μ.

Abdomen.— Abdomen margins and central area brown, separated from each other at tergites I-IV by a paler curved area, which results from a less sclerotic area at the ventral side between the margins and the central shield, proceeding distally up to the spiracle of the fourth ventral segment. A groove between metanotum and abdominal tergite I, between tergites I and II, VII and VIII, but the margins of the abdomen without segmental borders. Dorsally smooth, spinulae are lacking also on the margins of the anterior segments. The margin at each side per segment 2-4 sturdy hairs, dorsally per segment a transverse row of six sturdy hairs, and 4-10 minute hairs (fig. 81); the sturdy hairs (fig. 81) at the tips usually with 2-5 teeth, on tergite IV, 65-96 μ long, on tergite VII, 88-118 μ. Tergite VIII an elliptical plate, pale brown, 200-248 μ wide, and 40-67 μ long with spinulose imbrications, with two hairs with slender ends, 69-100 μ long. The ventral margins of segments I-II with some spinulae, the rest of the venter smooth or posteriorly with spinulose imbrications, marginally some sturdy hairs, in the centre on each segment about six slender hairs, 61-86 μ long, and some minute hairs. Siphunculi darker than the body, evenly brown or black, with a curved inner side and straight outer side, 224-346 μ long, 0.17-0.23 times as long as the body, 0.7-0.9 times as long as the width of the head across the eyes; 51-67 μ wide at the base, 71-104 μ at the widest part, which is at or over the middle; siphunculi 2.8-3.7 times as long as the widest part; with spinulae, sometimes on imbrications, but nowhere reticulated; the spinulae numerous, at the tips slightly more numerous, usually 4-8 μ long; some hairs, usually on the basal part, short, 12-20 μ long, but the other hairs sturdy, brown with sharp points, the longest 112-137 μ; siphunculi gradually tapering from over the middle, without a constriction, to the

narrowest distal part with a diameter of 37-59 µ, expanding from there to the flange, which is 1.09-1.39 times wider than the narrowest part. Cauda (fig. 86) pale brown, 141-180 µ wide, 45-63 µ long, with a rounded posterior margin, without a process, with nine hairs, 84-118 µ long, slender and with somewhat threadlike ends. Subanal plate brown, with 10-12 hairs, 108-140 µ long. Subgenital plate narrowly transversely elliptical, e.g. 267 µ wide, and 67 µ long, with coarse spinulae, anterior hairs two, 27-96 µ long, posterior hairs 4-5, 55-112 µ long. Gonapophyses three, the lateral with 1-3 hairs, the middle with 3-6, 8-18 µ long.

First stage larva of apterous viviparous ♀ (fig. 87; description mainly of one specimen).— Body length 539-815 µ, 1.8-2.7 times as long as it is wide. Head across the eyes 240 µ, with four anterior hairs and four in a transverse row between the eyes, 56 µ long. Antennae with four segments, 303 µ long, segment III, 114 µ long, 0.93 times as long as segment IV; segment IV, 123 µ long. The ultimate rostral segment 149 µ long. Tibia of the fore leg 152 µ long, 0.63 times as long as the width of the head across the eyes. Abdominal tergites I-VI each with four hairs, each on a pale brown sclerite, the two middle hairs of tergites II-VII on one common sclerite, the middle hair on tergite VI, 48 µ long, on tergite VII, 72 µ. Siphunculi brown, on abdominal segment VI, triangular with rounded or flat tips, 61 µ long, and 51 µ wide at the base, with some imbrications. Segment VII with a marginal brown tubercle, protruding backwards, nipple-shaped, 55 µ long, 25 µ wide at the base, with a few smooth imbrications and provided at the tip with a hair, 125 µ long; in the middle two hairs, 72 µ long, and 86 µ from each other. Tergite VIII a pale brown sclerite with some spinulae, 2-4 µ long, 110 µ wide, with two tubercles which protrude backwards from the surface of the tergite 10-12 µ, each with a hair on top, 100 µ long. The cauda with a broadly rounded posterior margin, with two hairs, 47 µ long.

Host plant records.— The specimens were collected in Java on: *Lithocarpus Bennettii* (Miq.) Rehd., Bogor Keb. R., 23.v.1975, 22.xii.1976, 23.i.1977, 11.xii.1977, D. Noordam; *Castanopsis javanica* (Bl.) DC., Bogor Keb. R., 27.iii.1977, D. Noordam; all RMNH, Leiden.

The aphids live on the upper and lower sides of very young leaves, on the main vein, and also on the very young part of a developing shoot.

Alatae were not collected.

Etymology.— "Nigrum", black, or especially glossy black.

Eutrichosiphum pallidum spec. nov.
(figs. 88-103)

Types.— Holotype, apterous viviparous ♀ from *Castanea crenata* Sieb. & Zucc., Cibodas (1400 m), Java, no. 784-5-1, 17.x.1976, D. Noordam. Paratypes: six apterous viviparous ♀♀, and one alate viviparous ♀, same host plant and locality as the holotype, no. 784-1, slides 1, 3-5, 17.x.1976, and no. 951-2, 8.iv.1977, all D. Noordam, RMNH, Leiden.

Life specimens.— Apterous viviparous ♀. The body yellowish white or sometimes pale brown. Antennae very pale brown, but around the primary rhinaria darker. Legs very pale brown, the tarsi black. Siphunculi pale brown. Cauda colour about as the abdomen. Eyes red, ocular tubercle black. Larvae yellowish white, sometimes with pale grey sclerites.

Macerated specimens (figs. 88-95; described from seven specimens).— Body length 1.66-2.39 mm, 2.0-2.4 times as long as it is wide.

Head.— Head very pale brown, the frons convex in outline, protruding with regard to the sides 10-18 μ; head across the eyes 338-433 μ, anteriorly one hair at each side observable dorsally or ventrally, in the middle 6-8 hairs; between the eyes 5-6 hairs, posteriorly hairs are lacking; the hairs are colourless, with the tips usually widened, with 3-5 teeth, the middle 100-125 μ long. Antennae (fig. 91) with five segments, very pale brown, around the primary rhinaria and the processus terminalis darker, 874-1300 μ long, 0.44-0.57 times as long as the body, 2.4-3.0 times the width of the head across the eyes; segments I and II smooth, with five and four hairs respectively; segment III dorsally and ventrally with smooth imbrications, but few in the basal part, 324-547 μ long, 2.3-2.7 times as long as segment IV, 1.04-1.36 times as long as segment V, with 9-13 hairs of different lengths, the longest 88-100 μ; segment IV dorsally and ventrally with smooth imbrications, 141-204 μ long, 0.45-0.51 times as long as segment V, with 3-4 hairs, 71-102 μ long; segment V with smooth imbrications, 312-401 μ long, 1.55-1.83 times as long as the processus terminalis, the base with four hairs, 39-55 μ long; the processus terminalis with four apical hairs, and 2-5 over its length. The eyes colourless, the ocular tubercle pale brown, diameter of the ommatidia of the ocular tubercle 18 μ. Ultimate rostral segment (fig. 92) 230-275 μ long, 2.16-2.53 times as long as the second tarsal segment of the hind leg; stylets 778-927 μ long.

Thorax.— Prothorax the same colour as the head, fused with the head, the lateral sides and posterior margin with spinulae, 3-5 μ long; the margin at each side with 5-6 hairs, and in the middle two anterior and four posterior hairs. Mesothorax and metathorax marginally with spinulae; the metathorax with 18-24 hairs, in the middle the hairs are more or less arranged in two transverse rows; the metathorax with 10-14 hairs, the hairs in the middle usually arranged in one transverse row. All hairs slightly widened at the tips and with teeth. Legs very pale brown, the second tarsal segments distally slightly darker, the femur with spinulose imbrications, the tibiae only distally with a few indistinct imbrications, and the second tarsal segments with almost smooth imbrications. Tibia of the fore leg 417-618 μ long, 1.11-1.43 times as long as the width of the head across the eyes. Tibia of the hind leg, hairs 29-35 μ long, the basal hair 23-38 μ; distally four bristles, 18-22 μ long, 2-3 μ wide near the base. First tarsal segments with seven hairs (fig. 93). Second tarsal segment of the hind leg (fig. 94), length of dorsoapical hairs 12-14 μ, of lateroapical hairs 38-41 μ, and of empodial hairs 27-30 μ. Length of segments of the hind leg: femur plus trochanter 449-637 μ, tibia 582-888 μ, 1.25-1.42 times as long as the femur, and 1.54-2.05 times the width of the head across the eyes, first tarsal segment 35-39 μ, second tarsal segment 102-119 μ.

Abdomen.— Abdomen very pale brown or pale brown, the sides of segments I-VII and the anterior margin of segments I and II with spinulae 2-8 μ long, the ventral side of the abdomen (fig. 89) with spinulae, 1-3 μ long; the abdomen with a distinct groove, usually only between metanotum and tergite I and between tergites I and II, but the margins without segmental borders. The margin at each side per segment with 2-6 colourless hairs with slightly widened tips with teeth, dorsally per segment one or two transverse rows with about eight hairs (fig. 90), colourless, with slightly

widened tips with teeth, the longest hairs on tergite IV, 84-125 µ; length of ventral hairs in the middle 51-78 µ. Siphunculi evenly very pale brown, 590-967 µ long, 0.32-0.40 times as long as the body, 1.6-2.2 times as long as the width of the head across the eyes; 50-78 µ wide at the base, 121-165 µ at the widest part, which is over the middle; siphunculi 4.1-5.9 times as long as the widest part; the base with some spinulose imbrications, but without reticulation, the rest of the siphunculi with separate spinulae, 4-8 µ long, more numerous on the distal 100 µ; the hairs colourless, with sharp points, 145-188 µ long, but a few on the basal part 50-80 µ long and sometimes with teeth at the tips; siphunculi gradually tapering from over the middle, without a constriction, to the narrowest distal part with a diameter of 35-57 µ, from there to the minute flange, which is 1.00-1.17 times wider than the narrowest part. Cauda (fig. 95) colourless, 140-186 µ wide, and 39-61 µ long, with a rounded posterior margin, without a process, with 7-8 hairs, 74-104 µ long, slender with threadlike ends. Subanal plate colourless, with 10-12 hairs, 90-133 µ long. Subgenital plate with a broadly rounded posterior margin, e.g. 176 µ wide and 71 µ long, with 2-5 anterior hairs, 53-86 µ long, and 7-10 posterior hairs, 112-139 µ long. Gonapophyses three, the lateral with 3-4 hairs, the middle with 4-6 hairs, 14-20 µ long.

Alate viviparous ♀.— In life: Head and thorax greyish brown, yellow between pronotum and mesonotum. Abdomen yellow with greyish brown marks on anterior segments, a large spot on the next tergites and a smaller one between the siphunculi. Legs brown, the base of the femora paler, the distal part of the tibiae, and the tarsi black. Antennae black. Siphunculi dark grey. Cauda black. Eyes red, the ocular tubercle black. Pterostigma grey.

Macerated specimen (figs. 96-103; described from one specimen).— Body length 1.68 mm, 2.5 times as long as it is wide.

Head (fig. 96).— Head pale brown, smooth, width of the head across the eyes 362 µ; dorsally anteriorly six hairs, between the paired ocelli three, and posteriorly six, the hairs colourless, slender with thin ends, 94 µ long. Antennae (fig. 97) five-segmented, 1.27 mm long, 0.75 times as long as the body, and 3.5 times as long as the width of the head across the eyes, pale brown, slightly paler to the end; segments I and II almost smooth; segment III distally with smooth imbrications, 560 µ long, 2.74 times as long as segment IV, 1.43 times as long as segment V, with 7-9 transversely elliptical rhinaria, lacking on the distal 100-300 µ of the segment, with 9-12 hairs, 98 µ long; segment IV with smooth imbrications, 204 µ long, 0.52 times as long as segment V, with 3-4 hairs, 69 µ long; segment V with smooth imbrications, 391 µ long, 1.74 times as long as the processus terminalis, the base with three hairs, 58 µ long; the processus terminalis with four apical hairs, and 4-5 over its length. The eyes pale brown, the ocular tubercle brown, diameter of the ommatidia of the ocular tubercle 18 µ. Ultimate rostral segment (fig. 98) 198 µ long, 1.92 times as long as the second tarsal segment of the hind leg; stylets 620 µ long.

Thorax.— Prothorax brown with an anterior transverse row of six hairs, and posteriorly eight hairs. Mesothorax brown, with colourless hairs (fig. 100), 80-110 µ long. Medial vein of the fore wing (fig. 99) twice branched, hind wing with two oblique veins. Legs pale brown, the distal part of the femora slightly darker. The femora with some spinulose imbrications. The tibia of the fore leg 716 µ long, 1.98 times as long as the width of the head across the eyes; tibiae distally with some indistinct imbrica-

tions, the middle and hind tibiae on the distal half with spines on the ventral side, 10-14 μ long, distally four bristles, 18 μ long; length of hairs of the hind tibia 61 μ, the basal hair 35 μ. First tarsal segments with seven hairs. Length of dorsoapical hair of the second tarsal segment of the hind leg (fig. 101) 14 μ, of the lateroapical hair 13 μ, and of the empodial hair 22 μ. Length of the segments of the hind leg: femur plus trochanter 582 μ, tibia 889 μ, 1.53 times as long as the femur, and 2.46 times the width of the head across the eyes, first tarsal segment 31 μ, second tarsal segment 103 μ.

Abdomen.— Marginal sclerites pale brown, with a colourless area between the segments; tergites I and II colourless with pale brown areas, the distal tergites a pale brown smooth shield with a colourless incision at the sides, and an almost colourless band anterior to the siphunculi; between the siphunculi a pale brown plate; pleurally intermuscular plates, oval paler coloured spots. Ventrally on the anterior segments spinulae, 1-2 μ long. Dorsal hairs (fig. 100) in transverse rows of about six hairs, 40 μ long, ventral hairs in the middle 60 μ long. Tergite VIII an almost colourless transversely elliptical plate, 170 μ wide, about 60 μ long, with spinulose imbrications with two hairs in the middle, 20 μ from each other, 120 μ long. μiphunculi (fig. 102), the basal 250 μ pale brown, gradually fading to the almost colourless distal part, 850 μ long, 0.50 times as long as the body, 2.3 times the width of the head across the eyes; 59 μ wide at the base, gradually widening to the widest diameter of 88 μ at 600 μ from the base; siphunculi 12.3 times as long as the diameter at the widest part, with an indistinct reticulate and spinulose imbrications, the distal 60 μ of the siphunculi with separate spinulae in transverse rows, 4-8 μ long; siphunculi gradually tapering to the narrowest distal part with a diameter of 40 μ, expanding from there to the flange, 1.17 times wider than the narrowest part; with numerous hairs, colourless, with thin ends, 160-190 μ long. Cauda (fig. 103) 150 μ wide, 43 μ long, with rounded posterior margin, without a process, with eight hairs, the longest 80 μ long. Subanal plate with 12 hairs, 127 μ long. Subgenital plate 271 μ wide, 145 μ long, with five anterior hairs, 110 μ long, and nine posterior hairs, 130 μ long. Gonapophyses three, the lateral with 3-4 hairs the middle with six hairs, 18 μ long.

First stage larvae are not available. Other stage larvae are confusing with regard to dorsal abdominal spinulae, which in some specimens are distinct, and hairs on pale brown sclerites, in other specimens only marginally spinulae, mainly on anterior segments, and sclerites are absent.

Host plant records.— The specimens were collected in Java: on *Castanea crenata* Sieb. & Zucc., Cibodas (1400 m), 17.x.1976, 8.iv.1977, D. Noordam, RMNH, Leiden.

The aphids live on the lower sides of leaves and on developing shoots.

Alatae were collected 8.iv.1977.

Etymology.— "Pallidum", pale.

Eutrichosiphum pasaniae (Okajima, 1908)
(figs. 104-120)

Trichosiphum pasaniae Okajima, 1908: 6.
Trichosiphum lithocarpae Maki, 1918: 344.
Trichosiphum lithocarpi subsp. *malayense* Takahashi, 1950: 589; Eastop & Hille Ris Lambers, 1976: 198 (synonymy).
Eutrichosiphum pasaniae Raychaudhuri, 1956: 15; Eastop and Hille Ris Lambers, 1976: 198 (synonymy).
Eutrichosiphum vandergooti Raychaudhuri, 1956: 19.

Types.— Syntypes, 14 apterous viviparous ♀♀, and one alate viviparous ♀, by Raychaudhuri as *Eutrichosiphum vandergooti* (Raychaudhuri, 1956: 19), from *Castanopsis*, Bogor, four slides, 27.vii.1918, P. v.d. Goot, det. P. v.d. Goot: *Greenidea* spec., LUW, Wageningen, and five slides with 14 apterous viviparous ♀♀ and one alate viviparous ♀, with the same data, BMNH, London.

Life specimens.— Apterous viviparous ♀ (pl. 5). Head anterior to the eyes dirty white or brown, thorax and abdomen olive-green, marbled brown or almost black, dull or semi-gloss. Eyes red. Antennae base and end black, in the middle pale brown. Legs pale brown, the tarsi darker. Siphunculi black. Cauda black. Smallest larvae yellowish with greyish margins and four transverse rows of greyish spots on the abdomen; head, antennae, legs and siphunculi grey; later larval stages dirty green or greyish green.

Macerated specimens (figs. 104-111; described from 12 specimens).— Body length 1.16-1.78 mm, 1.6-1.9 times as long as it is wide.

Head.— Head brown or pale brown, dorsally smooth with only some spinulae in the median area between the eyes, the frons almost straight; head across the eyes 303-401 µ, dorsally anteriorly one hair at each side and 6-8 in the middle; between the eyes 10-16 hairs, posteriorly 4-7 hairs, the hairs are brown, sturdy and with acute tips, 61-94 µ long. Antennae with five segments (fig. 108), segment III and the base of segment IV pale brown, the other parts brown, 669-960 µ long, 0.47-0.58 times as long as the body, 2.0-2.4 times the width of the head across the eyes; segments I and II smooth, segment I with 6-8 hairs, segment II with five; segment III dorsally almost smooth, ventrally with smooth imbrications, 232-397 µ long, 1.9-2.8 times as long as segment IV, 0.95-1.39 times as long as segment V, with 10-22 hairs of different lengths, the longest 51-92 µ; segment IV dorsally and ventrally with smooth imbrications, 103-153 µ long, 0.44-0.54 times as long as segment V, with 4-7 hairs, 65-80 µ long; segment V with smooth imbrications, 224-289 µ long, 1.66-1.80 times as long as the processus terminalis, the base with 3-5 hairs, 49-83 µ long; the processus terminalis with four apical hairs, and 1-3 over its length. The eyes colourless or pale brown, the ocular tubercle brown, diameter of the ommatidia of the ocular tubercle 16-18 µ. Ultimate rostral segment (fig. 110) 176-240 µ long, 2.06-2.60 times as long as the second tarsal segment of the hind leg; stylets 610-850 µ long.

Thorax.— Prothorax the same colour as the head, fused with the head, the sides, the posterior margin and dorsally the middle area with spinulae; dorsally with 21-33 hairs. Mesothorax and metathorax brown, the margins and the dorsum densely distributed with spinulae (fig. 105), frequently arranged in transverse lines; the mesothorax with 24-41 hairs, 37-90 µ long, the tips of the hairs acute or sometimes bifurcated. Legs paler than the body, about the colour of the head, the femora distally, the base of the tibiae and the tarsi slightly darker than the other parts of the The femora and second tarsal segments with imbrications, other parts of the legs smooth. Tibia of the fore leg 291-449 µ long, 0.88-1.13 times as long as the width of the head across the eyes. Tibia of the hind leg, hairs 30-57 µ long, the basal hair 29-59 µ; distally four bristles, 16-22 µ long, 2-4 µ wide near the base. First tarsal segments with seven hairs (fig. 107). Second tarsal segment of the hind leg (fig. 111), length of dorsoapical hair 16-23 µ, of lateroapical hair 33-39 µ, and of empodial hairs 22-28 µ. Length of segments of the hind leg: femur plus trochanter 306-447 µ, tibia 395-610 µ, 1.21-1.38

times as long as the femur, and 1.17-1.52 times the width of the head across the eyes, first tarsal segment 29-41 μ, second tarsal segment 76-100 μ.

Abdomen.— Abdominal margins and central area brown (darker than the head), separated from each other at tergites I-IV by a paler curved area, which results from a less sclerotic area at the ventral side between the margins and the central shield, proceeding distally up to the spiracle of the fourth ventral segment. A groove between metanotum and abdominal tergite I, between tergites I and II, VII and VIII, but the margins of the abdomen without segmental borders. The margins of segments I-VII, tergites I-VI (fig. 105) densely covered with spinulae, frequently arranged in transverse lines, 2-6 μ long; ventrally also spinulae, but lacking in the middle area. The number of hairs at each side per segment estimated to be six, each tergite with about 20 hairs in 2-3 transverse rows; the marginal and dorsal hairs (fig. 106) acute, or the tips with 2-4 teeth; on tergite IV the longest hairs 80-98 μ, the shortest 27-47 μ; length of hair on tergite VII, 75-96 μ. Tergite VIII, a plate with spinulose imbrications, 193-255 μ wide, standing upwards as a transverse vertical wall 30-60 μ, with two hairs pointing forward, 67-92 μ long. Ventral hairs slender, usually with acute points, sometimes near the margins with teeth at the tips, long hairs 43-65 μ, short hairs 6-16 μ. Siphunculi black, the distal 40 μ more transparent, usually with a strongly convex inner side and a slightly concave or straight outer side, 330-472 μ long, 0.26-0.31 times as long as the body, 1.1-1.3 times as long as the width of the head across the eyes; 37-60 μ wide at the base, 67-119 μ at the widest part, which is about in the middle; siphunculi 4.2-5.7 times as long as the widest part; the basal 25 μ with spinulose imbrications, sometimes reticulated, the rest of the siphunculi densely covered with spinulae, 2-6 μ long, the distal end of the siphunculi more densely covered with spinulae, frequently in transverse rows, these spinulae with a narrower base than the others; hairs pale brown with sharp points, 112-133 μ long, but some basal hairs 20-30 μ long; siphunculi gradually tapering from the middle, without a constriction to the narrowest distal part with a diameter of 27-37 μ, expanding from there to the flange, which is 1.18-1.30 times wider than the narrowest part. Cauda (fig. 109) pale brown, 118-167 μ wide, 36-53 μ long, with a rounded posterior margin, without a process, with 7-8 hairs, 63-92 μ long, slender and with somewhat thread-like ends. Subanal plate brown, with 11-15 hairs, 76-106 μ long. Subgenital plate transversely elliptical, e.g. 267 μ wide, and 108 μ long, with coarse spinulae, anterior hairs 2-5, 47-67 μ long, posterior hairs 4-9, 49-82 μ long. Gonapophyses three, the lateral with 2-3 hairs, the middle with 3-5, 8-10 μ long.

Specimens in life.— Alate viviparous ♀ (pl. 6). Head grey or greyish brown. Abdomen marbled black. Femora pale brown, distally darker, tibia basal part white or brown, the distal end darker, grey or dark grey as the tarsi. Antennae black, but segment III paler, and segments IV and V sometimes very pale grey and the processus terminalis white. Siphunculi black, the end paler, sometimes greyish brown. Cauda black. Eyes red, the ocular tubercle black. Pterostigma black.

Macerated specimens (figs. 112-119; described from eight specimens).— Body length 1.22-1.74 mm, 2.2-2.7 times as long as it is wide.

Head (fig. 112).— Head brown, smooth, width of the head across the eyes 354-405 μ; dorsally anteriorly 6-10 hairs, between the paired ocelli 2-4, and posterior 6-8, the hairs pale brown, slender with thin ends, 57-69 μ long. Antennae (fig. 114), seg-

ments I and II and basal part of segment III brown, slightly darker than the head, the distal part gradually paler; five-segmented, 1.07-1.46 mm long, 0.76-0.98 times as long as the body, and 3.0-3.8 times as long as the width of the head across the eyes; segments I and II with some spinulose imbrications, segment III over its whole length with almost smooth imbrications, 480-732 µ long, 2.73-3.59 times as long as segment IV, 1.60-1.89 times as long as segment V, with 16-27 transversely elliptical rhinaria over its whole length, with 13-24 hairs, 92-102 µ long; segment IV with smooth imbrications, 176-216 µ long, 0.52-0.62 times as long as segment V, with 4-7 hairs, 71-82 µ long; segment V with smooth imbrications, 299-395 µ long, 1.63-1.82 times as long as the processus terminalis, the base with 3-4 hairs, 53-72 µ long; the processus terminalis with four apical hairs, and 1-3 over its length. The eyes pale brown, the ocular tubercle brown, diameter of the ommatidia of the ocular tubercle 17-18 µ. Ultimate rostral segment (fig. 116) 170-207 µ long, 1.93-2.30 times as long as the second tarsal segment of the hind leg; stylets 475-590 µ long.

Thorax.— Prothorax brown, dorsally, including the margins, with 23-33 hairs. Mesothorax brown, with pale brown hairs (fig. 117), 71-96 µ long. Medial vein of the fore wing (fig. 115) twice branched, hind wing with two oblique veins. Legs pale brown, the distal part of the femora, the base and the distal part of the tibiae, and the tarsi darker. The femora with some spinulose imbrications. The tibia of the fore leg 496-693 µ long, 1.37-1.79 times as long as the width of the head across the eyes; tibiae distally only with a few spinulose imbrications, on the distal half with spines on the ventral side, 10-14 µ long, distally four bristles, 14-20 µ long; length of hairs of the hind tibia 57-82 µ, the basal hair 55-69 µ. First tarsal segments with seven hairs. Length of dorsoapical hair of the second tarsal segment of the hind leg (fig. 113) 16-20 µ, of the lateroapical hair 10-16 µ, and of the empodial hair 20-23 µ. Length of the segments of the hind leg: femur plus trochanter 397-511 µ, tibia 578-771 µ, 1.44-1.51 times as long as the femur, and 1.63-1.95 times as long as the width of the head across the eyes, first tarsal segment 27-32 µ, second tarsal segment 82-96 µ.

Abdomen.— Marginal sclerites pale brown, the area between the segments slightly paler; the tergite of segment I pleurally colourless, the posterior part of tergite II included to the pale brown shield of tergites III-VII; tergites I and II with some spinulae, the ventral side, especially marginally, with some more spinulae, 1-2 µ long. Hairs on each tergite in about two transverse rows, short with sharp points, on tergite IV (fig. 117) longest hairs 25-37 µ, shortest 15-22 µ, ventral hairs 41-61 µ long; tergite VII in the middle with two hairs, 39-59 µ long. Tergite VIII a pale brown transversely elliptical plate, e.g. 275 µ wide, 71 µ long, with spinulose imbrications, with two hairs, 65-92 µ long, 20 µ from each other. Siphunculi (fig. 119) brown or black, the distal 100-300 µ paler, 606-883 µ long, 0.38-0.57 times as long as the body, 1.7-2.2 times the width of the head across the eyes; 55-80 µ wide at the base, gradually widening to the widest diameter of 63-86 µ in the distal half; siphunculi 8.5-13.2 times as long as the diameter at the widest part, indistinctly reticulated and with a few spinulose imbrications, the distal 0.1 with separate spinulae in transverse rows, 2-6 µ long; siphunculi gradually tapering to the narrowest distal part with a diameter of 28-43 µ, expanding from there to the flange, 1.1-1.4 times wider than the narrowest part; with numerous hairs, pale brown, with sharp points or thin ends, 145-172 µ long. Cauda (fig. 118) 133-170 µ wide, 40-59 µ long, with a rounded posterior margin, without a

process, with 7-8 hairs, 51-84 μ long. Subanal plate with 10-14 hairs, 69-90 μ long. Subgenital plate e.g. 267 μ wide, 134 μ long, with 3-4 anterior hairs, 53-63 μ long, and 7-11 posterior hairs, 74-90 μ long. Gonapophyses three, the lateral with 2-5 hairs, the middle with 5-8, 8-18 μ long.

First stage larva of apterous viviparous ♀ (fig. 120; description of one specimen).— Body length 771 μ (other specimens 511-858 μ), 2.4 times as long as it is wide. Head across the eyes 240 μ wide, with four anterior hairs, and four hairs in a transverse row between the eyes, 37 μ long. Antennae with four segments, 295 μ long; segment III, 106 μ long, 0.86 times as long as segment IV; segment IV, 123 μ long. The ultimate rostral segment 143 μ long. Tibia of the fore leg 137 μ long, 0.57 times as long as the width of the head across the eyes. Abdominal tergites I-VI each with four hairs, each on a sclerite, hair on tergite VI, 57 μ long. Siphunculi pale brown, on abdominal segment VI, triangular, with rounded tips, 59 μ long, and 43 μ wide at the base, almost smooth, without spinulae and hairs. Segment VII with a marginal tubercle, protruding backwards, nipple-shaped, 35 μ long, 27 μ wide at the base, with a few smooth imbrications and a hair at the tip, 114 μ long; in the middle two hairs 88 μ long, 68 μ from each other, each on a tubercle, 42 μ wide and 12 μ high, with an almost smooth surface. Tergite VIII a colourless plate, 78 μ wide, with some spinulose imbrications, with two nipple-shaped tubercles, protruding backwards, each 18 μ long and 19 μ wide at the base, with a hair on top, 78 μ long. The cauda with a broadly rounded posterior margin, with two hairs, 45 μ long.

Host plant records.— The specimens were collected in Java: *Castanopsis*, Bogor, 27.vii.1918, P. v.d. Goot; *Quercus*, Goewadjenat, 14.viii.1919, P. v.d. Goot; *Quercus*, 1.v.1921, P. v.d. Goot; *Castanopsis argentea* (Bl.) DC., Bogor, probably 13.xii.1931, C. Franssen; these four LUW, Wageningen. *Quercus subsericea* A. Camus, Bogor Keb. R., 25.v.1975; *Castanopsis cuspidatus* Schottky, Bogor Keb. R., 24.v.1975; *Castanea crenata* Sieb. & Zucc., Cibodas (1400 m), 11.vii.1976; *Castanopsis javanica* (Bl.) DC., Bogor Keb. R., 27.i.1977, 28.i.1977; *Lithocarpus spicatus* Rehd. & W., Bogor Keb. R., 28.i.1977; *Lithocarpus ovalis* (Blanco) Rehd., Bogor Keb. R., 25.iii.1977; *Castanopsis javanica* (Bl.) DC., Bogor Keb. R., 27.iii.1977, 2.ix.1977, 20.ii.1978; *Castanopsis javanica* (Bl.) DC., Cibodas (1400 m), 18.xii.1977; *Castanopsis acuminatissima* (Bl.) Rehd., Bogor Keb. R., 6.i.1978; these 12 collections D. Noordam, RMNH, Leiden.

The aphids live on young developing shoots or on the lower sides of usually young leaves, mainly along the main vein.

Alatae or last stage larvae of alatae were collected 27.vii.1918, 1.v.1921, 24.v.1975, 11.vii.1976, 27.i.1977, 28.i.1977, 27.iii.1977, 2.ix.1977, 20.ii.1978.

Etymology.— "Pasaniae", of *Pasania*, a synonym of *Lithocarpus*, a genus of the Fagaceae.

Discussion.— Raychaudhuri (1956) described two species from Java living on *Quercus* and *Castanopsis*, *E. vandergooti* and *E. pasaniae* which could be distinguished on the grounds of the absence or presence of spinulose transverse striae on the ventral side of the femora, and on the ratio of the length of rostral segments IV and V. In this publication the existence of only one species *E. pasaniae* has been accepted, in accordance with Eastop & Hille Ris Lambers (1976), because the author was not successful in dividing the available material into two species.

Eutrichosiphum pullum spec. nov.
(figs. 121-129)

Types.— Holotype, apterous viviparous ♀, from *Castanopsis acuminatissima* Rehd., Dieng (2000 m), Java, Indonesia, no. 869-1-1, 2.i.1977, D. Noordam. Paratypes: 69 apterous viviparous ♀♀, same host plant and locality as the holotype, no. 869 slides 1 and 2; no. 865, 2.i.1977, one slide; no.874, 3.i.1977, four slides; *Castanopsis argentea* (Bl.) DC. Mt. Patuha (1900 m), 15.viii.1976, eight slides, all D. Noordam. Holotype and paratypes RMNH, Leiden.

Life specimens.— Apterous viviparous ♀. Head brown or pale brown, body shiny black. Siphunculi black. Legs slightly paler. Larvae greyish green with brown head, and brown end of the abdomen, upper side with small points, siphunculi black.

Macerated specimens (figs. 121-128; described from eight specimens).— Body length 1.20-1.70 mm, 1.8-2.1 times as long as it is wide.

Head.— Head pale brown or brown, dorsally smooth without spinulae, at the frons slightly convex, protruding with regard to the sides 8-18 µ; head across the eyes 303-358 µ, dorsally anteriorly one hair at each side and 5-7 in the middle, between the eyes 4-6 hairs, posteriorly hairs are lacking; the hairs are pale brown, sturdy and with acute tips, long hairs 57-88 µ, short hairs 8-12 µ. Antennae (fig. 128) usually with five segments, sometimes with six, brown, but the basal 0.6 of segment III pale brown, 527-700 µ long, 0.39-0.45 times as long as the body, 1.7-1.9 times as long as the width of the head across the eyes; segments I and II smooth, segment I with 6-7 hairs, segment II with four; in antennae with five segments, segment III dorsally the distal part with smooth imbrications, ventrally smooth imbrications lacking only on the 0.2 basal part, 169-250 µ long, 1.9-2.3 times as long as segment IV, 0.86-1.16 times as long as segment V, with 8-10 hairs of different lengths, the longest 49-69 µ; segment IV dorsally and ventrally with smooth imbrications, 87-109 µ long, 0.42-0.50 times as long as segment V, with three hairs, 53-78 µ long; segment V with smooth imbrications, 196-236 µ long, 1.72-1.96 times as long as the processus terminalis, the base with three hairs, 35-59 µ long; the processus terminalis with four apical hairs, and 1-2 over its length. In antennae with six segments, segment III, 193 µ long, 2.6 times as long as segment IV, 1.69 times as long as segment V, and 0.85 times as long as segment VI; segment IV, 74 µ long, 0.65 times as long as segment V; segment V, 0.50 times as long as segment VI; segment VI as segment V in antennae with five segments. The eyes pale brown, the ocular tubercle brown, diameter of the ommatidia of the eyes 10 µ, of the ocular tubercle 18-20 µ. Ultimate rostral segment (fig. 125) 165-224 µ long, 1.92-2.70 times as long as the second tarsal segment of the hind leg; stylets 680-758 µ long.

Thorax.— Prothorax the same colour as the head, fused with the head, dorsally without spinulae, or a few on the posterior margin, at each lateral side five hairs, and in the middle dorsally 6-9 hairs. Mesothorax and metathorax marginally with spinulae; the mesothorax with 17-28 hairs, the longest 20-51 µ, the shortest 6-12 µ; the metathorax with 11-19 hairs, all hairs with sharp points. Legs paler than the abdomen, about the colour of the head, the distal part of the tibiae slightly paler than the base. The femora and the second tarsal segments with imbrications, the tibiae at most dis-

tally with a few imbrications. Tibia of the fore leg 251-299 μ long, 0.77-0.84 times as long as the width of the head across the eyes. Tibia of the hind leg, hairs 29-37 μ long, the basal hair 16-22 μ; distally four bristles, 18-20 μ long, 3-4 μ wide near the base. First tarsal segments with seven hairs (fig. 124); second tarsal segment of the hind leg (fig. 126), length of dorsoapical hairs 12-16 μ, of lateroapical hairs 33-39 μ, and of empodial hairs 21-27 μ. Length of segments of the hind leg: femur plus trochanter 287-350 μ, tibia 342-433 μ, 1.18-1.24 times as long as the femur, and 1.08-1.21 times the width of the head across the eyes, first tarsal segment 29-31 μ, second tarsal segment 80-86 μ.

Abdomen.— Abdominal margins and central area brown (darker than the head), separated from each other at tergites I-IV by a paler curved area, which results from a less sclerotic area at the ventral side between the margins and the central shield, proceeding distally up to the spiracle of the fourth ventral segment. A groove between metanotum and abdominal tergite I, between tergites I and II, VII and VIII, but the margins of the abdomen without segmental borders. The margins and dorsal side of the abdomen without spinulae; ventrally near the margin of segments I-VII a band of coarse spinulae (fig. 123), 2-8 μ long, the band anteriorly e.g. 200 μ wide, posteriorly 30 μ, ventrally in the middle spinulose imbrications. Marginal and dorsal hairs with sharp points (fig. 122), on tergite IV, 38-69 μ long, short hairs 8-18 μ; ventral hairs in the middle 31-45 μ long; length of hair on tergite VII, 54-108 μ. Tergite VIII, a plate with spinulose imbrications, 168-228 μ wide, 30-45 μ long, usually standing upwards as a transverse vertical wall, with two hairs, 63-108 μ long. Siphunculi brown or black, usually the basal 0.2 paler, gradually becoming darker to the distal part, and sometimes the end of the siphunculi again slightly paler; usually with a strongly convex inner side and a slightly concave or straight outer side, 259-350 μ long, 0.19-0.22 times as long as the body, 0.8-1.0 times as long as the width of the head across the eyes; 39-49 μ wide at the base, 65-94 μ at the widest part, which is about in the middle; siphunculi 2.8-4.9 times as long as the widest part; the base with a few spinulose imbrications, without reticulation, the rest of the siphunculi densely covered with separate spinulae, 4-10 μ long, the distal end of the siphunculi more densely covered with spinulae frequently in transverse rows; hairs pale brown with sharp points, 108-127 μ long, the first hair from the base 16-60 μ long; siphunculi gradually tapering from the middle without a constriction to the narrowest distal part with a diameter of 29-39 μ, expanding from there to the flange, which is 1.00-1.10 times wider than the narrowest part. Cauda (fig. 127) brown, 131-145 μ wide, 42-57 μ long, with rounded posterior margin, without a process, with 7-11 hairs, 59-84 μ long, slender and with somewhat threadlike ends. Subanal plate brown, with 13-16 hairs, 72-103 μ long. Subgenital plate transversely elliptical, e.g. 259 μ wide, and 118 μ long, with coarse spinulae, anterior hairs two, 40-49 μ long, posterior hairs 4-6, 63-94 μ long. Gonapophyses three, the lateral with 1-2 hairs, the middle with 2-3, 8-16 μ long.

First stage larva of apterous viviparous ♀ (fig. 129; description of one specimen).— Body length 618 μ, 2.2 times as long as it is wide. Head across the eyes 228 μ, with six anterior hairs, and four hairs in a transverse row between the eyes, 41 μ long. Antennae with four segments, 267 μ long, segment III, 94 μ long, 0.77 times as long as segment IV; segment IV, 122 μ long. The ultimate rostral segment 137 μ long.

Tibia of the fore leg 133 μ long, 0.58 times as long as the width of the head across the eyes. Abdominal tergites I-VI each with four hairs, each on a sclerite, on tergite VI, 30 μ long. Siphunculi pale brown, on abdominal segment VI, triangular, with rounded tips, 63 μ long, and 57 μ wide at the base, almost smooth, without spinulae and hairs. Segment VII with a marginal tubercle, protruding backwards, nipple-shaped, 39 μ long, 27 μ wide at the base, almost smooth, at the tip with a hair, 84 μ long; in the middle two hairs 86 μ long, 63 μ from each other , each on a tubercle, 45 μ wide and 10 μ high, with a smooth surface. Tergite VIII a colourless plate, 84 μ wide, smooth, with two nipple-shaped tubercles, protruding backwards, each 20 μ long and 19 μ wide at the base, with a hair on top, 71 μ long. The cauda broadly rounded, posterior margin with two hairs, 27 μ long.

Second and third stage larvae also show spinulae on the middle of tergites I-V, but few on the sclerites with a hair.

Host plant records.— The specimens were collected in Java: *Castanopsis argentea* (Bl.) DC., Mt. Patuha (1900 m), 15.viii.1976, D. Noordam; *Castanopsis acuminatissima* (Bl.) A. DC., Dieng (2000 m), 2.i.1977, 3.i.1977, D. Noordam; all RMNH, Leiden.

The aphids live on young leaves and young shoots.

Last stage larvae of alatae were collected 15.viii.1976, 2.i.1977, 3.i.1977.

Etymology.— "Pullum", very dark, blackish (colour description Stearn, 1973).

Eutrichosiphum sinense Raychaudhuri, 1956
(figs. 130-147)

Eutrichosiphum sinense Raychaudhuri, 1956: 18; Eastop & Hille Ris Lambers, 1976: 198.

Types.— Holotype apterous viviparous ♀, Raychaudhuri (1956: 18), *Eutrichosiphum sinense*, Fukien, China, coll. M.S. Yang; in the slide also specimens of *E. pasaniae*, BMNH, London.

Life specimens.— Apterous viviparous ♀ (pl. 7). Head and thorax pale yellowish brown mixed with pale green, on the abdomen pale green or green with some brown. Antennae pale brown or whitish, the distal part of segments III, IV and V grey, or even blackish. Eyes red. Legs pale brown, the distal part of the tarsi grey. The basal 0.2-0.7 of the siphunculi pale brown or brown, to the distal part gradually darker, turning to black. Cauda same colour as the abdomen. First stage larvae pale green with six rows of grey spots, the head paler green; later larval stages bright green.

Macerated specimens (figs. 130-138; described from nine specimens).— Body length 1.18-2.09 mm, 2.0-2.3 times as long as it is wide.

Head.— Head colourless or pale brown, dorsally smooth, with only a few spinulae posteriorly in the middle, the frons slightly convex, protruding with regard to the sides 9-18 μ; head across the eyes 267-387 μ, dorsally anteriorly hairs at the sides are lacking, in the middle 4-5 hairs, between the eyes 8-10 hairs, posteriorly hairs are lacking (some small hairs assumed to be on the pronotum); the hairs are pale brown, frontal hairs with acute tips; hairs between the eyes usually slightly widened at the tips with 2-3 teeth, long hairs 53-76 μ, short hairs 9-17 μ. Antennae (fig. 135) with five segments, coloured as the head, but the distal end of segments III and IV, and all

except the base of segment V darker, 622-1145 μ long, 0.46-0.55 times as long as the body, 2.3-3.0 times the width of the head across the eyes; segments I and II smooth, segment I with 5-6 hairs, segment II with 3-4; segment III dorsally the distal part with smooth imbrications, ventrally covered all over with smooth imbrications, 222-464 μ long, 2.0-2.4 times as long as segment IV, 1.01-1.30 times as long as segment V, with 9-14 hairs of different lengths, the longest 49-78 μ; segment IV dorsally and ventrally with smooth imbrications, 104-232 μ long, 0.47-0.65 times as long as segment V, with 3-5 hairs, 57-88 μ long; segment V with smooth imbrications, 220-358 μ long, 1.79-1.83 times as long as the processus terminalis, the base with three hairs, 38-62 μ long; the processus terminalis with four apical hairs, and 1-2 over its length. The eyes and the ocular tubercle the same colour as the head, diameter of the ommatidia of the eyes 9-10 μ, of the ocular tubercle 16-20 μ. Ultimate rostral segment (fig. 138) 159-196 μ long, 2.00-2.29 times as long as the second tarsal segment of the hind leg; stylets 550-652 μ long.

Thorax.— Prothorax the same colour as the head, fused with the head, dorsally with some spinulae marginally, and in the middle posteriorly; with 21-27 hairs, 4-6 at each side on the margin. Mesothorax and metathorax marginally and dorsally with spinulae, about two μ long and arranged in transverse rows; the mesothorax with 14-27 hairs, blunt or widened at the tips, with teeth, the longest 37-63 μ; the metathorax with 9-13 hairs. The femora the same colour as the head, the tibiae in the basal 0.7 part and the tarsi darker than the femora, the fore tibiae slightly darker than the others. The femora and second tarsal segments with imbrications, the tibiae distally with some imbrications. Tibia of the fore leg 255-496 μ long, 0.95-1.34 times as long as the width of the head across the eyes. Tibia of the hind leg, hairs 23-31 μ long, the basal hair 15-29 μ; distally four bristles, 18-20 μ long, three μ wide near to the base. First tarsal segments with seven hairs (fig. 134); second tarsal segment of the hind leg (fig. 136), length of dorsoapical hairs 12-14 μ, of lateroapical hairs 25-37 μ, and of empodial hairs 21-25 μ. Length of segments of the hind leg: femur plus trochanter 287-472 μ, tibia 360-634 μ, 1.23-1.34 times as long as the femur, and 1.35-1.65 times the width of the head across the eyes, first tarsal segment 28-35 μ, second tarsal segment 72-90 μ.

Abdomen.— Abdomen the same colour as the head. A groove between metanotum and abdominal tergite I, between I and II, VII and VIII, but the margins of the abdomen without borders. The margins and dorsal side of segments I-V with spinulae (fig. 131) arranged in transverse lines or here and there as a reticulation, ventrally spinulae on the sides, but not in the middle; the spinulae 1-4 μ long, the large ones mainly in the marginal areas. Marginal and dorsal hairs (fig. 132) pale brown, on tergite IV, 41-57 μ long, 4-5 μ wide near the base, the tips widening with 3-5 teeth; short hairs on tergite IV, 8-26 μ long; ventral hairs more slender with sharp points, 27-44 μ long; hairs on tergite VII usually with blunt tips or with some teeth, 62-84 μ long. Tergite VIII a plate with spinulose imbrications, 165-314 μ wide, standing upwards as a transverse wall, about 50 μ high, with two hairs with sharp points, 78-110 μ long. Siphunculi, the basal 0.1-0.7 pale brown or sometimes brown, always darker than the abdomen, fading into the black of the distal part of the siphunculi; the end of the siphunculi is sometimes more transparent; the inner side is strongly convex, the outer side slightly concave or straight; length of the siphunculi 401-855 μ, 0.30-0.41

times as long as the body, 1.5-2.2 times as long as the width of the head across the eyes; 41-67 μ wide at the base, 86-157 μ at the widest part, which is about in the middle; siphunculi 4.4-7.4 times as long as the diameter of the widest part; the basal 50 μ (fig. 133) with some spinulose imbrications and with reticulation, the other parts of the siphunculi with separate spinulae, numerous and more dense to the top, 2-10 μ long; with numerous almost colourless hairs with sharp tips or sometimes with teeth at the tips, the longest 103-139 μ, the first hair from the base 23-65 μ long; siphunculi gradually tapering from the middle without a constriction to the narrowest distal part with a diameter of 30-46 μ, expanding to the flange, which is 1.02-1.13 times wider than the narrowest part. Cauda (fig. 137) colourless or pale brown, 123-200 μ wide, 35-90 μ long, with a rounded posterior margin, without a process, with 6-9 hairs, 74-108 μ long, slender and with somewhat threadlike ends. Subanal plate pale brown, with 10-13 hairs, 106-163 μ long. Subgenital plate transversely elliptical, e.g. 295 μ wide, and 149 μ long, with spinulose imbrications, with two anterior hairs, 37-65 μ long, and 4-6 posterior hairs, 47-84 μ long. Gonapophyses three, the lateral with 1-3 hairs, the middle with 2-5, 10-16 μ long.

Life specimens.— Alate viviparous ♀. Head and thorax greyish brown, the abdomen yellowish green. Antennal segment III basal 0.1 almost white, distal part black; basal half of segments IV and V dark grey, distal part black, processus terminalis colourless or black. Legs pale brown, the tibiae distally and the tarsi black. Siphunculi dark grey or black. Cauda as the abdomen. Eyes red. Pterostigma grey.

Macerated specimens (figs. 139-146; described from five specimens).— Body length 1.38-1.75 mm, 2.1-2.6 times as long as it is wide.

Head (fig. 139).— Head pale brown, or brown, smooth, width of the head across the eyes 334-370 μ; dorsally anteriorly 4-8 hairs, between the paired ocelli 2-4, and posteriorly 5-7 hairs, colourless, slender with thin ends, 55-63 μ long. Antennae (fig. 143) segments I and II and the middle part of segment III brown, also segments IV and V around the rhinaria brown, other parts pale brown; five-segmented, 928-1369 μ long, 0.62-0.78 times as long as the body, and 2.6-3.7 times as long as the width of the head across the eyes; segments I and II almost smooth or with a few spinulae, segment III the base with a few spinulae, and over its whole length with smooth imbrications, 381-582 μ long, 2.38-2.51 times as long as segment IV, 1.30-1.46 times as long as segment V, with 12-18 transversely elliptical rhinaria over its whole length, with 8-13 hairs, 55-78 μ long; segment IV with smooth imbrications, 157-232 μ long, 0.53-0.59 times as long as segment V, with 3-4 hairs, 39-72 μ long; segment V with smooth imbrications, 287-417 μ long, 1.72-1.84 times as long as the processus terminalis, the base with 2-3 hairs, 33-45 μ long; the processus terminalis with four apical hairs, and 1-3 over its length. The eyes almost colourless, the ocular tubercle pale brown, diameter of the ommatidia of the ocular tubercle 18-20 μ. Ultimate rostral segment (fig. 140) 154-169 μ long, 1.81-2.17 times as long as the second tarsal segment of the hind leg; stylets 495-656 μ long.

Thorax.— Prothorax pale brown, dorsally including the margins, with 19-25 hairs. Mesothorax brown or pale brown, with pale brown hairs (fig. 144), 69-88 μ long. Medial vein of the fore wing (fig. 141) twice branched, hind wing with two oblique veins. Legs pale brown, the distal part of the tibiae and the tarsi slightly darker. The femora with spinulose imbrications. The tibia of the fore leg 480-665 μ

long, 1.31-1.80 times as long as the width of the head across the eyes; tibiae only distally with a few spinulose imbrications, on the distal half with spines on the ventral side, 10-18 μ long, distally four bristles, 16-18 μ long; length of hairs on the hind tibiae 49-71 μ, the basal hair 41-47 μ. First tarsal segments with seven hairs. Length of dorsoapical hair of the second tarsal segment of the hind leg (fig. 142), 14-18 μ, of the lateroapical hair 12-16 μ, and of the empodial hair 16-23 μ. Length of segments of the hind leg: femur plus trochanter 409-527 μ, tibia 563-795 μ, 1.37-1.51 times as long as the femur, and 1.55-2.15 times the width of the head across the eyes, first tarsal segment 25-33 μ, second tarsal segment 78-92 μ.

Abdomen.— Abdomen almost colourless, but pale brown in intermediate specimens, the margins of segments I-V with colourless spinulae, 1-3 μ long, which are also present dorsally as an indistinct band on segments I and II, but are located mainly ventrally on the anterior segments. Marginal and dorsal hairs with sharp points, on tergite IV (fig. 144), 20-24 μ long, ventral hairs 40-55 μ long; tergite VII with two hairs in the middle, 39-49 μ long. Tergite VIII a colourless transversely elliptical plate, e.g. 260 μ wide, 51 μ long, with spinulose imbrications, with two hairs, 61-92 μ long, 16 μ from each other. Siphunculi (fig. 146) brown, the basal part slightly darker, 780-1000 μ long, 0.44-0.57 times as long as the body, 2.3-2.7 times the width of the head across the eyes (but 1.4-1.5 in apparently intermediate specimens), 59-80 μ wide at the base, and 80-86 μ at the widest part, almost cylindrical except in the intermediate specimens; siphunculi 9.1-13.5 times as long as the diameter at the widest part (5.8-5.9 times in the intermediate specimens), the basal 80-120 μ reticulated (intermediate specimens indistinctly reticulated over 0.7 of their length), the distal part with spinulose imbrications, and at the end separate spinulae in transverse rows, 2-6 μ long; siphunculi gradually tapering to the narrowest distal part with a diameter of 34-38 μ, expanding from there to the flange, 1.1-1.3 times wider than the narrowest part; with numerous hairs, pale brown, with sharp points or thin ends, 127-167 μ long. Cauda (fig. 145) 147-180 μ wide, 47-88 μ long, triangular, with a rounded posterior tip, without a process, with 7-8 hairs, 65-82 μ long. Subanal plate with 11-15 hairs, 76-102 μ long. Subgenital plate e.g. 236 μ wide, 134 μ long, with 2-6 anterior hairs, 47-74 μ long, and 6-10 posterior hairs, 59-94 μ long. Gonapophyses three, the lateral with 2-3 hairs, the middle with 4-8, 8-18 μ long.

First stage larva of apterous viviparous ♀ (fig. 147; description of one specimen).— Body length 803 μ (other specimens 610-846 μ), 2.6 times as long as it is wide. Head across the eyes 200 μ, with four anterior hairs, and four hairs in a transverse row between the eyes, 32 μ long. Antennae with four segments, 303 μ long; segment III, 110 μ long, 0.83 times as long as segment IV; segment IV, 132 μ long. The ultimate rostral segment 145 μ long. Tibia of the fore leg 145 μ long, 0.72 times as long as the width of the head across the eyes. Abdominal tergites I-VI each with four hairs, each on a very pale brown sclerite, on tergite IV, 28 μ long, on tergite VI, 34 μ. Siphunculi pale brown, darker than the head, on abdominal segment VI, triangular, with rounded tip, 72 μ long, and 51 μ wide at the base, almost smooth, without spinulae and hairs. Segment VII with a marginal tubercle, protruding backwards, nipple-shaped, 51 μ long, 33 μ wide at the base, smooth, provided at the tip with a hair, 106 μ long; in the middle two hairs 82 μ long, 86 μ from each other, each on a tubercle, 57 μ wide, and 11 μ high, with a smooth surface. Tergite VIII a colourless plate, 84 μ

wide, with some spinulose imbrications, with two nipple-shaped tubercles, protruding backwards, each 22 μ long and 23 μ wide at the base, with a hair on top, 76 μ long. The cauda with a broadly rounded posterior margin, with two hairs, 59 μ long.

Host plant records.— The specimens were collected in Java: *Castanopsis javanica* (Bl.) DC., Bogor Keb. R., 31.x.1976, 2.ix.1977; *Lithocarpus ovalis* (Blanco) DC., Bogor Keb. R., 15.v.1977, 12.xi.1977; all D. Noordam, RMNH, Leiden.

The aphids live on developing shoots and developing buds, and on the lower side of young leaves.

Alatae were collected 15.v.1977, 2.ix.1977.

Etymology.— "Sinense", of China.

Eutrichosiphum vandergooti (Franssen, 1930)
(figs. 148-151)

Trichosiphum vandergooti Franssen, 1930: 92.
Eutrichosiphum vandergooti; Raychaudhuri, 1956: 104; Eastop & Hille Ris Lambers, 1976: 198.

The material collected of this species has been lost. The description and figures of Franssen (1930) are copied here; the description is not detailed enough to conclude with certainty whether or not the aphid is an *Eutrichosiphum*.

Translation of the original description.— Alate viviparous ♂ (fig. 148), example of some measurements of the body: Body length 2.45 mm. Width of the body 0.96 mm. Length of the antennae 1.66 mm. Length of the siphunculi 1.83 mm. Expanse of the wings 6.20 mm. Length of the cauda 0.07 mm. Colour: head and thorax yellowish grey. Dorsal side of mesothorax and metathorax with a largew dark brown spot. Abdomen dirty yellow, and dorsally with a large dark spot. Eyes red. Antennae black, but the base of segments IV-VI white. Legs yellowish except the basal part of the tibiae. Siphunculi black, subanal plate and cauda brown. Pterostigma black, veins pale brown; the tip of the fore wing smoky, the hind wing somewhat smoky all over.

Morphological characters.— Head and thorax with rather a lot of long hairs; abdomen with transverse rows of long hairs. Antennae (fig. 149) much shorter than the body, with seven segments, with many long hairs; relative lengths of the last segments 36:10:12:9:16. Segment III over its whole length with 15-17 roundish, rather large rhinaria, segment IV sometimes with one rhinarium. Primary rhinaria without fringe, the additional rhinaria always basally to primary rhinaria. Rostrum long and narrow, a little beyond the hind pair of coxae, the ultimate rostal segment distinctly a separate fifth segment. Siphunculi (fig. 149) very long moderately thick, somewhat curved outwards, in the middle slightly widened, with numerous long hairs, the integument somewhat imbricated, distally with fine rows of spinulae. Cauda extewnding only a little, very broadly rounded, half moon-shaped. Rudimentary gonapophyses three, sometimes fused, with some short hairs. Below the anus I observed a transverse oblong structure with polygonal texture. Legs normal up to the femora distinctly imbricated, with rather long bristles. Fore wing (fig. 151) media twice branched, media II a little curved. Hind wing (fig. 150) with two transverse veins. Hooking hairs three.

Some alatae were found on a young tree of *Meliosoma ferruginea* Bl. in the neigh-

bourhood of Ranoe Daroeng on the south slope of the Smeroe in the forest (800 m), by Dr Kalshoven.

Genus *Greenidea* Schouteden, 1905
(figs. 152-230)

Greenidea Schouteden, 1905: 181 (Type species: *Siphonophora artocarpi* Westwood, 1890).

Life specimens (five species).— Apterous viviparous ♀. In life: Head brown, brownish yellow or green, the body shiny brown, pale green or dull green.

Macerated specimens.— Body 1.63-3.36 mm long, 1.5-2.4 times as long as it is wide. The head pale brown or brown, width across the eyes 417-700 µ, the frons protruding with regard to the sides 0-43 µ; the frons with 6-11 hairs, between the eyes 4-8 hairs, and posterior hairs 0-11; length of hairs between the eyes 72-170 µ, but in *G. magna* also some tiny hairs, 10 µ long, the tips of the hairs pointed or widened with 2-6 teeth. Antennae with six segments, 1.44-3.63 mm long, 0.78-1.23 times as long as the body, 3.2-5.7 times as long as the width of the head across the eyes; antennal segment III, 1.4-2.1 times as long as segment IV; the last segment 535-1315 µ long, 1.35-1.67 times as long as the processus terminalis; length of hair on antennal segment III, 69-151 µ, the processus terminalis with four apical hairs and 5-16 over its length. Eyes with numerous ommatidia, ocular tubercle with three ommatidia. Ultimate rostral segment 172-354 µ long, 1.55-2.53 times as long as the second tarsal segment of the hind leg; length of the stylets 751-1218 µ. The prothorax fused with the head, with 11-27 hairs. Tibia of the fore leg 441-1259 µ long, 1.01-1.93 times as long as the width of the head across the eyes. Tibia of the hind leg without coarse imbrications. First tarsal segments with seven hairs. The tergites of abdominal segments II-VII one plate with on each segment hairs in 1-3 transverse rows, on tergite IV, 90-153 µ long, and ventrally in the middle of the abdomen, 33-88 µ long; dorsally smooth, but ventrally spinulae are present, especially in *G. maculata* and *G. magna*, 2-6 µ long; the tips of the hairs are pointed or with 2-5 teeth. Tergite VII with two hairs, tergite VIII with two, on tergite VIII, 63-121 µ long. Siphunculi 535-1855 µ long, 0.29-0.80 times as long as the body, 1.2-3.6 times as long as the width of the head across the eyes, from the base over about 0.8 of its length the siphunculi are reticulate with a few, 3-10 or even 20 spinulae on each transverse reticulate line; spinulae at the distal end with more numerous spinulae in transverse lines, the spinulae 2-12 µ long; the siphunculi with numerous hairs over their whole length, 151-236 µ long, with a flange, 1.1-1.4 times wider than the narrowest distal part. Cauda with a broadly rounded posterior margin, with 7-9 hairs, 70-170 µ long, with a median process, 22-76 µ long. Subanal plate with 18-26 hairs, 118-215 µ long. µubgenital plate with 2-8 anterior hairs, 55-110 µ long, and 6-22 posterior hairs, 78-169 µ long. Gonapophyses three, the lateral with 2-5 hairs, the middle with 3-6, 8-33 µ long.

Life specimens.— Alate viviparous ♀ (four species). Head pale brown or greyish brown, the abdomen green or black with sometimes anterior to the siphunculi on each of three segments a blackish brown spot. Pterostigma greyish brown or brownish black.

Macerated specimens.— Body length 1.59-3.12 mm, 1.9-2.9 times as long as it is

wide. Head pale brown or brown, width of the head across the eyes 393-637 μ, with 2-5 hairs between the paired ocelli, 69-137 μ long. Antennae with six segments, 1.61-4.13 mm long, 0.95-1.44 times as long as the body, and 3.9-7.0 times as long as the width of the head across the eyes, segment III with 7-28 rhinaria, secondary rhinaria on the other segments lacking; segment IV, 224-677 μ long, the processus terminalis 350-1027 μ. Ultimate rostral segment 204-357 μ long, 1.77-2.64 times as long as the second tarsal segment of the hind leg; stylets 698-1322 μ long. Medial vein of the fore wing twice branched, hind wing with two oblique veins. First tarsal segments with seven hairs. Length of the dorsoapical hair of the second tarsal segment of the hind leg 20-35 μ, and the lateroapical hair 16-35 μ. Hairs on tergite IV, 25-110 μ long, ventrally on the middle of the abdomen 47-100 μ long. Siphunculi black, sometimes the distal end brown, 970-2714 μ long, 0.65-0.95 times as long as the body, and 2.6-4.7 times as long as the width of the head across the eyes, 12.8-27.9 times as long as the diameter of the cylindrical part just distal to the base, with transverse linear imbrications, reticulate by interconnections; spinulae on the imbrications only on the distal 0.1-0.4 part, and densely distributed on the distal 0.1; length of the spinulae 2-10 μ; with numerous hairs, 196-330 μ long. Cauda with a median process, 16-45 μ long; the cauda with 7-10 hairs, 84-172 μ long. Subanal plate with 17-26 hairs, 125-225 μ long. Subgenital plate with 2-9 anterior hairs, 61-123 μ long, and with 7-25 posterior hairs, 92-180 μ long. Gonapophyses three, the lateral with 2-6 hairs, the middle with 4-7, 12-22 μ long.

First stage larva of apterous viviparous ♀ (four species).— Body length 704-1480 μ. Antennae with five segments, in *G. ficicola* with four. Eyes with numerous facets, ocular tubercles with three ommatidia. The ultimate rostral segment 151-229 μ long. Tibia of the fore leg 208-417 μ long, 0.72-1.28 times as long as the width of the head across the eyes. Abdominal tergites I-VI each with four hairs. Siphunculi on abdominal segment VI, without spinulae and hairs. Segment VII with a nipple-shaped marginal tubercle and in the middle with two rather flat tubercles, each with a hair on top. Tergite VIII with two nipple-shaped tubercles, each with a hair on top. The cauda without a median process.

Etymology.— "Greenidea", name given by Schouteden (1905) to commemorate Mr E.E. Green of the Botanical Gardens of Peradeniya, Ceylon.

Greenidea (G.) ficicola Takahashi, 1921
(figs. 152-168)

Greenidea ficicola Takahashi, 1921: 66; Eastop & Hille Ris Lambers, 1976: 208.
Greenidea artocarpi van der Goot 1917: 131-135, pro parte.

Life specimens.— Apterous viviparous ♀ (pl. 26). Head and prothorax brownish yellow or brown. Antennal segments I, II, III and the base of IV as the head, the distal part of the antennae grey or black. Eyes red, the ocular tubercle darker. Legs brownish yellow, the tarsi near the claw black. The abdomen shiny brown, the borders and the segment between the siphunculi paler, more distinct after plunging in alcohol. Siphunculi brown or black, the basal 0.2 paler. Cauda pale brown as the head, or slightly more orange. Larvae head, cauda, antennae and legs pale brown, thorax and abdomen pale green or dirty green with a more distinct greenish line in

length anterior to the siphunculi, and grey spots with a hair in the centre, six on each segment.

Macerated specimens (figs. 152-167; described from 16 specimens).— Body length 1.64-2.25 mm, 1.5-1.9 times as long as it is wide.

Head.— Head pale brown or brown, dorsally smooth, the frons convex in outline, the middle protruding with regard to the sides 10-43 μ; the head across the eyes 436-527 μ, dorsally anteriorly one hair at each side and 4-9 in the middle; between the eyes 5-8 hairs, posteriorly 3-5; the hairs are brown, sturdy and the tips have 2-5 teeth, the hairs between the eyes 88-118 μ long, or the hairs are small with acute tips, e.g. 8-16 μ long. Antennae (fig. 157) with six segments, segments I-III or I to basal part of VI the same colour as the head, the rest darker, 1.44-2.14 mm long, 0.78-1.00 times as long as the body, 3.2-4.1 times the width of the head across the eyes; segments I and II smooth, segment I with 6-7 hairs, segment II with 4-5, 84-114 μ long; segment III dorsally and ventrally with smooth imbrications, 346-480 μ long, 1.6-2.1 times as long as segment IV, 1.43-1.66 times as long as segment V, 0.55-0.69 times as long as segment VI, with 14-21 hairs of different lengths, the longest 69-108 μ long; segment IV dorsally and ventrally with smooth imbrications, 165-295 μ long, 0.75-0.93 times as long as segment V, with 5-10 hairs, 74-108 μ long; segment V with smooth imbrications, 208-334 μ long, 0.37-0.45 times as long as segment VI, with 6-8 hairs, 78-112 μ long; segment VI with smooth imbrications, 535-858 μ long, 1.41-1.67 times as long as the processus terminalis, the base with 5-8 hairs, 57-86 μ long; the processus terminalis 341-598 μ long, with four apical hairs, and 5-12 over its length. The eyes colourless or pale brown, the ocular tubercle brown, diameter of the ommatidia of the ocular tubercle 18-20 μ. Ultimate rostral segment (fig. 155) 172-205 μ long, 1.55-2.17 times as long as the second tarsal segment of the hind leg; stylets 751-904 μ long.

Thorax.— Prothorax similarly coloured as the head, fused with the head, the margins and dorsal side without spinulae, dorsally with 14-24 hairs. Mesothorax and metathorax the same colour as the head, the mesothorax with 12-24 hairs dorsally, most hairs sturdy and the tips with teeth, 71-98 μ long. Legs the same colour as the head, the tibiae slightly darker, but the distal 0.2 part paler. All segments with almost smooth imbrications. Tibia of the fore leg 456-669 μ long, 1.01-1.35 times as long as the width of the head across the eyes. Tibia of the hind leg, hair 45-65 μ long, the basal hair 31-40 μ; distally four bristles, 22-25 μ long, four μ wide near the base. First tarsal segments with seven hairs (fig. 159). Second tarsal segment of the hind leg (fig. 156), length of dorsoapical hairs 18-27 μ, of lateroapical hairs 39-49 μ, and of empodial hairs 23-29 μ. Length of the segments of the hind leg: femur plus trochanter 484-693 μ, tibia 594-890 μ, 1.22-1.38 times as long as the femur, and 1.34-1.83 times the width of the head across the eyes, first tarsal segment 35-42 μ, second tarsal segment 100-120 μ.

Abdomen.— Abdominal margins brown, as dark as the head; the central area brown, but darker than the head; the margins and the central area separated from each other at tergites I-IV by a paler curved area, which results from a less sclerotic area at the ventral side between the margins and the central shield, proceeding distally up to the spiracle of the fourth ventral segment. A groove between metanotum and abdominal tergite I, between tergites I and II, VII and VIII, but the margins of the

abdomen without segmental borders. Spinulae are lacking dorsally, but ventrally some spinulae are present along the margins of the ventral shield of anterior segments, and a ventral area located anterior to the siphunculi. The number of marginal hairs at each segment are estimated to be 1-5 at each side, tergites I-VI each with about 10-20 hairs in 1-2 transverse rows; the marginal and dorsal hairs brown, the tips acute or with teeth (fig. 153), on tergite IV the longest hairs 104-127 µ, the shortest 31-67 µ; on tergite I some short hairs about 20 µ long; two hairs along the posterior margin of tergite VII, 98-133 µ long, the tips frequently with small teeth. Tergite VIII, a plate with spinulose imbrications, 267-318 µ wide, standing upwards as a transverse vertical wall 50-80 µ, with two hairs pointing forward, 71-114 µ long. Ventral hairs slender, usually with sharp points, sometimes near the margins with teeth at the tips, long hairs 55-76 µ. Siphunculi (fig. 154) dark brown or black, the basal 0.2 frequently paler, with a convex inner side and a slightly concave outer side, 535-803 µ long, 0.29-0.42 times as long as the body, 1.2-1.7 times as long as the width of the head across the eyes; 69-80 µ wide at the base, 69-114 µ at the widest part, which is at 0.2-0.4 of its length; siphunculi 5.0-9.1 times as long as the widest part; the basal 0.8 of the siphunculi reticulate with 3-10 spinulae on each transverse reticulation line, the spinulae 2-6 µ long; in the distal 0.2 the reticulation disappears gradually and is replaced by transverse imbrications with numerous spinulae, 4-10 µ long; hairs pale brown or brown, the tips with sharp points or sometimes with small teeth, 163-200 µ long, the first basal hair 39-84 µ; siphunculi gradually tapering to its end, without a constriction to the narrowest distal part with a diameter of 37-47 µ, expanding from there to the flange, which is 1.21-1.38 times wider than the narrowest part. Cauda (fig. 158) pale brown, 161-230 µ wide, 60-122 µ long, with a rounded posterior margin, interrupted in the middle by a process, 22-41 µ long; with 7-9 hairs, 78-123 µ long, slender and with somewhat threadlike ends. Subanal plate pale brown, with 18-26 hairs, 118-176 µ long. Subgenital plate transversely elliptical, e.g. 373 µ wide, and 153 µ long, with spinulose imbrications and at the lateral borders some spinulae; anterior hairs 2-4, 63-90 µ long; posterior hairs 10-29, of which 5-10 are large, 98-139 µ long, and located at the sides, while 4-21 are small, 14-40 µ long, and located in the middle area. Gonapophyses three, the lateral with 2-3 hairs, the middle with 4-6, 10-16 µ long.

Life specimens.— Alate viviparous ♀ (pl. 27): Head pale brown. Pronotum and mesonotum equal in colour, darker than the head. Abdomen dark green or black and only the transverse borders of the segments green, around the siphunculi white. Antennae black. Legs brown, the knees, the distal part of the tibiae and the tarsi black. Siphunculi black. Cauda pale brown. Eyes red, the ocular tubercle darker. Pterostigma brownish grey or brownish black.

Macerated specimens (figs. 160-167; described from eight specimens).— Body length 1.59-2.33 mm, 1.8-2.4 times as long as it is wide.

Head (fig. 160).— Head brown, smooth, width of the head across the eyes 456-508 µ; dorsally 14-19 hairs of which anterior about 8-12, between the paired ocelli 3-4, and posterior 2-4, the hairs brown, the tips pointed or with some small teeth, 71-110 µ long. Antennae (fig. 165) segments I and II and 30-40 µ of the base of segment III brown, the rest of the antennae black, but the end of the processus terminalis paler; six-segmented, 1.80-2.41 mm long, 1.01-1.28 times as long as the body, and 3.9-4.9

times as long as the width of the head across the eyes, segments I and II with some spinulose imbrications, length of hairs on segment II, 74-104 μ; segment III over its whole length with smooth imbrications, 480-673 μ long, 1.77-2.11 times as long as segment IV, 1.62-1.80 times as long as segment V, and 0.69-0.81 times as long as segment VI, with 14-20 transversely elliptical rhinaria over its whole length, with 14-19 hairs, 96-116 μ long; segment IV with smooth imbrications, 244-346 μ long, 0.80-0.93 times as long as segment V, with 5-9 hairs, 82-108 μ long; segment V with smooth imbrications, 287-373 μ long, 0.41-0.45 times as long as segment VI, with 6-10 hairs, 90-116 μ long; segment VI, 653-891 μ long, 1.45-1.54 times as long as the processus terminalis, the base with 6-7 hairs, 53-84 μ long; the processus terminalis 425-614 μ long, with four apical hairs, and 7-10 over its length. The eyes pale brown, the ocular tubercle slightly darker, diameter of the ommatidia of the ocular tubercle 22 μ. Ultimate rostral segment (fig. 161) 204-221 μ long, 1.77-2.01 times as long as the second tarsal segment of the hind leg; stylets 810-982 μ long.

Thorax.— Prothorax brown, dorsally, including the margins with 19-26 hairs. Mesothorax brown with brown hairs (fig. 164), 98-137 μ long. Medial vein of the fore wing (fig. 162) twice branched, hind wing with two oblique veins. Legs brown, the femora paler than the other parts. The femora with almost smooth imbrications. The tibia of the fore leg 657-850 μ long, 1.43-1.75 times as long as the width of the head across the eyes; tibiae with imbrications, with or without spinulae, distal half of the tibiae on the ventral side with spines, 14-18 μ long, distally four bristles, 22-31 μ long; length of hairs of the hind tibia 74-98 μ, the basal hair 51-69 μ. First tarsal segments with seven hairs. Length of dorsoapical hair of the second tarsal segment of the hind leg (fig. 166) 20-27 μ, of the lateroapical hair 20-27 μ, and of the empodial hair 22-27 μ. Length of the segments of the hind leg: femur plus trochanter 614-771 μ, tibia 881-1109 μ, 1.38-1.46 times as long as the femur, and 1.91-2.27 times as long as the width of the head across the eyes, first tarsal segment 35-39 μ, second tarsal segment 104-120 μ.

Abdomen.— Marginal sclerites brown, with a colourless area between the segments; the tergites of segments I and II with a rather narrow transverse brown band and a colourless area in between with brown muscular plates; tergites III-VII a brown plate with only narrow transverse lines in between; the dorsum smooth with 8-12 hairs in 1-2 transverse rows, on tergite IV (fig. 164) 25-41 μ long, but some hairs longer as in apterae, shortest hairs 22-33 μ long; ventral hairs 69-84 μ long; on tergite VII one anterior hair in the middle, two large posterior hairs (fig. 164), 58-88 μ long, and a small lateral hair at each side. Tergite VIII a transversely elliptical plate, e.g. 295 μ wide, and 59 μ long, with spinulose imbrications, with two hairs in the middle (fig. 164), about 65 μ from each other, 98-131 μ long. Siphunculi (fig. 167) black, cylindrical with the distal 0.1 slightly curved outwards, 1.18-1.62 mm long, 0.65-0.76 times as long as the body, 2.6-3.3 times as long as the width of the head across the eyes; 90-114 μ wide at the base, 12.8-22.2 times as long as the diameter of the cylindrical part just distal to the base, with transverse linear imbrications reticulate by interconnections; spinulae on the imbrications a few present on the basal part, more on the distal 0.2 part, and densely distributed on the distal 0.1; length of the spinulae 4-10 μ; siphunculi gradually tapering to the narrowest distal part with a diameter of 39-49 μ, expanding from there to the flange which is 1.2-1.5 times wider than the narrowest

part; with numerous brown hairs with sharp points, but sometimes with a colourless pennon, 212-263 μ long. Cauda (fig. 163) pale brown, 151-216 μ wide, and 90-130 μ long, with a median process, 22-31 μ long; the cauda with 7-9 hairs, 84-123 μ long. Subanal plate brown, with 17-22 hairs, 127-155 μ long. Subgenital plate e.g. 290 μ wide, 148 μ long, with spinulose imbrications, anterior hairs 2-5, 67-94 μ long; posterior hairs 7-24, the longest 98-131 μ, but 3-16 of the hairs small in the middle area 20-40 μ long. Gonapophyses three, the lateral with 2-3 hairs, the middle with 4-5, 12-15 μ long.

First stage larva of apterous viviparous ♀ (fig. 168; description of one specimen).— Body length 881 μ (704-1050 μ in 19 specimens), 2.5 times as long as it is wide. Head across the eyes 287 μ, with four anterior hairs, and four hairs in a transverse row between the eyes, 56 μ long. Antennae with four segments (other specimens 4-5 segments, 421-700 μ long), 567 μ long, segment III, 193 μ long, 0.65 times as long as segment IV; segment IV, 295 μ long, 1.45 times as long as the processus terminalis. The ultimate rostral segment 151 μ long. Tibia of the fore leg 208 μ long, 0.72 times as long as the width of the head across the eyes. Abdominal segments I-VI with one marginal hair at each side and four dorsal hairs, each on a sclerite, on tergite VI, 74 μ long; the hairs frequently with teeth at the tip. Siphunculi pale brown, on abdominal segment VI, triangular, with a rounded tip, 94 μ long, and 72 μ wide at the base, almost smooth without spinulae and hairs. Segment VII with a marginal tubercle, protruding backwards, nipple-shaped, 43 μ long, 35 μ wide at the base, almost smooth, provided with a hair at the tip, 112 μ long; in the middle two hairs, 86 μ long, 96 μ from each other, on a common tubercle with smooth surface. Tergite VIII a pale brown sclerite with some spinulose imbrications, the spinulae about two μ long, 108 μ wide, with two nipple-shaped tubercles which occupy the greater part of the tergite, and protrude backwards; each tubercle 35 μ long (the process of the hair not included), and 30 μ wide at the base, with a hair on top, 82 μ long. The cauda somewhat triangular with a rounded posterior tip, without a process, with two hairs, 40 μ long.

Host plant records.— The specimens were collected in Java: *Ficus benjamina* Linnaeus, Pasoeroean, vi.1913, P. v.d. Goot; *Ficus glomerata* Oxb. Grati, iv.1914, P. v.d. Goot; *Ficus*, Garoet, 13.viii.1916, P. v.d. Goot; ? *Ficus*, Kawa Kemodjang, 16.viii.1916, P. v.d. Goot; *Ficus variegata* Bl., Gondang (500 m), Zuid Yang hellingen, 3.iv.1950, 20.v.1950, Rappard; *Ficus* ? *quercifolia*, Bondowoso (300 m), 18.vii.1950, Rappard; *Ficus variegata* Bl., Gondang (600 m), 21.vii.1950, Rappard; *Ficus* spec. Rayap (550 m), 5.xi.1950, Rappard; *Streblus asper* Lour., Bogor Keb. R., 6.vi.1976, 3.ix.1976, 9.ix.1976, 6.ii.1977, 6.xi.1977, 21.xi.1977, 8.i.1978; these and the next collections D. Noordam; *Ficus ampelas* Burm.f., Sindanglaya (1100 m), 24.i.1977, ; *Ficus kurzii* King, Bogor, 5.ii.1977; *Ficus kurzii* King, Bogor Keb. R., 6.ii.1977; *Streblus elongatus* (Miq.) Corner, Bogor Keb. R., 2.iii.1977, 21.xi.1977; *Ficus racemosa* Linnaeus, Bogor Keb. R., 2.iii.1977, 2.v.1977; *Ficus copiosa* Steud., Bogor Keb. R., 5.ix.1977; *Ficus ampelas* Burm.f., Sindanglaya, 2.xi.1977; *Ficus virens* W.Ait., Bogor Keb. R., 25.xi.1977. P. v.d. Goot, LUW, Wageningen; F.W. Rappard BMNH, London; D. Noordam, RMNH, Leiden.

The aphids live on young developing shoots, on young but already lignified branches, on the axil of developing shoots, on stalks of young fruits, and larvae sometimes on the lower side of developing leaves.

Alatae or last stage larvae of alatae were collected vi.1913, iv.1916, 3.ix.1976, 9.ix.1976, 24.i.1977, 5.ii.1977, 6.ii.1977, 2.iii.1977, 5.ix.1977, 2.xi.1977, 21.xi.1977, 8.i.1978.

Etymology.— "Ficicola", meaning dwelling on *Ficus*.

Greenidea (G.) maculata spec. nov.
(figs. 169-176)

Type.— Holotype, apterous viviparous ♀, *Syzygium antisepticum* (Bl.) Merr. & Perry, Tjibodas, Java, no. 922-2-1, 30.i.1977, D. Noordam, RMNH, Leiden.

Life specimens.— Apterous viviparous ♀ (pl. 28): Head and border of the body orange brown, the middle of the abdomen brown. Eyes red. Antennal segments I, II and the basal 0.7 of III orange brown, the rest of the antennae black. The basal 0.1 of the siphunculi orange brown, the rest black. The long antennae and siphunculi, and the cauda process are distinctive characteristics in life from *Mollitrichosiphum (Metatrichosiphon) syzygii*.

Macerated specimen (fig. 169-176; description from one specimen).— Body length 2.29 mm, 2.2 times as long as it is wide.

Head.— Head pale brown, dorsally smooth, the frons straight in outline; head across the eyes 508 µ, dorsally anteriorly one hair at each side and six in the middle; between the eyes six hairs, posteriorly hairs are lacking; the hairs are brown, sturdy and the tips with 2-5 teeth, the hairs between the eyes 130 µ long. Antennae with six segments, segments I, II and the basal 0.7 part of III the same colour as the head, the rest darker, in the middle black, 2.53 mm long, 1.10 times as long as the body, 5.0 times the width of the head across the eyes; segments I and II smooth, segment I with eight hairs, II with four, 143 µ long; segment III dorsally and ventrally with smooth imbrications, 630 µ long, 1.81 times as long as segment IV, 1.65 times as long as segment V, 0.66 times as long as segment VI, with 22 hairs of different lengths, the longest 147 µ; segment IV dorsally and ventrally with smooth imbrications, 348 µ long, 0.91 times as long as segment V, with nine hairs, 137 µ long; segment V with smooth imbrications, 383 µ long, 0.40 times as long as segment VI, with seven hairs, 163 µ long; segment VI with smooth imbrications, 960 µ long, 1.42 times as long as the processus terminalis, the base with seven hairs, 94 µ long; the processus terminalis 677 µ long, with four apical hairs and nine over its length. The eyes colourless, the ocular tubercle pale brown, diameter of the ommatidia of the ocular tubercle 18-20 µ. Ultimate rostral segment (fig. 173) 218 µ long, 1.72 times as long as the second tarsal segment of the hind leg; stylets 794 µ long.

Thorax.— Prothorax the same colour as the head, the margins and dorsal side without spinulae, dorsally with 13 hairs. Mesothorax and metathorax the same colour as the head, the lateral sides with some spinulae; the mesothorax with 17 hairs dorsally, most hairs sturdy, brown, and the tips with teeth; the metathorax with nine hairs, 108 µ long. Femora colour as the head, distally slightly darker, tibiae and tarsi brown. Femora with imbrications with barely visible minute spinulae, tibiae with imbrications, distally with spinulae, tarsi with smooth imbrications. Tibia of the fore leg 771 µ long, 1.52 times as long as the width of the head across the eyes. Tibia of the hind leg, hairs 64 µ long, the basal hair 55 µ; distally four bristles, 20 µ long, 4-5 µ wide near the

base. First tarsal segments with seven hairs (fig. 174). Second tarsal segment of the hind leg (fig. 175), length of dorsoapical hairs 27 μ long, of lateroapical hairs 49 μ, and of empodial hairs 27 μ. Length of segments of the hind leg: femur plus trochanter 755 μ, tibia 967 μ, 1.28 times as long as the femur, and 1.90 times the width of the head across the eyes, first tarsal segment 44 μ, second tarsal segment 127 μ.

Abdomen.— The abdomen slightly darker brown than the head with an area in the middle, about 300 μ wide and 850 μ long, brown; the margins and the central area separated from each other at tergites I-IV by a paler curved area, which results from a less sclerotic area at the ventral side between the margins and the central shield, proceeding distally up to the spiracle of the fourth ventral segment. A groove between metanotum and abdominal tergite I, between I and II, VII and VIII, but the margins of the abdomen without segmental borders. Spinulae are lacking dorsally, but ventrally (fig. 171) anterior to the siphunculi, spinulae are present on the lateral sides and on the ventral shield, 2-5 μ long. The number of marginal hairs on each segment are 1-4 at each side, each tergite with six to about 14 hairs in 1-2 transverse rows; the marginal and dorsal hairs brown, the tips with 2-7 teeth, on tergite IV hairs (fig. 170), 130-149 μ long, shorter hairs 45-70 μ long and only a few on anterior tergites; two hairs along the posterior margin of tergite VII, 123 μ long; tergite VIII a plate 350 μ wide, 79 μ long, with spinulose imbrications, with two hairs, 69 μ long. Ventral hairs in the middle area slender, with sharp points, 55 μ long, hairs near the lateral sides more sturdy and sometimes with teeth. Siphunculi brown, the basal 200 μ and the distal end slightly paler, with a convex inner side and a concave outer side, 1.83 mm long, 0.80 times as long as the body, 3.61 times as long as the width of the head across the eyes; 116 μ wide at the base, 130 μ at the widest part, which is somewhat distal to the base; siphunculi 14.1 times as long as the widest part; the siphunculi (fig. 172) with a reticulum which is lacking only on the distal 140 μ; a few spinulae on the reticulum, but the distal 170 μ densely distributed with spinulae, 4-10 μ long, arranged in transverse rows; hairs brown, with sharp points or threadlike tips, 236 μ long, the first basal hair 55 μ; siphunculi gradually tapering off to the narrowest part with a diameter of 71 μ, expanding from there to the flange, which is 1.07 times wider than the narrowest part. Cauda (fig. 176) pale brown, 240 μ wide, 118 μ long, with a rounded posterior margin, interrupted in the middle by a process, 47 μ long; with 11 hairs, 123 μ long, slender and with somewhat threadlike ends. Subanal plate pale brown, with 22 hairs, 169 μ long. Subgenital plate transversely elliptical, 358 μ wide and 172 μ long, with spinulose imbrications and at the lateral borders some spinulae; anterior hairs two, 90 μ long; posterior hairs 15, six of which located at the lateral sides, large, 137 μ long, and nine small hairs, located in the middle area, 20-43 μ long. Gonapophyses three, the lateral with three, the middle with four hairs, 10 μ long.

Host plant record.— The specimen was collected in Java: *Syzygium antisepticum* (Bl.) Merr. & Perry, Tjibodas (1400 m), 30.i.1977, D. Noordam, RMNH, Leiden.

The aphid was found on a young shoot with developing leaves.

Etymology.— "Maculata", meaning spotted or blotched. Name given for the presence of the large blotch on the middle of the abdomen.

Greenidea (G.) magna spec.nov.
(figs. 177-196)

Type.— Holotype (apterous viviparous ♀), from *Castanopsis acuminatissima* (Bl.) DC., Dieng (2000 m), Java, 3.i.1977, no. 872-1, D. Noordam. Paratypes 17 apterae viviparae and seven alate viviparous ♀♀ with the same data as the holotype but no. 872-2, 3, 6, 7; and *Castanopsis* spec., Dieng (2050 m), 22.vii.1976, no.707-1; *Castanopsis argentea* (Bl.) DC. Mt.Patuha (1900 m), 15.viii.1976, no. 722-1; *Castanopsis acuminatissima* (Bl.) DC., Dieng (2000 m), 2.i.1977, no. 865-3, 865-4; *Castanopsis javanica* (Bl.) DC., Tjibodas, 30.i.1977, no. 918-1-5, and no. 920; *Castanea crenata* Sieb. & Zucc., Cibodas, 27.xi.1977, no. 1145; all D. Noordam, RMNH, Leiden.

Life specimens.— Apterous viviparous female (pl. 29). The body pale green, green or brownish, the head paler; on the distal abdominal segments in the middle a brown spot. Eyes red, the ocular tubercle black. Antennal segments I-IV brown, the rest black. Siphunculi pale brown or brown, the distal end black. The femora whitish, the tibiae and the tarsi brown or black. Cauda orange brown or brown.

Macerated specimens (figs. 177-185; described from seven specimens).— Body 2.42-3.36 mm, 1.8-2.4 times as long as it is wide.

Head.— Head pale brown, dorsally smooth, the frons straight in outline or the middle protruding with regard to the sides at most 16 µ; head across the eyes 559-653 µ, dorsally anteriorly one hair at each side and 6-7 in the middle; between the eyes six hairs, the two in the middle frequently small or minute; posteriorly, anterior to the sturdy hairs of the pronotum 3-11 minute hairs; the hairs are brown, sturdy, the tips with teeth, the hairs between the eyes 139-170 µ long, but minute hairs e.g. 10 µ long. Antennae (fig. 183) with six segments, pale brown or brown, the distal end of segments III and IV darker, and part of segment V and VI black, 2.86-3.63 mm long, 1.02-1.23 times as long as the body, and 4.4-5.7 times the width of the head across the eyes; segments I and II with some imbrications and spinulae, segment I with 7-9 hairs, segment II with 5-7, 118-151 µ long; segment III dorsally and ventrally with smooth imbrications, 693 -1000 µ long, 1.4-2.0 times as long as segment IV, 1.33-1.80 times as long as segment V, 0.57-0.84 times as long as segment VI, with 16-28 hairs of different lengths, the longest 112-151 µ long; segment IV dorsally and ventrally with smooth imbrications, 370-590 µ long, 0.91-1.03 times as long as segment V, with 5-9 hairs, 112-139 µ long; segment V with smooth imbrications, 408-586 µ long, 0.35-0.47 times as long as segment VI, with 6-8 hairs, 106-159 µ long; segment VI with smooth imbrications, 1.01-1.24 mm long, 1.37-1.44 times as long as the processus terminalis, the base with 5-7 hairs, 85-122 µ long; the processus terminalis 700-878 µ long, with four apical hairs, and 8-15 over its length. The eyes colourless, the ocular tubercle brown, diameter of the ommatidia of the ocular tubercle 20-24 µ. Ultimate rostral segment (fig. 184), 288-354 µ long, 1.91-2.53 times as long as the second tarsal segment of the hind leg; stylets 1.10-1.20 mm long.

Thorax.— Prothorax the same colour as the head, fused with the head, the margins and the dorsal side without spinulae, dorsally with 18-27 hairs. Mesothorax and metathorax the same colour as the head, the mesothorax with dorsally 3-11 small hairs, and 17-25 sturdy, brown hairs, the tips with teeth, 108-141 µ long. Metathorax dorsally with 10-18 hairs. The femora the same colour as the head, tibiae and tarsi

darker. Femora and tarsi with almost smooth imbrications, the tibiae with only some imbrications. Tibia of the fore leg 920-1259 μ long, 1.47-1.93 times as long as the width of the head across the eyes. Tibia of the hind leg, hairs 67-118 μ long, the basal hair 65-102 μ; distally four bristles, 29-31 μ long, 6 μ wide near the base. First tarsal segments with seven hairs (fig. 178). Second tarsal segment of the hind leg (fig. 181), length of dorsoapical hairs 22-33 μ, of lateroapical hairs 51-61 μ, and of empodial hairs 30-32 μ. Length of segments of the hind leg: femur plus trochanter 967-1300 μ, tibia 1.35-1.82 mm, 1.37-1.53 times as long as the femur, and 2.07-2.78 times the width of the head across the eyes, first tarsal segment 49-53 μ, second tarsal segment 137-155 μ.

Abdomen.— Abdominal margins and dorsum pale brown, as the head, with a brown blotch in the middle of tergite III or IV to VII, 350-500 μ wide and 800-1000 μ long (one specimen for the greater part brown, apparently an alatoid characteristic); the margins and the central area separated from each other at tergites I-IV by a curved area of almost the same colour, which resulting from a less sclerotic area at the ventral side between the margins and the central shield, proceeding distally up to the spiracle of the fourth ventral segment. A groove between the metanotum and abdominal tergite I, between I and II, VII and VIII, but the margins of the abdomen without segmental borders. Spinulae are lacking dorsally, ventrally spinulae are present on the lateral sides of segments I and II, and are densely distributed over the ventral shield (fig. 179), 3-6 μ long. The number of marginal hairs on each segment are 2-5 at each side, each tergite I-VII with about 6-20 hairs in 1-2 transverse rows; the marginal and dorsal hairs (fig. 180) brown, the tips with 2-4 teeth, on tergite IV hairs 102-153 μ long; hair on tergite VII, 87-136 μ long. Tergite VIII a plate with spinulae, 3-6 μ long in transverse rows, the plate usually standing upwards, 354-450 μ wide, and if flat e.g. 450 μ wide and 90 μ long, with two hairs, 74-121 μ long. Ventral hairs in the middle are slender, with sharp points 61-88 μ long, hairs near the lateral sides more sturdy, and the tips with teeth. Siphunculi slightly darker than the head, and the distal end sometimes darker than the base, with a convex inner side and a concave outer side, 1.04-1.85 mm long, 0.37-0.57 times as long as the body, 1.60-2.84 times as long as the width of the head across the eyes; 82-127 μ wide at the base, 98-120 μ at the widest part, which is somewhat distal to the base, from there the siphunculi gradually taper off to the narrowest distal part with a diameter of 52-68 μ, and then expand to the flange, which is 1.33-1.45 times wider than the narrowest part; the siphunculi (fig. 182) with a reticulum which is lacking on the distal end; the reticulum densely covered with spinulae, about 20 on each line; the distal end with transverse spinulose imbrications or with spinulae arranged in a transverse line, on each line more than 20 spinulae, 6-12 μ long; hairs brown with sharp points, 186-216 μ long, the first basal hair 65-102 μ long Cauda (fig. 185) pale brown, 263-338 μ wide, 102-173 μ long, with a rounded posterior margin, interrupted in the middle by a process, 43-59 μ long, with 8-10 hairs, 125-163 μ long and with somewhat threadlike ends. Subanal plate pale brown, with 18-24 hairs, 168-215 μ long. Subgenital plate transversely elliptical, e.g. 535 μ wide and 220 μ long, with spinulae and spinulose imbrications; anterior hairs 2-8, 74-110 μ long, and 6-17 posterior hairs, 0-13 of them smaller in the middle, 104-169 μ long. Gonapophyses three, the lateral with 2-5 hairs, the middle with 4-5, 8-12 μ long.

Life specimens.— Alate viviparous ♀ (pl. 30). Head and mesothorax brown. Abdomen green with, between the siphunculi and each of the three segments anterior to this, a blackish brown spot; a green transverse line between the segments in the middle, the lateral sides black, around the siphunculi white. Antennae black. Base of the femora brown, the rest of the legs black. Siphunculi black, but distally dark grey. Cauda pale orange brown, as the abdominal segment anterior to it. Eyes red, the ocular tubercle darker. Pterostigma greyish brown.

Macerated specimens (figs. 186-195; described from six specimens).— Body length 2.74-3.12 mm, 2.6-2.9 times as long as it is wide.

Head (fig. 186).— Head brown, smooth, width of the head across the eyes 559-637 μ; dorsally 14-17 hairs of which anterior about 8-11, between the paired ocelli two, and posterior 3-4, the hairs brown, the tips pointed, but one hair with two teeth, 112-135 μ long. Antennae (fig. 192) segments I and II and the distal part of the processus terminalis brown, the rest black; with six segments, 3.45-4.13 mm long, 1.16-1.44 times as long as the body, and 5.7-7.0 times as long as the width of the head across the eyes, segments I and II with some spinulose imbrications, length of hair on segment II, 131-152 μ long, segment III the basal part smooth, the rest with smooth imbrications, 952-1135 μ long, 1.63-1.77 times as long as segment IV, 1.69-1.82 times as long as segment V, and 0.73-0.85 times as long as segment VI, with 10-18 roundish rhinaria on the basal half, with 22-27 hairs, 139-167 μ long; segment IV with smooth imbrications, 543-677 μ long, 0.99-1.07 times as long as segment V, with 7-11 hairs, 141-159 μ long; segment V with smooth imbrications, 535-649 μ long, 0.43-0.48 times as long as segment VI, with 5-7 hairs, 127-159 μ long; segment VI, 1.13-1.44 mm long, 1.39-1.49 times as long as the processus terminalis, the base with 5-8 hairs, 82-120 μ long; the processus terminalis 759-1027 μ long, with four apical hairs and 9-16 over its length. The eyes pale brown, the ocular tubercle brown or black, diameter of the ommatidia of the ocular tubercle 22 μ. Ultimate rostral segment (fig. 193) 325-357 μ long, 2.23-2.64 times as long as the second tarsal segment of the hind leg; stylets 1.24-1.32 mm long.

Thorax.— Prothorax brown, dorsally including the margins, with 28-33 hairs. Mesothorax brown, with brown hairs (fig. 190), 143-172 μ long. Medial vein of the fore wing (fig. 187) twice branched, hind wing with two oblique veins. Legs brown, the femora paler than the other parts, the tibiae distally sometimes black. The femora with imbrications with indistinct spinulae. The tibia of the fore leg 1.19-1.49 mm long, 2.04-2.48 times as long as the width of the head across the eyes; tibiae almost without imbrications, distal half of the tibiae on the ventral side with spines, 10-14 μ long, distally four bristles, 29-35 μ long; length of hairs of the hind tibia 123-139 μ, the basal hair 78-118 μ. First tarsal segments with seven hairs. Length of dorsoapical hair of the second tarsal segment of the hind leg (fig. 188) 29-35 μ, of the lateroapical hair 27-35 μ, and of the empodial hair 29-32 μ. Length of segments of the hind leg: femur plus trochanter 1.12-1.38 mm, tibia 1.61-2.07 mm, 1.43-1.53 times as long as the femur, and 2.88-3.47 times the width of the head across the eyes, first tarsal segment 43-49 μ, second tarsal segment 135-149 μ.

Abdomen (fig 191).— Marginal sclerites brown with a large colourless area between segments I-II and a tiny area between the sclerites of segments III-VI; distinct brown muscular plates between the tergites of segments I-II and II-III. Tergites

III-V fused with the marginal sclerites, with only a transverse white line between tergite III and IV, and between IV and V; tergites III and IV each pleurally with a paler brown marginal sclerite; tergites VI and VII each separated on all sides by a white area from the surroundings. The dorsum smooth with, on the anterior tergites, about eight hairs in a transverse row, on tergite IV (fig. 190), 61-110 µ long, and shortest hairs 43-47 µ long, ventral hairs 78-100 µ long. The ventral side of the abdomen with spinulae (fig. 189), 2-8 µ long. On tergite VII one anterior hair in the middle, two posterior hairs, 61-92 µ long, and sometimes a small lateral hair at each side. Tergite VIII very pale brown, a transversely elliptical plate, e.g. 358 µ wide, 72 µ long, with spinulose imbrications, with two hairs in the middle, about 60 µ from each other, 104-137 µ long. Siphunculi (fig. 195) black, the distal end brown, cylindrical with the distal end slightly curved outwards, 2.47-2.71 mm long, 0.83-0.95 times as long as the body, 4.0-4.7 times as long as the width of the head across the eyes; 96-144 µ wide at the base, 22.8-27.5 times as long as the diameter of the cylindrical part just distal to the base, with transverse linear imbrications, reticulate by interconnections; spinulae on the imbrications are only present on the distal 0.1 part, and are only densely distributed on the distal 200 µ; length of the spinulae 4-10 µ; siphunculi gradually tapering to the narrowest distal part with a diameter of 57-67 µ, expanding from there to the flange, which is 1.4-1.5 times wider than the narrowest part; with numerous brown hairs with sharp points or with colourless pennons, 274-330 µ long. Cauda (fig. 194) very pale brown, 263-306 µ wide, and 150-169 µ long, with a median process 33-45 µ long; the cauda with 8-10 hairs, 137-172 µ long. Subanal plate brown, with 19-24 hairs, 188-220 µ long. Subgenital plate e.g. 450 µ wide, 179 µ long, anterior with spinulose imbrications, posterior with separate spinulae, 3-10 µ long; anterior hairs 5-9, 94-123 µ long, posterior hairs 8-13, 137-180 µ long, but 2-5 hairs in the middle small, about 50 µ long. Gonapophyses three, the lateral with 3-6 hairs, the middle with about six hairs, 12-20 µ long.

First stage larva of apterous viviparous ♀ (fig. 196; description of one specimen).— Body length 1.48 mm (1.01-1.48 mm in 11 specimens), 2.4 times as long as it is wide. Head across the eyes 326 µ, with four anterior hairs, and in a transverse row between the eyes four anterior hairs and four posterior, 104 µ long. Antennae with five segments, 1.22 mm long, segment III, 318 µ long, 1.59 times as long as segment IV, and 0.56 times as long as segment V; segment IV, 200 µ long, 0.35 times as long as segment V; segment V, 570 µ long, 1.37 times as long as the processus terminalis. The ultimate rostral segment 229 µ long. Tibia of the fore leg 417 µ long, 1.28 times as long as the width of the head across the eyes. Abdominal tergites I-VI with one marginal hair at each side and four dorsal hairs, each on a sclerite, but the sclerites of the two middle hairs of segments III-VI fused; the hairs with sharp points, or sometimes the tips with 2-3 teeth; hairs on tergite VI, 110 µ long. Siphunculi brown, on abdominal segment VI, triangular, with a rounded tip, 193 µ long, and 90 µ wide at the base, almost smooth without spinulae and hairs. Segment VII with a marginal tubercle, protruding backwards, nipple-shaped, 63 µ long, 41 µ wide at the base, smooth provided at the tip with a hair, 161 µ long; in the middle two hairs, 143 µ long, 110 µ from each other, on the posterior side of the smooth sclerite of tergite VII. Tergite VIII a brown sclerite with some spinulose imbrications, the spinulae about two µ long, 153 µ wide, with two nipple-shaped tubercles which occupy the greater part of the

tergite, and protrude backwards; each tubercle 55 µ long (the process of the hair not included), and 37 µ wide at the base, with a hair on top , 139 µ long. The cauda somewhat triangular with a rounded posterior tip, without a process, with two hairs, 45 µ long.

Host plant records.— The specimens were collected in Java: *Castanopsis* spec., Dieng village, 22.vii.1976; *Castanopsis argentea* (Bl.) DC., Mt. Patuha (1900 m), 15.viii.1976; *Castanopsis acuminatissima* (Bl.) A. DC., Dieng (2000 m), 2.i.1977, 3.i.1977; *Castanopsis javanica* (Bl.) DC., Cibodas, 30.i.1977; *Castanea crenata* Sieb. & Zucc., Cibodas (1400 m), 27.xi.1977; 18.xii.1977; *Castanopsis javanica* (Bl.) DC., Cibodas (1400 m), 18.xii.1977; all D. Noordam, RMNH, Leiden.

The aphids live on the lower side of leaves and on young developing shoots.

Alatae or last stage larvae of alatae were collected 22.vii.1976, 15.viii.1976, 2.i.1977, 3.i.1977, 30.i.1977, 27.xi.1977.

Etymology.— "Magna", large, name given for the considerable size of this aphid.

Greenidea (G.) rappardi Raychaudhuri, 1956
(figs. 197-213)

Greenidea rappardi Raychaudhuri, 1956: 40; Eastop & Hille Ris Lambers, 1976: 209.

Types.— Holotype selected by Raychaudhuri (1956: 40) *Greenidea rappardi* (slide with two apterous viviparous ♀♀), *Scurrula*, Rembangan, 1.x.1950, F.W. Rappard no. 245. Paratypes four slides with the same data as the holotype, one slide from *Scurrula*, Rembangan (700 m), 20.viii.1950, and one from *Scurrula*, Rembangan 8.x.1950. BMNH, London.

Life specimens.— Apterous viviparous ♀ (pl. 8). Shiny brown, the head, thorax and abdominal segment of the siphunculi paler. Antennal segments I, II and III the same colour as the head, but the distal end of segment III darker, and the rest of the antennae black. Eyes red, the ocular tubercle black. Legs pale orange brown. The siphunculi pale orange brown, the distal 0.2 part black. Cauda brownish yellow, paler than the posterior abdominal segments. Smallest larvae yellow, the margins bright green, the posterior side with four white or colourless papillae, the siphunculi greyish brown. Larger larvae green or the middle pale brown; sometimes with grey spots, and a large one between the siphunculi.

Macerated specimens (figs. 197-204; described from seven specimens).— Body length 1.63-1.94 mm, 1.8-1.9 times as long as it is wide.

Head.— Head pale brown, dorsally smooth, the frons convex in outline, the middle protruding with regard to the sides 6-27 µ; head across the eyes 417-472 µ, dorsally anteriorly one hair at each side and 4-6 in the middle; between the eyes 4-7, posteriorly 0-2; the hairs are brown, sturdy and the tips with 1-6 teeth, the hairs between the eyes 72-96 µ long, but some hairs small and with acute tips, e.g. 12 µ long. Antennae (fig. 201) with six segments, segments I-III and the processus terminalis the same colour as the head, the distal part of segment III, and the other parts of the antennae usually darker, 1.68-1.89 mm long, 1.03-1.08 times as long as the body, 4.0-4.3 times the width of the head across the eyes; segments I-II with inconspicuous imbrications with some tiny spinulae, segment I with 5-6 hairs, segment II with 4-5, 74-87 µ long;

segment III dorsally and ventrally with smooth imbrications, 326-425 μ long, 1.4-1.7 times as long as segment IV, 1.13-1.34 times as long as segment V, 0.40-0.46 times as long as segment VI, with 8-16 hairs of different lengths, the longest 70-82 μ long; segment IV dorsally and ventrally with smooth imbrications, 200-267 μ long, 0.73-0.80 times as long as segment V, with 5-8 hairs, 71-82 μ long; segment V with smooth imbrications, 271-326 μ long, 0.33-0.37 times as long as segment VI, with 6-8 hairs, 76-88 μ long; segment VI with smooth imbrications, 728-865 μ long, 1.35-1.40 times as long as the processus terminalis, the base with 7-8 hairs, 42-55 μ long; the processus terminalis 590-641 μ long, with four apical hairs, and 8-9 over its length. The eyes colourless, the ocular tubercle brown, diameter of the ommatidia of the ocular tubercle 18-20 μ. Ultimate rostral segment (fig. 200) 216-227 μ long, 2.04-2.18 times as long as the second tarsal segment of the hind leg; stylets 928-966 μ long.

Thorax.— Prothorax the same colour as the head, fused with the head, the margins and dorsal side without spinulae, dorsally with 11-16 hairs. Mesothorax and metathorax the same colour as the head; the mesothorax with 14-17 hairs dorsally, most hairs sturdy and the tips with teeth, 78-92 μ long. Legs the same colour as the head, all segments with almost smooth imbrications. Tibia of the fore leg 441-527 μ long, 1.06-1.22 times as long as the width of the head across the eyes. Tibia of the hind leg hairs 31-47 μ long, the basal hair 20-33 μ; distally four bristles, 19-22 μ long, four μ wide near the base. First tarsal segments with seven hairs (fig. 202). Second tarsal segment of the hind leg (fig. 203), length of dorsoapical hairs 23-29 μ, of lateroapical hairs 39-41 μ, and of empodial hairs 22-25 μ. Length of the segments of the hind leg: femur plus trochanter 468-582 μ, tibia 582-748 μ, 1.22-1.36 times as long as the femur, and 1.40-1.58 times the width of the head across the eyes, first tarsal segment 35-40 μ, second tarsal segment 101-106 μ.

Abdomen.— Abdominal margins brown, as dark as the head; the central area brown, but darker than the head; the margins and the central area separated from each other by a paler curved area, which results from a less sclerotic area at the ventral side between the margins and the central shield, proceeding distally up to the spiracle of the fourth ventral segment. A groove between metanotum and abdominal tergite I, between tergites I and II, VII and VIII, but the margins of the abdomen without segmental borders. Spinulae are lacking dorsally, but ventrally some spinulae are present along the margins of the ventral shield of anterior segments, and a ventral area located anterior to the siphunculi. The number of marginal hairs on each segment are estimated to be 1-5 at each side, tergites I-VI each with about 10-20 hairs in 1-2 transverse rows; the marginal and dorsal hairs (fig. 198) brown, the tips with teeth or sometimes acute, on tergite IV the longest hairs 90-112 μ, the shortest 43-74 μ; on tergite I some short hairs 8-20 μ long; hairs on tergite VII, 96-114 μ long, the tips frequently with small teeth. Tergite VIII, a plate with spinulose imbrications, 244-326 μ wide, standing upwards as a transverse vertical wall, with two hairs pointing forward, 63-72 μ long. Ventral hairs slender with sharp points, 33-49 μ long, but hairs near the margins frequently with teeth. Siphunculi (fig. 199) brown, the same colour as the head, paler than the middle of the abdomen, but the distal 0.2 part darker than the rest, with a convex inner side and a slightly concave outer side, 594-835 μ long, 0.36-0.43 times as long as the body, 1.4-1.8 times as long as the width of the head across the eyes; 65-88 μ wide at the base, 94-123 μ at the widest part, which is some-

what distal to the base; siphunculi 6.2-7.2 times as long as the widest part; the basal 0.8-0.9 of the siphunculi reticulated with 3-10 spinulae on each transverse reticulation line, the spinulae 2-6 μ long; in the distal 0.1-0.2 the reticulation disappears gradually and is replaced by transverse imbrications with numerous spinulae, 4-10 μ long; hairs pale brown, the tips with sharp points or sometimes with small teeth, 151-159 μ long, the first basal hair 38-71 μ; siphunculi gradually tapering at its end, without a constriction to the narrowest distal part with a diameter of 38-43 μ, expanding from there to the flange, which is 1.27-1.39 times wider than the narrowest part. Cauda (fig. 204) pale brown, 172-212 μ wide, 89-106 μ long, with rounded posterior margin, interrupted in the middle by a process, 22-27 μ long; with eight hairs, 88-108 μ long, slender and with somewhat threadlike ends. Subanal plate pale brown, with 18-24 hairs, 121-161 μ long. Subgenital plate transversely elliptical, e.g. 365 μ wide, and 143 μ long, with spinulose imbrications and at the lateral borders some spinulae; anterior hairs two, 55-69 μ long, posterior hairs 10-17, 5-9 of which are large, 78-98 μ long, and located at the sides, while 4-9 are small, 8-33 μ long, and located in the middle area. Gonapophyses three, the lateral with 2-3 hairs, the middle with 3-4, 14-18 μ long.

Alate viviparous ♀.— Macerated specimens (figs. 205-212); described from two specimens). Body length 1.73-1.81 mm, 2.4-2.6 times as long as it is wide.

Head (fig. 205).— Head pale brown or brown, smooth, width of the head across the eyes 429-472 μ; dorsally 14-16 hairs of which anterior about 8-9, between the paired ocelli 4-5, and posterior two, the tips pointed or with some small teeth, 69-78 μ long. Antennae (fig. 209) segments I and II brown, segments III-VI black but the processus terminalis paler; six-segmented, estimated to be 2.21-2.22 mm long, 1.22-1.27 times as long as the body, and 4.7-5.1 times as long as the width of the head across the eyes, segments I and II with some spinulose imbrications, length of hair on segment II, 74-82 μ; segment III over its whole length with smooth imbrications, 480-484 μ long, 1.68-1.75 times as long as segment IV, 1.34-1.50 times as long as segment V, and 0.47-0.49 times as long as segment VI, with 21-25 transversely elliptical rhinaria over its whole length, sometimes somewhat squeezed flatly against each other, with 10-13 hairs, 88 μ long; segment IV with smooth imbrications, 277-285 μ long, 0.80-0.86 times as long as segment V, with seven hairs, 82 μ long; segment V with smooth imbrications, 322-358 μ long, 0.35 times as long as segment VI, with 6-10 hairs, 74-79 μ long; segment VI 944-1011 μ long, 1.37 times as long as the processus terminalis, the base with 7-9 hairs, 22-45 μ long; the processus terminalis 689-738 μ long, with four apical hairs, and 10-11 over its length. The eyes pale brown, the ocular tubercle brown, diameter of the ommatidia of the ocular tubercle 18-20 μ. Ultimate rostral segment (fig.208) 223-235 μ long, 2.12-2.14 times as long as the second tarsal segment of the hind leg; length of the stylets 905-982 μ.

Thorax.— Prothorax brown, dorsally, including the margins, with 14-16 hairs. Mesothorax brown, with brown hairs (fig. 210), 87-106 μ long. Medial vein of the fore wing (fig. 206) twice branched, hind wing with two oblique veins. Legs brown, the femora paler than the other parts. The femora with almost smooth imbrications. The tibia of the fore leg 661-716 μ long, 1.52-1.54 times as long as the width of the head across the eyes; tibiae with imbrications, with or without spinulae, distal half of the tibiae on the ventral side with spines, up to 14 μ long, distally four bristles, 23-25 μ

long; length of hairs of the hind tibia 72-82 μ, the basal hair 30-37 μ. First tarsal segments with seven hairs. Length of dorsoapical hair of the second tarsal segment of the hind leg (fig. 211) 20-23 μ, of the lateroapical hair 16-20 μ, and of the empodial hair 22 μ. Length of segments of the hind leg: femur plus trochanter 606-642 μ, tibia 850-924 μ, 1.40-1.44 times as long as the femur, and 1.96-1.98 times as long as the width of the head across the eyes, first tarsal segment 35-37 μ, second tarsal segment 105-110 μ.

Abdomen.— Colour pattern the same as of *G. magna*, but with somewhat more colourless areas between the marginal sclerites. The dorsum smooth with 8-12 hairs in 1-2 transverse rows, on tergite IV (fig. 210), 36 μ long, shortest hairs 20-25 μ long; ventral hairs 47-53 μ long; on tergite VII one anterior hair in the middle, and two posterior hairs, 37-39 μ long, and a small lateral hair at each side. Tergite VIII a transversely elliptical plate, e.g. 232 μ wide, 45 μ long, with spinulose imbrications, with two hairs in the middle, about 37 μ from each other, 69-86 μ long. Siphunculi (fig. 212) black, cylindrical with the distal 0.1 slightly curved outwards, 1.26-1.42 mm long, 0.73 times as long as the body, 2.9-3.0 times as long as the width of the head across the eyes; 84-88 μ wide at the base, 20.0-21.3 times as long as the diameter of the cylindrical part just distal to the base, with transverse linear imbrications, reticulate by interconnections; spinulae on the imbrications are only present on the distal 0.4 part, and are densely distributed on the distal 0.1, length of the spinulae 2-10 μ; siphunculi gradually tapering to the narrowest distal part with a diameter of 39-43 μ, expanding from there to the flange, which is 1.4-1.5 times wider than the narrowest part; with numerous brown hairs usually with sharp points, but sometimes with colourless pennons, 196-212 μ long. Cauda (fig. 207) pale brown, 188-190 μ wide, 88-102 μ long, with a median process 16-19 μ long; the cauda with 8-9 hairs, 103-106 μ long. Subanal plate pale brown, with 20-21 hairs, 125-147 μ long. Subgenital plate e.g. 248 μ wide, 133 μ long, with spinulose imbrications, anterior hairs two, 61-63 μ long, posterior hairs 10-12, the longest 92-104 μ, but 5-6 of the hairs small in the middle area, 12-45 μ long. Gonapophyses three, the lateral with 3-4 hairs, the middle with presumably four hairs, 14-16 μ long.

First stage larva of apterous viviparous ♀ (fig. 213; description of one specimen).— Body length 842 μ (811-952 μ in seven specimens), 2.5 times as long as it is wide. Head across the eyes 283 μ, with four anterior hairs, and four hairs in a transverse row between the eyes, 63 μ long. Antennae with five segments, 685 μ long, segment III, 112 μ long, 1.10 times as long as segment IV, 0.28 times as long as segment V; segments III plus IV, 0.54 times as long as segment V; segment V, 393 μ long, 1.34 times as long as the processus terminalis. The ultimate rostral segment 152 μ long. Tibia of the fore leg 216 μ long, 0.76 times as long as the width of the head across the eyes. Abdominal segments I-VI with one marginal hair at each side and four dorsal hairs, each on a sclerite, on tergite VI, 76 μ long; the hairs frequently with teeth at the tips. Siphunculi pale brown, on abdominal segment VI, triangular, with a rounded tip, 94 μ long, and 55 μ wide at the base, almost smooth without spinulae and hairs. Segment VII with a marginal tubercle, protruding backwards, nipple-shaped, 33 μ long, 31 μ wide at the base, almost smooth, provided at the tip with a hair, 108 μ long; in the middle two hairs, 96 μ long, 92 μ from each other, on a common tubercle with smooth surface. Tergite VIII a pale brown sclerite with some spinulose imbrications,

the spinulae about two µ long, 137 µ wide, with two nipple-shaped tubercles which occupy the greater part of the tergite, and protrude backwards; each tubercle 35 µ long (the process of the hair not included), and 25 µ wide at the base, with a hair on top, 80 µ long. The cauda somewhat triangular with a rounded posterior tip, without a process, with two hairs, 39 µ long.

Host plant records.— The specimens were collected in Java: *Loranthus*, Salatiga, 30.iii.1916 two slides, and one slide *Loranthus*, Java, 20.iii.1916, P. v.d. Goot; *Scurrula atropurpurea* (Bl.) Dans., Rembangan (700 m), 20.viii.1950, F.W. Rappard; *Scurrula (?) fusca*, Rembangan (650 m), 1.x.1950 , F.W. Rappard, BMNH, London; *Scurrula* spec., Lembang, 19.ii.1977, D. Noordam; *Scurrula philippensis* (Cham & Schlecht.) G. Don, 1.viii.1977, D. Noordam, RMNH, Leiden.

The aphids live on young developing shoots, on the lower side of the youngest leaves, on leaf stalks and (Dr Rappard notes) on flower buds.

Alatae were collected 20.iii.1916, 19.ii.1977.

Etymology.— "Rappardi", named after Dr F.W. Rappard, of the Forestry Service of Indonesia, who collected this aphid.

Greenidea (G.) schimae Takahashi, 1929
(figs. 214-230)

Greenidea schimae Takahashi, 1929: 528; Eastop & Hille Ris Lambers, 1976: 209.

Types.— Takahashi (1929: 532): "all the type specimens are preserved in the Department of Agriculture, Research Institute, Formosa."

Life specimens.— Apterous viviparous ♀. Head pale brown, the body dull green with a somewhat reddish hue, which becomes more prominent in older specimens. Antennae pale brown, distally sometimes black. Eyes red. Legs pale yellowish brown, the tarsi black. Siphunculi pale brown, the apex black. Cauda dull green or pale brown. Larvae even pale green. Data of van der Goot (unpublished), Rappard (notes), and Noordam.

Macerated specimens (figs. 214-221; described from 3-8 specimens).— Body length 2.48-3.08 mm (van der Goot, unpublished 3.78 mm), 1.9-2.1 times as long as it is wide.

Head.— Head pale brown, dorsally smooth, the frons convex in outline, the middle protruding with regard to the sides 4-43 µ; head across the eyes 582-700 µ, dorsally anteriorly one hair at each side and 5-8 in the middle; between the eyes 6-7, posteriorly 0-4; the hairs are pale brown or brown, sturdy and the tips with 2-5 teeth, the hairs between the eyes 112-137 µ long, or the hairs are small with acute tips, e.g. 10-18 µ long. Antennae (fig. 218) with six segments, the same colour as the head, but segments III and IV distally, and the distal half of segment V, and most of segment VI darker, 2.19-3.28 mm long (van der Goot unpublished 4.14 mm), 0.88-1.07 times as long as the body, 3.8-4.7 times the width of the head across the eyes; segments I and II with a few spinulose imbrications, segment I with 6-10 hairs, segment II with 4-7, 106-131 µ long; segment III dorsally and ventrally with smooth imbrications, 519-780 µ long, 1.7-1.9 times as long as segment IV, 1.55-1.57 times as long as segment V, 0.59-0.61 times as long as segment VI, with 16-21 hairs of different lengths, the longest 120-129 µ long; segment IV dorsally and ventrally, with smooth imbrications, 290-445

μ long, 0.83-0.89 times as long as segment V, with 8-10 hairs, 102-114 μ long; segment V with smooth imbrications, 330-500 μ long, 0.37-0.39 times as long as segment VI, with 5-10 hairs, 108-123 μ long; segment VI with smooth imbrications, 881-1315 μ long, 1.40-1.52 times as long as the processus terminalis; the base with 7-10 hairs, 72-76 μ long; the processus terminalis 581-936 μ long, with four apical hairs, and 11-16 over its length. The eyes colourless, the ocular tubercle pale brown, somewhat darker than the head, diameter of the ommatidia of the ocular tubercle 20-22 μ. Ultimate rostral segment (fig. 217) 234-263 μ long, 1.81-2.00 times as long as the second tarsal segment of the hind leg: stylets 1.07-1.22 mm long.

Thorax.— Prothorax the same colour as the head, fused with the head, smooth, dorsally with 17-21 hairs. Mesothorax and metathorax the same colour as the head; the mesothorax dorsally with 17-23 hairs, most hairs sturdy and the tips with teeth, 94-125 μ long. The legs the same colour as the head, but the tarsi brown. All segments with almost smooth imbrications. Tibia of the fore leg 685-999 μ long, 1.15-1.34 times the width of the head across the eyes. Tibia of the hind leg, hairs 35-71 μ long, the basal hair 20-43 μ; distally four bristles, 23-27 μ long, five μ wide near the base. First tarsal segments with seven hairs (fig. 219). Second tarsal segment of the hind leg (fig. 220), length of dorsoapical hairs 22-27 μ long, of the lateroapical hairs 47-51 μ, and of the empodial hairs 27-30 μ. Length of segments of the hind leg: femur plus trochanter 697-938 μ, tibia 904-1280 μ, 1.28-1.40 times as long as the femur, and 1.55-1.98 times as long as the width of the head across the eyes, first tarsal segment 43-45 μ, second tarsal segment 121-143 μ.

Abdomen.— Abdomen as dark as the head; the margins and the central area separated from each other at tergites I-IV by a colourless area or groove, which results from a less sclerotic area at the ventral side between the margins and the central shield, proceeding distally up to the spiracle of the fourth ventral segment. A groove between metanotum and abdominal tergite I, between tergites I and II, VII and VIII, but the margins of the abdomen without segmental borders. Spinulae are lacking dorsally, but ventrally some spinulae are present along the margins, and along the ventral shield of the anterior segments. The number of marginal hairs on each segment are estimated to be 2-7 at each side, each tergite with about 10-20 hairs, in 1-2 transverse rows; the marginal and dorsal hairs brown with teeth (fig. 215), on tergite IV the longest hairs 118-133 μ, the shortest 22-31 μ; hairs on tergite VII, 127-137 μ long, usually with small teeth. Tergite VIII, a plate with spinulose imbrications, 377-444 μ wide, standing upwards as a transverse vertical wall 68-94 μ, with two hairs pointing forward, 74-108 μ long, with acute tips. Ventral hairs slender with sharp points or the tips almost threadlike, 45-72 μ long; hairs near the margins are more sturdy and sometimes with teeth at the tips. Siphunculi pale brown, with a convex inner side, and a slightly concave outer side, 1.12-1.51 mm long (van der Goot unpublished 2.25 mm), 0.44-0.54 times as long as the body, 2.15-2.38 times as long as the width of the head across the eyes; 86-110 μ wide at the base, 114-137 μ at the widest part, which is somewhat distal to the base; siphunculi 11.5-11.9 times as long as the widest part; the basal 0.8 of the siphunculi (fig. 216) reticulate with 3-15 spinulae on each transverse reticulation; the spinulae ventrally on the basal 100 μ are blunt, the others pointed, 2-6 μ long; the reticulation in the distal 0.2 part disappears gradually and is replaced by transverse imbrications with numerous spinulae, 2-10 μ long;

hairs pale brown, the tips with sharp points or sometimes with small teeth, 165-202 μ long, the first basal hair 40-45 μ; siphunculi gradually tapering at the end, without a constriction to the narrowest distal part with a diameter of 54-62 μ, expanding from there to the flange, which is 1.19-1.31 times wider than the narrowest part. Cauda (fig. 221) pale brown, 267-306 μ wide, 160-189 μ long, with a rounded posterior margin, interrupted in the middle by a process, 53-76 μ long; with 8-9 hairs, 127-170 μ long, slender and with somewhat threadlike ends. Subanal plate pale brown, with 21-24 hairs, 176-210 μ long. Subgenital plate transversely elliptical, e.g. 488 μ wide, and 185 μ long, with spinulose imbrications and at the lateral and posterior borders separate spinulae; anterior hairs two, 82-94 μ long, posterior hairs 11-17, most of which are large, 110-137 μ long, and located at the sides, while 1-4 are small, 20-50 μ long, and located in the middle area. Gonapophyses three, the lateral with 2-3 hairs, the middle with five, 16-25 μ long.

Life specimens.— Alate viviparous ♀. Head and thorax greyish brown, the abdomen dirty green or brown with transverse green between the mesonotum and abdominal segment I, and between other abdominal segments. Eyes red. Antennae black. Legs black, only the greater part of the femora greenish. Siphunculi black. Cauda olive green. Pterostigma greyish. Data from van der Goot (unpublished), and Noordam.

Macerated specimens (figs. 222-229; described from 2-6 specimens).— Body length 2.72-3.02 mm, 2.6-2.7 times as long as it is wide.

Head (fig. 222). Head brown, smooth, width of the head across the eyes 570-622 μ, dorsally 18-20 hairs of which anterior about 12-14, between the paired ocelli four, and posterior two, the hairs brown, the tips pointed or a few with small teeth, 131-137 μ long. Antennae (fig. 226) segments I and II and about 20 μ of the base of segment III brown; the rest of the antennae black; six-segmented, 3.30-3.47 mm long, 1.12-1.22 times as long as the body, 5.43 times as long as the width of the head across the eyes, segment I smooth, segment II with some spinulae, length of hair on segment II 122-152 μ; segment III over its whole length with smooth imbrications, 700-897 μ long, 1.58-1.78 times as long as segment IV, 1.50-1.70 times as long as segment V, and 0.52-0.63 times as long as segment VI, with 16-26 transversely elliptical rhinaria, which are frequently lacking on the distal 0.3, with 18-24 hairs, 121-141 μ long; segment IV with smooth imbrications, 400-504 μ long, 0.93-0.98 times as long as segment V, with 9-12 hairs, 116-125 μ long; segment V with smooth imbrications, 430-527 μ long, 0.33-0.37 times as long as segment VI, with 7-11 hairs, 118-154 μ long; segment VI, 1.33-1.47 mm long, 1.37-1.41 times as long as the processus terminalis, the base with 8-9 hairs, 80-84 μ long; the processus terminalis 949-1070 μ long, with four apical hairs, and 15-16 over its length. The eyes pale brown, the ocular tubercle brown, diameter of the ommatidia of the ocular tubercle 22 μ. Ultimate rostral segment (fig. 224) 284-315 μ long, 2.06-2.17 times as long as the second tarsal segment of the hind leg; stylets 1.09-1.32 mm long.

Thorax.— Prothorax brown, dorsally, including the margins, with 19-22 hairs. Mesothorax brown, with hairs, 141-153 μ long. Medial vein of the fore wing (fig. 223) twice branched, hind wing with two oblique veins. Femora brown, but the knee, and the rest of the legs almost black. All segments of the legs with smooth imbrications. The tibiae distally with spinulose imbrications. The tibia of the fore leg 1.14-1.17 mm

long, 1.84-1.91 times as long as the width of the head across the eyes. Distal half of the tibiae on the ventral side spines up to 16 μ long, distally four bristles, 25-26 μ long; length of hairs of the hind tibia 94-131 μ, the basal hair 80-98 μ. First tarsal segments with seven hairs. Length of dorsoapical hair of the second tarsal segment of the hind leg (fig. 229) 25 μ, of the lateroapical hair 28 μ, and of the empodial hair 29-31 μ. Length of the segments of the hind legs: femur plus trochanter 1.04-1.08 mm, tibia 1.54-1.62 mm, 1.47-1.49 times as long as the femur, and 2.48-2.63 times as long as the width of the head across the eyes, first tarsal segment 43-47 μ, second tarsal segment 138-145 μ.

Abdomen.— The same colour pattern as *G. magna* (fig. 191). The dorsum smooth with on tergites I-V, 8-12 hairs in 1-2 transverse rows, on tergite IV, 35-49 μ long, shortest hairs 33-37 μ long; ventral hairs 74-84 μ long. On tergite VI, 5-7 hairs; on tergite VII, one anterior hair in the middle, and two posterior hairs, 78-133 μ long, and a smaller lateral hair at each side. Tergite VIII a transversely elliptical plate, e.g. 346 μ wide, 71 μ long, with spinulose imbrications, with two (in one specimen three) hairs in the middle, about 84 μ from each other, 118-165 μ long. Siphunculi (fig. 227, 228) black, cylindrical with the distal 0.1 slightly curved outwards, 2.08-2.33 mm long, 0.77-0.82 times as long as the body, 3.4-3.7 times as long as the width of the head across the eyes; 114-143 μ wide at the base, 23.3-27.9 times as long as the diameter of the cylindrical part just distal to the base, with transverse linear imbrications, reticulate by interconnections; spinulae on the imbrications are only present on the distal 0.1 part, and are densely distributed on the distal 100 μ, length of the spinulae 4-10 μ; siphunculi gradually tapering to the narrowest distal part with a diameter of 49-59 μ, expanding from there to the flange, which is 1.2-1.4 times wider than the narrowest part; with numerous brown hairs with sharp points, but sometimes with colourless pennons, 267-275 μ long. Cauda (fig. 225) pale brown, 263-275 μ wide, 157-161 μ long, with a median process 40 μ long; the cauda with 9-10 hairs, 149 -151 μ long. Subanal plate pale brown, with 22-23 hairs, 203-225 μ long. Subgenital plate e.g. 358 μ wide, 181 μ long, with spinulose imbrications, anterior hairs 2-3, 94-100 μ long, posterior hairs 10-13, the longest 121-131 μ long, but 4-5 hairs in the middle area smaller, 29-59 μ long. Gonapophyses three, the lateral with 3-4 hairs, the middle with five hairs, 20-22 μ long.

First stage larva of apterous viviparous ♀ (fig. 230; description of one specimen).— Body length 1.25 mm (897-1280 μ in nine specimens), 2.6 times as long as it is wide. Head across the eyes 362 μ with four anterior hairs and four hairs in a transverse row between the eyes, 69 μ long. Antennae with five segments 1.02 mm long, segment III, 212 μ long, 1.39 times as long as segment IV, 0.38 times as long as segment V; segment III plus segment IV, 0.65 times as long as segment V; segment V, 559 μ long, 1.39 times as long as the processus terminalis. The ultimate rostral segment 208 μ long. Tibia of the fore leg 397 μ long, 1.10 times as long as the width of the head across the eyes. Abdominal segments I-VI with one marginal hair at each side and four dorsal hairs, each on a sclerite, on tergite IV, 80 μ long, on tergite VI, 84 μ long, the hairs frequently with teeth at the tips. Siphunculi pale brown, on abdominal segment VI, triangular with rounded tips, 167 μ long, and 102 μ wide at the base, with some smooth imbrications, without hairs. Segment VII with a marginal tubercle, protruding backwards, nipple-shaped, 55 μ long, 49 μ wide at the base, almost smooth, provided at the tip

with a hair, 127 μ long; in the middle two hairs, 137 μ long, 116 μ from each other, on a common tubercle with some spinulose imbrications. Tergite VIII a pale brown sclerite with spinulose imbrications, the spinulae about two μ long, 196 μ wide, with two nipple-shaped tubercles which occupy the greater part of the tergite, and protrude backwards, each tubercle 53 μ long (the process of the hair not included), and 39 μ wide at the base, with a hair on top, 123 μ long. The cauda somewhat triangular with a rounded posterior tip, without a process, with two hairs, 59 μ long.

Host plant records.— The specimens were collected in Java on *Schima wallichii* (DC.) Korth. sspec. *noronhae* (Reinw. ex Bl.) Bloembergen: Mt. Merbaboe (1000 m), 1.vi.1916; Dieng, 12.viii.1919; both P. v.d. Goot, LUW, Wageningen and BMNH, London; Mt. Lawu, Djogorogo (1100 m), 19.vi.1951, F.W. van Rappard, BMNH, London; Wonosobo, 21.vii.1976, Dieng (1850 m), 21.vii.1976; both D. Noordam, RMNH, Leiden.

The aphids live on young shoots (van der Goot, unpublished; Rappard, notes).

Alatae were collected 1.vi.1916, 12.viii.1919, 21.vii.1976.

Etymology.— "Schimae", of *Schima* the name of the genus of the plant on which Takahashi found this aphid in May 1929.

Greenidea subgenus *Trichosiphum* Pergande, 1906
(figs. 231-339)

Trichosiphum Pergande, 1906: 206.

Life specimens (seven species).— Apterous viviparous ♀. In life: head yellow, pale brown or blackish, abdomen whitish, yellow or shiny brown or black.

Macerated specimens.— Body 1.26-2.43 mm long, 1.5-2.0 times as long as it is wide. The width of the head across the eyes 355-578 μ. Length of hairs between the eyes 55-125 μ, the tips of the hairs pointed or with 2-7 teeth. Antennae with six segments, 900-2250 μ long, 0.62-1.09 times as long as the body, 2.3-4.5 times as long as the width of the head across the eyes; antennal segment III, 1.6-2.8 times as long as segment IV; the last segment 325-972 μ long, 1.33-1.56 times as long as the processus terminalis; length of hair on antennal segment II, 58-135 μ, the processus terminalis with four apical hairs, and 4-12 over its length. Ultimate rostral segment 141-263 μ long, 1.25-2.77 times as long as the second tarsal of the hind leg; length of stylets 629-1050 μ long. The prothorax with 12-25 hairs. Tibia of the fore leg 366-744 μ long, 0.93-1.42 times as long as the width of the head across the eyes. Length of hairs on tergite IV, 63-151 μ long, and ventrally in the middle of the abdomen 39-82 μ long; length of hairs on tergite VIII, 37-100 μ. Siphunculi 269-925 μ long, 0.18-0.47 times as long as the body, 0.7-1.9 times as long as the width of the head across the eyes; the basal 0.1 or rarely, 0.2 part of the siphunculi reticulate, observable at a magnification of 100; distally to this basal part, the siphunculi are smooth or with a reticulate observable at a magnification of 500 or in *Greenidea (Trichosiphum) flacourtiae* 300-500. Hairs of the siphunculi 105-220 μ long. Cauda with 6-9 hairs, 70-147 μ long, with a median process, 12-71 μ long.

Alate viviparous ♀ (five species).— Macerated specimens. Body length 1.62-2.41 mm, 2.0-2.8 times as long as it is wide. Width of the head across the eyes 393-555 μ, with 2-6 hairs between the paired ocelli, 69-135 μ long. Antennae with six segments,

1.60-2.76 mm long, 0.91-1.34 times as long as the body, and 4.1-6.2 times as long as the width of the head across the eyes, segment III with 4-31 rhinaria, secondary rhinaria on the other segments are lacking; segment IV, 212-441 µ long, the processus terminalis 373-755 µ. Ultimate rostral segment 163-292 µ long, 1.70-2.52 times as long as the second tarsal segment of the hind leg; stylets 670-1045 µ long. Length of the lateroapical hair of the second tarsal segment of the hind leg 20-27 µ. Siphunculi 912-1934 µ long, 0.53-0.90 times as long as the body, and 2.1-3.9 times as long as the width of the head across the eyes, 14.0-28.9 times as long as the diameter of the cylindrical part just to the base, with imbrications and reticulate as in species of the genus. Cauda with a median process, 5-57 µ long.

First stage larva of apterous viviparous ♀ (six species).— Body length 574-1090 µ. Antennae with five segments, but in *G. (Trichosiphum) anonae* with four. Eyes with several facets in *G. (Trichosiphum) nigricans*, *G. (Trichosiphum) pallidipes* and *G. (Trichosiphum) psidii*, but facets lacking or only a few in *G. (Trichosiphum) anonae*, ocular tubercles with three ommatidia. The ultimate rostral segment 117-177 µ long. Tibia of the fore leg 153-251 µ long, 0.67-0.84 times as long as the width of the head across the eyes. Abdominal tergites each with four hairs. Siphunculi on abdominal segment VI, triangular, without spinulae and hairs. Segment VII with a nipple-shaped marginal tubercle and in the middle with two rather flat tubercles, each with a hair on top. Tergite VIII with two nipple-shaped tubercles, each with a hair on top. The cauda without a median process.

Etymology.— "Trichosiphum", hairy pipe, referring to the siphunculi.

Greenidea (Trichosiphum) anonae (Pergande, 1906)
(figs. 231-248)

Trichosiphum anonae Pergande, 1906: 206.
Greenidea (Trichosiphum) anonae; Raychaudhuri, 1956: 47; Eastop & Hille Ris Lambers, 1976: 210.

Apterous viviparous ♀.— In life (pl. 9): head, prothorax brown, mesothorax fading into black, body shiny black. Antennal segments I-III brown, the rest black. Eyes red, ocular tubercle black. Legs rather pale brown, the tarsi darker. Siphunculi black, but the base somewhat brownish. Cauda pale brown. Larvae green, with rows of brown spots, and a rectangular brown spot between the siphunculi; head pale brown.

Macerated specimens (figs. 231-238; described from eight specimens).— Body length 1.32-1.81 mm, 1.6-2.0 times as long as it is wide.

Head.— Head pale brown, dorsally smooth, the frons convex in outline, the middle protruding 6-20 µ; head across the eyes 381-441 µ, dorsally anteriorly one hair at each side and 5-7 in the middle; between the eyes 6-10; the hairs are brown, sturdy and the tips with 2-5 teeth, the hairs between the eyes 78-96 µ long; between the ocular tubercles 2-4 tiny hairs in a transverse row, 6-27 µ long. Antennae (fig. 234) with six segments, segments I-III the same colour as the head, but segments IV-VI darker, 996-1362 µ long, 0.62-0.76 times as long as the body, 2.58-2.83 times the width of the head across the eyes; segments I-II smooth, segment I with 8-10 hairs, segment II with 5-6, 69-84 µ long; segment III dorsally and ventrally with smooth imbrications,

220-354 μ long, 1.69-2.05 times as long as segment IV, 1.42-1.77 times as long as segment V, 0.54-0.73 times as long as segment VI, with 14-23 hairs of different lengths, the longest 78-98 μ. Segment IV dorsally and ventrally with smooth imbrications, 118-173 μ long, 0.69-0.88 times as long as segment V, with 5-8 hairs, 72-98 μ long; segment V with smooth imbrications, 145-200 μ long, 0.36-0.43 times as long as segment VI, with 5-8 hairs, 78-104 μ long; segment VI with smooth imbrications, 377-497 μ long, 1.46-1.55 times as long as the processus terminalis, the base with 5-7 hairs, 60-81 μ long; the processus terminalis 246-334 μ long, with four apical hairs, and 4-5 over its length. The eyes colourless, the ocular tubercle brown, diameter of the ommatidia of the ocular tubercle 20-22 μ. Ultimate rostral segment (fig. 235) 153-188 μ long, 1.64-1.96 times as long as the second tarsal segment of the hind leg; stylets 655-812 μ long.

Thorax.— Prothorax the same colour as the head, fused with the head, smooth dorsally, with 15-22 hairs. Mesothorax and metathorax the same colour as the head; the mesothorax dorsally with 22-34 hairs, most hairs sturdy and the tips with teeth, 74-88 μ long. The legs the same colour as the head, also the tarsi. All segments with almost smooth imbrications. Tibia of the fore leg 369-456 μ long, 0.95-1.07 times as long as the width of the head across the eyes. Tibia of the hind leg, hairs 47-53 μ long, the basal hair 31-44 μ; distally four bristles, 18-20 μ long, 3-4 μ wide near the base. First tarsal segments with seven hairs (fig. 238). Second tarsal segment of the hind leg (fig. 236), length of dorsoapical hairs 4-6 μ, of the lateroapical hairs 35-43 μ, and of the empodial hairs 18-28 μ. Length of segments of the hind leg: femur plus trochanter 365-441 μ, tibia 456-567 μ, 1.21-1.32 times as long as the femur, and 1.18-1.34 times as long as the width of the head across the eyes, first tarsal segment 33-37 μ, second tarsal segment 83-98 μ.

Abdomen.— Abdominal margins brown, as dark as the head; the central area brown or almost black; the central area separated from the margin by a darker line or band which results from folds in the margins of the ventral central shield, or sometimes in the dorsal shield. A groove between metanotum and abdominal tergite I, between tergites I and II, VII and VIII, but the margins of the abdomen without segmental borders. Spinulae are lacking dorsally, but ventrally spinulae are present from segment I to ventral to the siphunculi. The number of marginal hairs at each segment are estimated to be 2-5 at each side, each tergite I-VI with about 10-20 hairs in 1-2 transverse rows; the marginal and dorsal hairs brown with teeth (fig. 232), and some small hairs are pointed; on tergite IV the longest hairs 74-92 μ, the shortest 12-34 μ; tergite VII with 2-3 hairs along the posterior margin with acute tips, 51-81 μ long. Tergite VIII, a plate with spinulose imbrications, 267-315 μ wide, standing upwards as a transverse vertical wall 51-75 μ, with two hairs pointing forward, 37-47 μ long. Ventral hairs slender, with sharp points, 59-76 μ long. Siphunculi brown at the base, gradually changing to the black of the distal half, with a convex inner side and a slightly concave outer side, 269-441 μ long, 0.18-0.25 times as long as the body (in an alatoid specimen 0.30 times as long as the body), 0.70-1.00 times as long as the width of the head across the eyes; 57-69 μ wide at the base, 71-82 μ at the widest part, which is about in the middle; the siphunculi 3.6-6.2 times as long as the widest part; the basal 0.1-0.2 part of the siphunculi reticulate observable at a magnification of 100, with spinulae only observable at a higher magnification; on the siphunculi distal to

the reticulate spinulae (fig. 233) increase in size and number and are arranged in transverse rows on imbrications, observable at a magnification of 500; in the distal 100 µ, without hairs, the spinulae constitute continuous rows, the rows 5-6 µ from each other, the spinulae 6-8 µ long; hairs brown with sharp points or sometimes tips with small teeth, 110-141 µ long, the first basal hair 33-65 µ long; the distal half of the siphunculi gradually tapering towards the end, with no constriction, to the narrowest distal part with a diameter of 38-45 µ, expanding from there to the flange, which is 1.22-1.37 times wider than the narrowest part. Cauda (fig. 237) pale brown, 149-177 µ wide, 51-70 µ long, with a rounded posterior margin interrupted by a process, 12-18 µ long, usually pointing upwards; with 6-8 hairs, 80-98 µ long, slender and with somewhat threadlike ends. Subanal plate pale brown, with 18-23 hairs, 90-108 µ long. Subgenital plate transversely elliptical e.g. 358 µ wide, and 137 µ long, with spinulose imbrications and at the lateral sides some spinulae; anterior hairs 5-7, 67-86 µ long; posterior hairs 11-15, 5-7 of which are large, 75-100 µ long, and located at the sides, while the other hairs are 10-50 µ long and located in the middle area. Gonapophyses three, the lateral with 2-3 hairs, the middle with 3-4, 8-12 µ long.

Alate viviparous ♀.— In life as *G. (Trichosiphum) psidii.*

Macerated specimens (figs. 239-247; described from seven specimens).— Body length 1.62-1.81 mm, 2.2-2.8 times as long as it is wide.

Head.— Head (fig. 239) brown, dorsally smooth, width of the head across the eyes 393-441 µ; dorsally 12-16 hairs, 5-9 of which on the part anterior to the paired ocelli, and 7-8 between and posterior to the paired ocelli, hairs pale brown, the tips pointed, 74-92 µ long; one hair on the lateral sides, anteriorly, is usually located ventrally and not included in the numbers mentioned above. Antennae (fig. 242) somewhat darker than the head, the processus terminalis paler to the end; with six segments, 1.60-1.91 mm long, 0.91-1.07 times as long as the body, and 3.82-4.34 times as long as the width of the head across the eyes, segments I and II with a few almost smooth imbrications, length of hair on segment II, 67-83 µ; segment III over its whole length with smooth imbrications, 417-571 µ long, 1.90-2.17 times as long as segment IV, 1.84-2.00 times as long as segment V, and 0.82-0.89 times as long as segment VI, with 4-7 transverse elliptical or roundish rhinaria, usually confined to the basal 0.3-0.6, with 16-20 hairs, 108-114 µ long; segment IV with smooth imbrications, 212-263 µ long, 0.87-1.00 times as long as segment V, with 7-8 hairs, 96-104 µ long; segment V with smooth imbrications, 242-301 µ long, 0.43-0.47 times as long as segment VI, with 7-9 hairs, 98-110 µ long; segment VI, 550-643 µ long, 1.46-1.51 times as long as the processus terminalis, the base with 6-7 hairs, 66-85 µ long; the processus terminalis 373-425 µ long, with four apical hairs, and 4-6 over its length. The eyes almost colourless, the ocular tubercle brown, diameter of the ommatidia of the ocular tubercle 19-22 µ. Ultimate rostral segment (fig. 241) 163-192 µ long, 1.70-1.88 times as long as the second tarsal segment of the hind leg; length of the stylets 742-767 µ.

Thorax.— Prothorax brown, dorsally including the margins, with 17-19 hairs. Mesothorax brown, with brown hairs, 96-110 µ long. Medial vein of the fore wing (fig. 240) twice branched, hind wing with two oblique veins. Legs evenly brown. The femora with almost smooth imbrications. The tibia of the fore leg 582-661 µ long, 1.45-1.54 times as long as the width of the head across the eyes; tibiae with imbrications, with or without spinulae, distal half of the tibiae on the ventral sides with

spines, up to 14-16 μ long, distally four bristles, 20-23 μ long; length of hairs of the hind tibia 65-78 μ long, the basal hair 45-53 μ long. First tarsal segments with seven hairs. Length of dorsoapical hair of the second tarsal segment of the hind leg (fig. 243) six μ, of the lateroapical hair 20-24 μ, and of the empodial hair 23-27 μ. Length of the segments of the hind leg: femur plus trochanter 519-561 μ, tibia 700-795 μ, 1.31-1.42 times as long as the femur, and 1.65-1.88 times as long as the width of the head across the eyes, first tarsal segment 31-35 μ, second tarsal segment 94-102 μ.

Abdomen (fig. 245).— Marginal sclerites brown with a large colourless area between segments I and II and tiny areas between the sclerites II-V; distinct brown muscular plates between the tergites of segments I-II and II-III. Tergites III-V fused with the marginal sclerites, and a colourless or paler coloured transverse area between tergites III-IV and IV-V; most distinct is a colourless line between tergites VI and VII, but this can also be interrupted between the median and lateral parts. On each marginal sclerite of segment I two hairs, of segment II four, of segments III-V, 5-7, and on segment VI, ventrally located, 2-3; the dorsum smooth with, on tergite I, about six hairs, on tergite II-VI, 8-20 in 1-2 transverse rows; on tergite IV long hairs 55-71 μ long, short hairs 33-45 μ; ventral hairs 65-71 μ long; on tergite VII one anterior hair in the middle, and two posterior hairs, 53-67 μ long, and a small lateral hair at each side. Tergite VIII colourless, a transverse plate, e.g. 354 μ wide, 88 μ long, with spinulose imbrications, with two hairs in the middle, about 40 μ from each other and 35 μ from the posterior margin, 61-78 μ long. Siphunculi (fig. 244) black, cylindrical with the distal 0.1 slightly curved outwards, 912-1000 μ long, 0.53-0.60 times as long as the body, 2.1-2.5 times as long as the width of the head across the eyes; 82-102 μ wide at the base, 55-72 μ wide at the cylindrical part just distal to the base, 13.9-17.6 times as long as this last diameter, with transverse linear imbrications, reticulate by interconnections; small spinulae sometimes on imbrications of the base, but sharp spinulae, 8-9 μ long, only on the distal 0.3 part, and densely distributed on the distal 0.1 part; siphunculi in the distal 0.1 gradually tapering to the narrowest distal part with a diameter of 35-39 μ, expanding from there to the flange, which is 1.31-1.34 times wider than the narrowest part; with numerous brown hairs with threadlike tips, 172-200 μ long. Cauda (fig. 247) colourless, 167-212 μ wide, 60-74 μ long, with a median process, 5-10 μ long; the cauda with 7-8 hairs, 78-104 μ long. Subanal plate pale brown, with 15-21 hairs, 104-125 μ long. Subgenital plate, e.g. 287 μ wide, 135 μ long, with spinulose imbrications, anterior hairs 5-9, 61-82 μ long, posterior hairs 11-18, the longest 88-125 μ, but 6-9 of these hairs small in the middle area, 10-65 μ long. Gonapophyses three, the lateral with 3-4 hairs, the middle with four, 10-12 μ long.

First stage larva of apterous viviparous ♀ (fig. 248; description of one specimen).— Body length 795 μ (582-795 μ in 15 specimens), 2.7 times as long as it is wide. Head across the eyes 250 μ, with four anterior hairs, and in a transverse row between the eyes four anterior hairs and two posterior, 65 μ long. Antennae with four segments, 413 μ long, segment III, 149 μ long, 0.77 times as long as segment IV, 194 μ long, 1.53 times as long as the processus terminalis. The ultimate rostral segment 144 μ long. Tibia of the fore leg 178 μ long, 0.71 times as long as the width of the head across the eyes. Abdominal tergites I-VI with one marginal hair at each side and four dorsal hairs each on a sclerite; the hairs with 2-6 teeth; hairs on tergite VI, 63 μ long. Siphunculi pale brown, on abdominal segment VI, triangular, with a rounded tip, 72 μ long

and 43 µ wide at the base, almost smooth, without spinulae and hairs. Segment VII with a marginal tubercle, protruding backwards, nipple-shaped, 35 µ long, 23 µ wide at the base, smooth, provided at the tip with a hair, 82 µ long, in the middle two hairs, 98 µ long, 74 µ from each other, on the posterior side of the smooth sclerite of tergite VII. Tergite VIII a pale brown sclerite with some spinulose imbrications, the spinulae about one µ long, 92 µ wide, with two nipple-shaped tubercles which occupy the greater part of the tergite, and protrude backwards; each tubercle 25 µ long (the process of the hair not included), and 25 µ wide at the base, with a hair on top, 84 µ long. The cauda with a broadly rounded posterior margin, without a process, with two hairs, 43 µ long.

Host plant records.— The specimens were collected in Java: *Annona muricata* Linnaeus, Salatiga (570 m), 7.viii.1913, 10.v.1916, P. v.d. Goot, LUW, Wageningen and BMNH, London; *Annona reticulata* Linnaeus, Garoet (730 m), P. v.d. Goot (manuscript, unpublished); *Annona muricata* Linnaeus, Banjoewangi, 4.viii.1948, 10.x.1948; *Annona reticulata* Linnaeus, Malang, 24.ii.1951, 3.iii.1951, 23.iii.1951; all five F.W. Rappard, BMNH, London; *Annona muricata* Linnaeus, Wonosobo, 30.xii.1976; *Annona muricata* Linnaeus, Sindanglaya (1100 m), 20.i.1977, 2.xi.1977; all three D. Noordam, RMNH, Leiden.

The aphids live on the lower side of developing leaves, on young shoots and also (F.W. Rappard notes) on flowers.

Alatae or larvae of alatae were collected from May to September (van der Goot, unpublished manuscript), 10.v.1916, 10.x.1948, 23.iii.1951, 30.xii.1976, 20.i.1977, 2.xi.1977.

Etymology.— "Anonae", of Anona referring to the host *Annona muricata* on which Dr L. Zehntner, January 10, 1902, discovered this aphid at Salatiga (Pergande, 1906). *Anona* is a synonym of *Annona*.

Greenidea (Trichosiphum) castanopsidis spec.nov.
(figs. 249-258)

Types.— Holotype (apterous viviparous ♀) from *Castanopsis acuminatissima* (Bl.) DC., Dieng (2000 m), Java, 3.i.1977, D. Noordam, no. 873. Paratypes: 22 larvae of apterous viviparous ♀♀, the same host plant, same locality, dates 2.i.1977 and 3.i.1977, no. 865-2 and no. 875, D. Noordam. Holotype and paratypes RMNH, Leiden.

Life specimens.— Apterous viviparous ♀ (one specimen). Body shiny dark brown. Antennae black. Legs brown. Siphunculi rather light brown, slightly darker to the end. Cauda brown. Larvae head brown or black; body green but grey because of some wax, with small grey spots and distally with an oval black spot, and siphunculi black.

Macerated specimen (figs. 249-257; described from one specimen).— Body length 2.19 mm, 2.0 times as long as it is wide.

Head.— Head brown, dorsally smooth, the frons convex in outline, the middle protruding 25 µ; head across the eyes 527 µ, dorsally anteriorly one hair at each side and seven in the middle; between the eyes six hairs; the hairs are brown, sturdy and the tips of the anterior hairs pointed, the tips of the others with 2-4 teeth, the hairs between the eyes 106 µ long; between the ocular tubercles three tiny hairs in a transverse row, 8-12 µ long. Antennae (fig. 254) with six segments, the same colour as the

head, but the base of the last segment slightly darker, 2.18 mm long, 0.99 times as long as the body, 4.1 times as long as the width of the head across the eyes; segments I-II smooth, segment I with 7-8 hairs, segment II with 5-6, of segment II, 112 μ long; segment II dorsally and ventrally with smooth imbrications, 464 μ long, 1.74 times as long as segment IV, 1.41 times as long as segment V, 0.50 times as long as segment VI, with 14-18 hairs of different lengths, the longest 127 μ; segment IV dorsally and ventrally with smooth imbrications, 267 μ long, 0.81 times as long as segment V, with seven hairs, 127 μ long; segment V with smooth imbrications, 330 μ long, 0.35 times as long as segment VI, with six hairs, 120 μ long; segment VI with smooth imbrications, 929 μ long, 1.36 times as long as the processus terminalis, the base with seven hairs, 104 μ long; the processus terminalis 685 μ long, with four apical hairs, and 12 over its length. The eyes almost colourless, the ocular tubercle brown, diameter of the ommatidia of the ocular tubercle 22 μ. Ultimate rostral segment (fig. 253) 234 μ long, 1.79 times as long as the second tarsal segment of the hind leg; stylets 955 μ long.

Thorax.— Prothorax the same colour as the head, fused with the head, smooth dorsally, with 16 hairs. Mesothorax and metathorax the same colour as the head; the mesothorax dorsally with 23 hairs, most hairs sturdy and the tips with teeth, 98 μ long. The legs the same colour as the head, the tarsi slightly darker. All segments with imbrications, frequently with some tiny spinulae. Tibia of the fore leg 708 μ long, 1.34 times as long as the width of the head across the eyes. Tibia of the hind leg, hairs 78 μ long, the basal hair 57 μ; distally four bristles, 28 μ long, four μ wide near the base. First tarsal segments with seven hairs (fig. 255). Second tarsal segment of the hind leg (fig. 256), length of dorsoapical hairs 20-26 μ, of the lateroapical hairs 50 μ, and of the empodial hairs 25 μ. Length of segments of the hind leg: femur plus trochanter 708 μ, tibia 960 μ, 1.36 times as long as the femur, and 1.82 times as long as the width of the head across the eyes, first tarsal segment 45 μ, second tarsal segment 131 μ.

Abdomen.— Abdomen margins brown, as dark or slightly darker than the head; the central area brown, but darker than the head; the margins and the central area separated from each other on one side by a paler curved area, resulting from a less sclerotic area at the ventral side between the margins and the central shield, proceeding distally up to the spiracle of the fourth ventral segment; on the other side the pale curved area is hidden by a dark band caused by folds in the ventral shield. A groove between metanotum and abdominal tergite I, between tergites I and II, VII and VIII, but the margins of the abdomen without segmental borders. Spinulae are lacking dorsally, but ventrally spinulae are present on the lateral sides of segments I and II, and are densely distributed over the ventral shield (fig. 251), 2-8 μ long. The number of marginal hairs on each segment are 2-5, each tergite I-V with about 10-20 hairs in 1-2 transverse rows; tergite VI presumably with five hairs; the marginal and dorsal hairs brown, with 2-4 teeth or with one sharp point (fig. 250); on tergite IV the longest hair 116 μ, the shortest 55 μ; tergite VII with one anterior hair in the middle, and two hairs along the posterior margin, 88 μ long, two of these hairs with teeth. Tergite VIII pale brown, an elliptical plate, 306 μ wide, 80 μ long, the anterior 20 μ almost smooth, the rest with spinulae in transverse rows, the spinulae 2-5 μ long, with two hairs along the posterior margin, 67 μ long. Ventral hairs slender, with

sharp points, in the middle 61 μ long. Siphunculi brown, towards the end slightly darker, with a convex inner side and an almost straight outer side, 661 μ long, 0.30 times as long as the body, 1.25 times the width of the head across the eyes; 82 μ wide at the base, 114 μ at the widest part, which is in the middle; the siphunculi 5.8 times as long as the widest part; the basal 0.1 part of the siphunculi reticulate observable at a magnification of 100, with spinulae 3-6 μ long; the siphunculi distal to the reticulate, smooth with separate spinulae (fig. 252), arranged in transverse rows, about 10 on each row; in the distal 150 μ, rows with about 20 spinulae, the spinulae 6-8 μ long; hairs brown with sharp points, 155 μ long, the first basal hair 72 μ; the distal half of the siphunculi gradually tapering to the end, without a constriction, to the narrowest distal part with a diameter of 43 μ, expanding from there to the flange, which is 1.21 times wider than the narrowest part. Cauda (fig. 257) brown, 215 μ wide, 116 μ long, with a rounded posterior margin interrupted by a process, 45 μ long; with seven hairs, 117 μ long, slender and with somewhat threadlike ends. Subanal plate brown, with 16 hairs, 135 μ long. Subgenital plate transversely elliptical 346 μ wide and 92 μ long, with spinulae; anterior hairs two, 73 μ long; posterior hairs six, 67 μ long. Gonapophyses three, but only two hairs observable in the middle , 10 μ long.

First stage larva of the apterous viviparous ♀ (fig. 258; description of one specimen).— Body length 1.09 mm (other specimen 1.07 mm), 2.5 times as it is wide. Head across the eyes 342 μ, with four anterior hairs, and in a transverse row between the eyes four anterior hairs and two posterior, 61 μ long. Antennae with five segments, 771 μ long, segment III, 181 μ long, 1.64 times as long as segment IV, and 0.47 times as long as segment V; segment IV, 110 μ long, 0.28 times as long as segment V; segment V, 387 μ long, 1.39 times as long as the processus terminalis. The ultimate rostral segment 196 μ long. Tibia of the fore leg 285 μ long, 0.83 times as long as the width of the head across the eyes. Abdominal tergites I-VI with one marginal hair at each side and four dorsal hairs, each on a sclerite; the hairs with 2-5 teeth; hairs on tergite VI, 78 μ long. The venter with spinulae, on colourless areas not striking, but distinct on some sclerotic plates in the centre. Siphunculi pale brown, on abdominal segment VI, triangular with rounded tips, 125 μ long and 83 μ wide at the base, almost smooth, without spinulae or hairs. Segment VII with a marginal tubercle, protruding backwards, nipple-shaped, 57 μ long, 39 μ wide at the base, provided at the tip with a hair, 145 μ long; in the middle two hairs, 127 μ long, 112 μ from each other, on the posterior side of the smooth sclerite of tergite VII. Tergite VIII a brown sclerite with spinulose imbrications on the basal part, the spinulae 2-3 μ long, 135 μ wide, with two nipple-shaped tubercles which occupy the greater part of the tergite and protrude backwards; each tubercle 49 μ long (the process of the hair not included), and 41 μ wide at the base, with a hair on top, 116 μ long. The cauda brown with a broadly rounded posterior margin, without a process, with two hairs, 47 μ long.

Larvae of the four stages are available and all specimens have spinulae on the central ventral area. The length of the body of the eight specimens of the last larval stage are 1.81-2.10 mm, and the length of adults arising from these larvae are estimated to be 2.3-2.5 mm.

Host plant.— The specimens were collected in Java on *Castanopsis acuminatissima* (Bl.) DC., Dieng (2000 m), 2.i.1977, 3.i.1977, D. Noordam, RMNH, Leiden.

The aphids live on young shoots.

Alatae were not collected.
Etymology.— "Castanopsidis", of *Castanopsis*, a genus of Fagaceae.

Greenidea (Trichosiphum) flacourtiae van der Goot, 1917 (figs. 259-276)

Greenidea flacourtiae van der Goot, 1917: 136; Eastop & Hille Ris Lambers, 1976: 208.
Greenidea distylii van der Goot, 1917; 296 (nomen nudum).
Greenidea (Trichosiphum) flacourtiae; Raychaudhuri, 1956: 51.

Types.— Lectotype designated by Raychaudhuri (1956: 53). *Flacourtia* spec., Kedjadjar, Dieng, Java, Indonesia (1450 m), 20.viii.1915, P. van der Goot, det. P. van der Goot: *Greenidea flacourtiae*. One slide, no. 233, with damaged material: the body of two adult apterae, one siphunculus separate; the rest are larvae with some parts of the larvae separate. The designated slide contains some material which van der Goot mentions in his 1917 publication, and on which his description is based. In the collection at LUW, Wageningen.

Life specimens.— Apterous viviparous ♀ (pl. 10). Head pale brown. Abdomen shiny brown. Antennal segments I-III brown, but segment III distally blackish, segment IV base brown, the rest of the antennae black. Eyes red, the ocular tubercle black. Legs pale brown. Siphunculi, basal half brown, the rest black. Cauda pale brown. Larvae green abdomen with rows of dots and a larger brown spot anterior to the siphunculi.

Macerated specimens (figs. 259-266; described from 5-10 specimens).— Body length 1.44-2.43 mm, 1.5-1.9 times as long as it is wide.

Head.— Head brown, dorsally smooth, the frons convex in outline, the middle protruding 4-18 µ; head across the eyes 425-578 µ, dorsally anteriorly one hair at each side and 6-8 in the middle; between the eyes 6-7 hairs, and sometimes a few tiny hairs; the hairs are brown, sturdy and the tips of all hairs with 2-4 teeth, the hairs between the eyes 100-123 µ long; between the ocular tubercles usually 1-7 tiny hairs in a transverse row, 8-31 µ long. Antennae (fig. 263) with six segments, segments I-III and sometimes the base of segment IV and the processus terminalis the same colour as the head, but the distal part of III to the end of the antennae frequently black, 1.50-2.17 mm long, 0.88-1.03 times as long as the body, and 3.34-3.97 times as long as the width of the head across the eyes; segments I-II almost smooth, segment I with 5-8 hairs, segment II with 4-5, of segment II, 111-127 µ long; segment III dorsally and ventrally with smooth imbrications, 271-480 µ long, 1.68-1.86 times as long as segment IV, 1.42-1.60 times as long as segment V, 0.48-0.57 times as long as segment VI, with 12-17 hairs of different lengths, the longest 104-127 µ; segment IV dorsally and ventrally with smooth imbrications, 145-275 µ long, 0.77-0.90 times as long as segment V, with 5-6 hairs, 82-129 µ long; segment V with smooth imbrications, 185-322 µ long, 0.34-0.38 times as long as segment VI, with 5-7 hairs, 90-137 µ long; segment VI with smooth imbrications, 664-904 µ long, 1.39-1.48 times as long as the processus terminalis, the base with 7-8 hairs, 69-106 µ long; the processus terminalis 464-645 µ long, with four apical hairs, and 7-12 over its length. The eyes colourless, the ocular tubercle brown, diameter of the ommatidia of the ocular tubercle 20-22 µ. Ultimate rostral segment (fig. 262) 216-279 µ long, 1.81-2.45 times as long as the second tarsal

segment of the hind leg; stylets 775-928 μ long.

Thorax.— Prothorax the same colour as the head, fused with the head, smooth dorsally, with 17-18 hairs. Mesothorax and metathorax the same colour as the head; the mesothorax dorsally with 16-22 hairs, most hairs sturdy and the tips with teeth, 84-112 μ long. The legs the same colour as the head, but the tibiae distally and the tarsi darker. All segments with imbrications, those of the distal part of the tibiae with some tiny spinulae. Tibia of the fore leg 555-744 μ long, 1.21-1.36 times as long as the width of the head across the eyes. Tibia of the hind leg, hairs 57-69 μ, the basal hair 27-46 μ; distally four bristles, 25-30 μ long, 4-6 μ wide near the base. First tarsal segments with seven hairs (fig. 264). Second tarsal segment of the hind leg (fig. 265), length of dorsoapical hairs 18-26 μ, of the lateroapical hairs 41-45 μ, and of the empodial hairs 29-32 μ. Length of segments of the hind leg: femur plus trochanter 421-829 μ, tibia 527-1105 μ, 1.25-1.41 times as long as the femur and 1.24-1.95 times as long as the width of the head across the eyes, first tarsal segment 37-43 μ, second tarsal segment 96-127 μ.

Abdomen.— Abdominal margins brown, as dark or slightly darker than the head, the central area brown, but darker than the head; the margins and the central area separated from each other by a paler brown curved area, resulting from a less sclerotic area at the ventral side between the margins and the central shield, proceeding distally up to the spiracle of the fourth ventral segment. A groove between metanotum and abdominal tergite I, between tergites I and II, VII and VIII, but the margins of the abdomen without segmental borders. Spinulae are lacking dorsally, but ventrally spinulae are present on the lateral sides of segments I-V, 2-6 μ long, the ventral shield with spinulose imbrications, but separate spinulae are lacking. The number of marginal hairs on each segment are 3-7, each tergite I-V with about 10-20 hairs in 1-3 transverse rows; tergite VI presumably with 4-6 hairs; the marginal and dorsal hairs brown, with 2-4 teeth or, rarely, one point (fig. 260); on tergite IV the longest hair 110-127 μ, the shortest 40-92 μ; tergite VII with one anterior hair in the middle and two hairs along the posterior margin, 95-132 μ long, the tips pointed or with some teeth. Tergite VIII pale brown, a plate with spinulose imbrications, 315-350 μ wide, standing upwards as a transverse vertical wall 62-80 μ, with two hairs pointing forward, 69-76 μ long. Ventral hairs slender with sharp points, in the middle area 57-71 μ long. Siphunculi, the reticulate base brown, as at the base over 0.7 part of the siphunculi, or sometimes over its whole length; with a convex inner side and a slightly concave or straight outer side, 385-845 μ long, 0.32-0.38 times as long as the body, 1.30-1.55 times as long as the width of the head across the eyes (in one collection a specimen with the siphunculus 385 μ long, 0.36 times as long as the body, 0.91 times as long as the width of the head); 69-86 μ wide at the base, 90-108 μ at the widest part, which is in the middle; the siphunculi 5.5-9.3 times as long as the widest part; the basal 0.1 part of the siphunculi reticulate, observable at a magnification of 100, with spinulae 2-4 μ long; the siphunculi distal to the reticulum smooth (fig. 261), here and there with a reticulate observable at a magnification of 300-500, with about 10 spinulae arranged in transverse rows; the density of spinulae increases in the distal 0.3 part to 15-20 in each row, the rows 6-8 μ from each other, the spinulae 8-10 μ long; hairs numerous, brown, usually with sharp points, 194-212 μ long, the first basal hair 29-67 μ long; the distal half of the siphunculi gradually tapering to the

end, without a constriction, to the narrowest distal part with a diameter of 46-49 μ, expanding from there to the flange, which is 1.22-1.28 times wider than the narrowest part. Cauda (fig. 266) pale brown, 212-251 μ wide, 114-124 μ long, a with rounded posterior margin interrupted by a process, 30-50 μ long; with 8-9 hairs, 102-140 μ long, slender and with somewhat threadlike ends. Subanal plate brown, with 16-21 hairs, 158-182 μ long. Subgenital plate transversely elliptical, e.g. 449 μ wide and 161 μ long, with anteriorly spinulose imbrications and posteriorly spinulae; anterior hairs two, 80-96 μ long, posterior hairs 6-11, 5-7 of which are large, 110-143 μ long and located at the sides, while the other hairs are 20-69 μ long and located in the middle area. Gonapophyses three, the lateral with three hairs, the middle with 4-6, 12-16 μ long.

Life specimens.— Alate viviparous ♀: head, mesothorax and tergites III-VII dark brown. Prothorax, tergites I-II, the margins of the body and the distal point of the abdomen green. Antennae and siphunculi black. Legs brownish. Eyes red. Larvae head and thorax pale brown; cauda and legs pale brown. Siphunculi pale brown with blackish distal ends.

Macerated specimens (figs. 267-275; described from two specimens).— Body length 2.03-2.41 mm, 2.1-2.4 times as long as it is wide.

Head.— Head (fig. 267) brown, dorsally smooth, width of the head across the eyes 548-555 μ; dorsally 16 hairs 9-10 of which on the part anterior to the paired ocelli, one at each side and 6-7 between and posterior to the paired ocelli; hairs brown, the tips pointed, hairs between the paired ocelli 112-135 μ long. Antennae (fig. 268), segments I and II the same colour as the head, segment III the basal 25-40 μ pale brown, the processus terminalis brown, the rest of the antennae black; antennae with six segments, 2.73-2.76 mm long, 1.15-1.34 times as long as the body, and 4.92-5.04 times as long as the width of the head across the eyes; segment I almost smooth, segment II dorsally with spinulose imbrications or longitudinal imbrications, with a hair 145-156 μ long; segment III over its whole length with smooth imbrications, 708-752 μ long, 1.90-2.17 times as long as segment IV, 1.75-1.82 times as long as segment V, and 0.68-0.74 times as long as segment VI, with 13-20 transversely elliptical or roundish rhinaria, lacking on the distal 100-200 μ of the segment, with 17 hairs, 145-160 μ long; segment IV with smooth imbrications, 381-383 μ long, 0.92-0.95 times as long as segment V, with 7-8 hairs, 123-149 μ long; segment V with smooth imbrications, 405-413 μ long, 0.39-0.41 times as long as segment VI, with seven hairs, 137-157 μ long; segment VI, 1.02-1.04 mm long, 1.39-1.44 times as long as the processus terminalis, the base with seven hairs, 61-76 μ long; the processus terminalis 704-752 μ long, with four apical hairs, and 10 over its length. The eyes almost colourless, the ocular tubercle dark brown, diameter of the ommatidia of the ocular tubercle 20 μ. Ultimate rostral segment (fig. 269) 237-243 μ long, 1.88-2.01 times as long as the second tarsal segment of the hind leg; length of the stylets 900-930 μ.

Thorax.— Prothorax brown, dorsally including the margins, with 20-21 hairs. Mesothorax brown, with hairs (fig. 271), 123-159 μ long. Medial vein of the fore wing (fig. 270) twice branched, hind wing with two oblique veins. Legs, femora brown, paler than the head, distally slightly darker, with almost smooth imbrications. The tibia of the fore leg 929-950 μ long, 1.67-1.73 times as long as the width of the head across the eyes; tibiae with dark brown base and distal part, in between paler brown,

with smooth or spinulose imbrications, distal half of the tibiae on the ventral sides with spines, up to 20 μ long, distally four bristles, 27-29 μ long; length of hairs of the hind tibia 123-127 μ, the basal hair 92-96 μ long. First tarsal segments with seven hairs. Length of dorsoapical hair of the second tarsal segment of the hind leg (fig. 272) 21-23 μ, of the lateroapical hair 22-25 μ, and of the empodial hair 29-31 μ. Length of the segments of the hind leg: femur plus trochanter 858-873 μ, tibia 1.27-1.28 mm, 1.46-1.49 times as long as the femur, and 2.30-2.34 times as long as the width of the head across the eyes, first tarsal segment 37 μ, second tarsal segment 121-126 μ.

Abdomen (fig. 273).— Marginal sclerites brown with a large colourless area between segments I-VI; between tergites I-II and II-III distinct muscular plates and tergites I and II with little brown sclerites; on tergites III-VI brown sclerites, fused with each other, with narrow colourless areas between the tergites, and wider colourless areas between the tergites and the marginal sclerites. On each marginal sclerite of segment I two hairs, of segment II, 3-4; of segments III-V, 3-6, and on segment VI, two located ventrally; the dorsum smooth, on each of tergites II-V about 8-15 hairs, on tergite VI, 4-5 in 1-2 transverse rows; on tergite IV long hairs (fig. 271) 47-84 μ, short hairs 27-31 μ; ventral hairs 84-86 μ long; on tergite VII one anterior hair in the middle and two posterior hairs (fig. 271), 123-166 μ long, and a small marginal hair at each side. Tergite VIII pale brown, a transverse plate with spinulose imbrications, 303-350 μ wide, 51-78 μ long, with two hairs in the middle along the posterior margin, about 65 μ from each other, 102-123 μ long. Siphunculi (fig. 275) dark brown, cylindrical with the distal 100 μ slightly curved outwards, 1.76-1.83 mm long, 0.73-0.90 times as long as the body, and 3.21-3.31 times as long as the width of the head across the eyes; 86-104 μ wide at the base, 67-73 μ wide at the cylindrical part just distal to the base, 24.4-27.4 times as long as this last diameter, with transverse linear imbrications, with some interconnections; small spinulae sometimes on imbrications of the base, but sharp spinulae, 8-10 μ long, only on the distal part, and densely distributed on the distal 0.1; siphunculi in the distal 100 μ gradually tapering to the narrowest distal part with a diameter of 49 μ, expanding from there to the flange, which is 1.33-1.35 times wider than the narrowest part; with numerous brown hairs, with thin tips, 306-314 μ long. Cauda (fig. 274) brown or pale brown, 228-263 μ wide, 143-160 μ long, with a median process, 33-37 μ long; the cauda with eight hairs, 142-161 μ long. Subanal plate brown, with 20 hairs, 180-188 μ long. Subgenital plate e.g. 326 μ wide, 163 μ long, with spinulose imbrications, anterior hairs two, 84-86 μ long, posterior hairs nine, the longest 127-153 μ, but three of these hairs small in the middle area, 30-40 μ long. Gonapophyses three, the lateral with three hairs, the middle with four, 14-18 μ long.

First stage larvae of apterous viviparous females are not available.

Host plant records.— The specimens were collected in Java from *Distylium stellare* O.K. (van der Goot 1917: 138 gives *Flacourtia* spec., but on p. 296 amended into *D. stellare*), Kedjajar, 20.viii.1915, P. v.d. Goot, det. P. v.d. Goot *Greenidea flacourtiae*, with fragments of five apterae only; *Distylium stellare*, without locality and date, P. v.d. Goot, det. P. v.d. Goot, *Greenidea distylii*, fragments of five apterae; *Distylium stellare*, Dieng, 1918, P. v.d. Goot, det. P. v.d. Goot, *Greenidea distylii*, LUW, Wageningen. *Distylium stellare* O.K., Dieng (2000 m), 2.i.1977, D. Noordam, RMNH, Leiden.

The aphids live on the youngest part of developing shoots.

Alatae were collected 20.viii.1915, 2.i.1977.

Etymology.— "Flacourtiae", of *Flacourtia*, a genus of the Flacourtiaceae. The name of the plant from which van der Goot (1917) collected this aphid he called *Flacourtia*, but it was in fact *Distylium* (see van der Goot, 1917:296).

Greenidea (Trichosiphum) fulva spec. nov.
(figs. 277-294)

Types.— Holotype (apterous viviparous ♀) from *Bridelia monoica* (Lour.) Merr., Bogor Keb. R., Java, 23.i.1977, D. Noordam, no. 891-1-1. Paratypes: 42 apterous viviparous ♀♀ and seven alate viviparous ♀♀, the same data as the holotype no.891-1 to 891-6; *Bridelia monoica* (Lour.) Merr., Bogor Keb. R., Java, 8.v.1975, no.317; 22.ii.1976, no.500; 24.iii.1976, no.549; 6.vi.1976, no.607-2, no.608; 19.xii.1976, no.820; 2.iii.1977, no.943; *Bridelia monoica* (Lour.) Merr., Bogor, Java, 27.v.1976, no.589 and 8.ix.1977, no. 1037. All D. Noordam, RMNH, Leiden.

Life specimens.— Apterous viviparous ♀ (pl. 11). Head, thorax and abdomen wholly yellow, pale brown or dirty whitish, with red points, eyes of internally present embryos. Antennae yellow, last segment around the rhinarium black or grey, processus terminalis grey. Eyes red, ocular tubercle black. Legs whitish yellow, the end of the second tarsal segments black. Siphunculi pale brown or orange brown, usually with black ends. Cauda white or yellow. Larvae whitish, the abdomen very pale green.

Macerated specimens (figs. 276-283; described from seven specimens).— Body length 1.64-2.13 mm, 1.9-2.0 times as long as it is wide.

Head.— Head very pale brown, dorsally smooth, the frons straight or protruding up to 14 µ; head across the eyes 429-504 µ, anteriorly one hair at each side and 5-8 in the middle; between the eyes four sturdy hairs and in the middle 0-3 smaller hairs; the tips of the sturdy hairs with 2-7 teeth, length of the hairs 65-110 µ; between the ocular tubercles two sturdy hairs, tiny hairs are lacking. Antennae (fig. 282) with six segments, very pale brown, the area around the rhinarium of the last segment and the processus terminalis darker; the antennae 1.48-2.04 mm long, 0.89-1.03 times as long as the body, and 3.46-4.19 times as long as the width of the head across the eyes; segments I-II with some imbrications with small spinulae, segment I with 5-9 hairs, segment II with four hairs, 72-98 µ long; segment III dorsally and ventrally with smooth imbrications, 318-464 µ long, 1.64-2.11 times as long as segment IV, 1.48-1.76 times as long as segment V, 0.51-0.59 times as long as segment VI, with 13-17 hairs of different lengths, the longest 67-116 µ; segment IV dorsally and ventrally with smooth imbrications, 181-259 µ long, 0.78-0.98 times as long as segment V, with 5-7 hairs, 67-104 µ long; segment V with smooth imbrications, 212-281 µ long, 0.31-0.36 times as long as segment VI, with 5-7 hairs, 76-118 µ long; segment VI with smooth imbrications, 626-849 µ long, 1.33-1.42 times as long as the processus terminalis, the base with 4-6 hairs, 43-81 µ long; the processus terminalis 441-637 µ long, with four apical hairs and 7-10 over its length. The eyes colourless, the ocular tubercle pale brown, diameter of the ommatidia of the ocular tubercle 17-20 µ. Ultimate rostral segment (fig. 280) 204-239 µ long, 1.99-2.21 times as long as the second tarsal segment of the hind leg; stylets 629-770 µ long.

Thorax.— Prothorax the same colour as the head, fused with the head, smooth dorsally, with 10-14 hairs. Mesothorax and metathorax very pale brown; the mesothorax dorsally with 18-21 hairs, 2-4 of these small, the others sturdy and the tips with teeth, 65-90 μ long. The legs as dark as the head, all segments with imbrications, smooth or spinulose, the spinulae also on the distal part of the tibiae tiny. Tibiae of the fore leg 504-681 μ long, 1.17-1.42 times as long as the width of the head across the eyes. Tibia of the hind leg, hairs 39-47 μ long, the basal hair 25-36 μ long; distally four bristles, 20-23 μ long, four μ wide near the base. First tarsal segments with seven hairs (fig. 281). Second tarsal segment of the hind leg (fig. 283), length of the dorsoapical hairs 14-16 μ, of the lateroapical hairs 37-39 μ, and of the empodial hairs 25-29 μ. Length of the segments of the hind leg: femur plus trochanter 480-614 μ, tibia 669-879 μ, 1.39-1.53 times as long as the femur, and 1.56-1.89 times as long as the width of the head across the eyes, first tarsal segment 35-38 μ, second tarsal segment 102-111 μ.

Abdomen.— Abdomen evenly pale brown, the same colour as the head, only abdominal segment I slightly paler in the middle, a curved area between the margins and the central area is present but is of the same colour as the margins and the dorsum. A groove between metanotum and abdominal tergite I, between tergites I and II, VII and VIII, but the margins of the abdomen without segmental borders. Spinulae are lacking dorsally, but ventrally spinulae are present on the lateral sides on segments I-IV, length of the spinulae 2-5 μ. Imbrications with small spinulae observable in some areas of the ventral shield. The number of marginal hairs at each of segments I-V presumably ranges from 2-6, each tergite I-V with 10-15 hairs in 1-2 transverse rows; tergite VI presumably with 4-5 hairs; the marginal and dorsal hairs pale brown, with 2-7 teeth (fig. 277); on tergite IV the longest hair 96-121 μ, the shortest 19-72 μ; tergite VII pale brown, with one anterior hair in the middle, and two hairs along the posterior margin, 95-112 μ long, the tips with several teeth or, exceptionally, with one point; laterally on tergite VII one hair, 16-28 μ long. Tergite VIII pale brown, a plate with spinulose imbrications, 263-330 μ wide, standing upwards as a vertical wall 60-78 μ, with two hairs pointing forward, 43-82 μ long. Ventral hairs (fig. 277) slender, the tips with one point, somewhat threadlike, in the middle area 61-72 μ long. Siphunculi usually broken off (frequently while collecting), the basal part with the network brown or pale brown always darker than the head, distal to the base the colour remains the same or gradually becomes somewhat darker; the distal 0.1-0.3 part is brown or dark brown, with a convex inner side and a slightly concave or straight outer side, 633-925 μ long, 0.39-0.47 times as long as the body, 1.47-1.90 times as long as the width of the head across the eyes; 59-78 μ wide at the base, 94-133 μ at the widest part, which is near the base, at about 0.2 of its length; the siphunculi 5.5-9.5 times as long as the widest part; the basal 0.1 part of the siphunculi reticulate, observable at a magnification of 100, with several spinulae, 3-4 μ long; the siphunculi distal to the reticulum (fig. 278) smooth or with a network observable at a magnification of 500, with 5-15 spinulae arranged in transverse rows; the density of spinulae increases in the distal 0.2 part to 15-20 in each row, the rows about six μ from each other; the spinulae 6-7 μ long; hairs pale brown, numerous, the tips with 2-6 teeth or with one sharp point, 127-194 μ long, the first basal hair 33-100 μ long; the siphunculi gradually taper from the widest part to the end, without a constriction,

the narrowest distal part with a diameter of 31-43 µ, expanding from there to the flange, which is 1.16-1.41 times wider than the narrowest part. Cauda (fig. 279) very pale brown, 167-220 µ wide, 126-157 µ long, with a rounded posterior margin, interrupted by a process, 52-76 µ long, with eight hairs, 97-132 µ long, slender and with somewhat threadlike ends. Subanal plate very pale brown, with 14-18 hairs, 120-165 µ long. Subgenital plate transversely elliptical, e.g. 393 µ wide and 145 µ long, with spinulose imbrications; anterior hairs two, 67-88 µ long, posterior hairs 7-14, 5-7 of which are large, 82-116 µ long and located at the sides, while 2-7 in the middle area are small, 18-67 µ long. Gonapophyses three, the lateral with 2-4 hairs, the middle with 5-6, 10-16 µ long.

Life specimens.— Alate viviparous ♀ (pl. 12). Head and thorax pale orange brown. Legs pale orange brown, but tarsi and the tibiae darker, especially the distal part of the tibiae. Antennal segments I and II and the basal 0.1 of segment III same colour as the head, the rest black. Eyes red. Abdomen yellow with about five ill-defined pale grey transverse bands. Siphunculi black. Cauda yellow as the abdomen. Pterostigma pale grey.

Macerated specimens (figs. 284-293; described from five specimens).— Body length 2.05-221 mm, 2.2-2.5 times as long as it is wide.

Head.— Head (fig. 284) pale brown, dorsally smooth, width of the head across the eyes 464-504 µ; dorsally 9-16 hairs 5-9 of which anterior to the paired ocelli, one at each side; between the paired ocelli together with posterior hairs 4-7, 72-84 µ long. Antennae (fig. 288) segments I and II and the basal 50 µ of segment III the same colour as the head, the rest of the antennae brown; antennae with six segments, 1.91-2.45 mm long, 0.93-1.12 times as long as the body, and 4.12-4.93 times as long as the width of the head across the eyes; segments I and II dorsally with some imbrications with tiny spinulae, segment II with a hair 73-108 µ long; segment III over its whole length with smooth imbrications, 519-645 µ long, 1.81-2.24 times as long as segment IV, 1.66-1.97 times as long as segment V, and 0.62-0.70 times as long as segment VI, with 14-21 transversely elliptical or roundish rhinaria, lacking on the distal 43-120 µ of the segment, with 12-15 hairs, 94-125 µ long; segment IV with smooth imbrications, 232-330 µ long, 0.88-1.01 times as long as segment V, with 6-7 hairs, 78-110 µ long; segment V with smooth imbrications, 263-362 µ long, 0.34-0.39 times as long as segment VI, with 6-8 hairs, 84-112 µ long; segment VI, 741-980 µ long, 1.33-1.46 times as long as the processus terminalis, the base with 6-7 hairs, 45-65 µ long; the processus terminalis 519-732 µ long, with four apical hairs, and 6-10 over its length. The eyes almost colourless, the ocular tubercle brown, diameter of the ommatidia of the ocular tubercle 18-20 µ. Ultimate rostral segment (fig. 287) 206-219 µ long, 1.89-2.01 times as long as the second tarsal segment of the hind leg; length of the stylets 670-772 µ.

Thorax.— Prothorax pale brown, dorsally, including the margins, with 9-14 hairs. Mesothorax pale brown, with pale brown hairs (fig. 290), 71-96 µ long. Medial vein of the fore wing (fig. 285) twice branched, hind wing with two oblique veins. Legs, femora same colour as the head, with almost smooth imbrications. The tibia of the fore leg 712-865 µ long, 1.53-1.73 times as long as the width of the head across the eyes; tibiae brown, the middle part slightly paler, with smooth or spinulose imbrications, distal half of the tibiae on the ventral sides with spines, up to 10-14 µ long; dis-

tally 2-4 bristles, 22-23 μ long; length of the hairs of the hind tibia 51-72 μ, the basal hair 25-45 μ long. First tarsal segments with seven hairs. Length of the dorsoapical hair of second tarsal segment of the hind leg (fig. 292) 14-18 μ long, of the lateroapical hair 20-24 μ, and of the empodial hair 23-27 μ. Length of the segments of the hind leg: femur plus trochanter 622-748 μ, tibia 912-1102 μ, 1.32-1.52 times as long as the femur, and 1.96-2.22 times as long as the width of the head across the eyes, first tarsal segment 34-37 μ, second tarsal segment 108-114 μ.

Abdomen (figs. 286, 289).— Marginal sclerites very pale brown with a colourless area between segments I-VI; muscular plates between tergites I-II and II-III indistinct and tergites I and II with small very pale brown sclerites, tergites III-VI very pale brown or almost colourless sclerites, fused with each other and with the marginal sclerites, with colourless areas between the tergites. On each marginal sclerite (in one specimen) of segment I, 1-2 hairs, of segment II two, segment III, 4-5, segment IV six, segment V, 5-6, and on segment VI ventrally located presumably one; the dorsum smooth, on each of tergites II-V about 10 hairs, on tergite VI five hairs; on tergite IV long hairs, 35-44 μ, short hairs 29-33 μ; ventral hairs in the middle 63-72 μ (fig. 290); on tergite VII one anterior hair in the middle and two hairs along the posterior margin (fig. 290), 41-55 μ long, and a lateral hair at each side, 25-47 μ long. Tergite VIII almost colourless, a transversely elliptical plate 267-334 μ wide, 63-92 μ long, with spinulose imbrications, with two hairs (fig. 290) in the middle along the posterior margin, 39-65 μ from each other, 65-98 μ long. Siphunculi (fig. 293) brown or black, cylindrical, with the distal 100-200 μ sometimes slightly curved outwards, 1.15-1.79 mm long, 0.56-0.82 times as long as the body, 3.05-3.62 (in one specimen 2.49) times as long as the width of the head across the eyes; 92-112 μ wide at the base, 61-92 μ wide at the cylindrical part just distal to the base, 18.2-24.9 times as long as this last diameter, with transverse linear imbrications with interconnections, reticulate; spinulae are lacking on imbrications of the base, some are present on imbrications 150-250 μ from the end, but only in the distal 100 μ are spinulae densely distributed in transverse rows, the spinulae 6-8 μ long; siphunculi in the distal 100 μ gradually tapering to the narrowest part with a diameter of 36-44 μ, expanding from there to the flange, which is 1.38-1.42 times wider than the narrowest part; with numerous brown or pale brown hairs, with sharp points or thin tips, 172-216 μ long. Cauda (fig. 291) almost colourless, 190-235 μ wide, 134-153 μ long, with a median process, 33-57 μ long. Subanal plate very pale brown, with 12-21 hairs, 143-155 μ long. Subgenital plate transversely elliptical, e.g. 334 μ wide, 133 μ long, with spinulose imbrications, anterior hairs two, 78-88 μ long, posterior hairs 8-13, of which 4-6 lateral, large, 102-116 μ long, and 2-8 small hairs in the middle 20-71 μ long. Gonapophyses three, the lateral with 2-5 hairs, the middle with 3-6, 12-16 μ long.

First stage larva of apterous viviparous ♀ (description of one specimen, data incomplete).— Body length 800 μ, 2.7 times as long as it is wide. Antennae with five segments, 598 μ long, segment III, 110 μ long, 1.25 times as long as segment IV, and 0.35 times as long as segment V; segment IV, 88 μ long, 0.28 times as long as segment V; segment V, 316 μ long, 1.39 times as long as the processus terminalis. The ultimate rostral segment 155 μ long. Tibia of the fore leg 248 μ long. The tips of dorsal hairs with teeth; hair on tergite IV, 59 μ long, on tergite VI, 67 μ. Siphunculi on abdominal segment VI, triangular, with rounded tips, 118 μ long and 65 μ wide at the base,

smooth, without spinulae and hairs. Segment VII with a marginal tubercle, protruding backwards, nipple-shaped, 41 μ long, 29 μ wide at the base, smooth, provided with a hair at the tip, 102 μ long; in the middle two hairs 90 μ long, 88 μ from each other, on the posterior side of the smooth sclerite of tergite VII. Tergite VIII with two nipple-shaped tubercles, which protrude backwards; each tubercle 37 μ long (the process of the hair not included) and 28 μ wide at the base, with a hair on top, 80 μ long. The cauda triangular with a rounded tip, without a process, with two hairs, 39 μ long.

Host records.— The specimens were collected in Java from *Bridelia monoica* (Lour.) Merr.: Bogor Keb. R., 8.v.1975, 22.ii.1976, 6.vi.1976, 23.i.1977, 2.iii.1977; Bogor, 24.iii.1976, 27.v.1976, 8.ix.1977; all D. Noordam, RMNH, Leiden.

The aphids live between leaves in buds of developing sprouts, separately or at most three together on one sprout. The siphunculi break easily.

Alatae or larvae of alatae were collected 24.iii.1976, 6.vi.1976, 23.i.1977, 2.iii.1977, 8.ix.1977.

Etymology.— "Fulva", yellowish brown.

Discussion.— *G. (Trichosiphum) fulva* and the two *Greenideoida* species described here all live on *Bridelia monoica*. It is striking that the *Greenideoida* species have short blunt ultimate rostral segments and *G. (Trichosiphum) fulva* has a long narrow ultimate rostral segment and longer stylets. The difference in their way of life makes the difference clear. The *Greenideoida* species live on the leaves, *G. (Trichosiphum) fulva* in the corners available between developing sprouts.

Greenidea (Trichosiphum) nigricans spec. nov.
(figs. 294-302)

Types.— Holotype (apterous viviparous ♀), from *Syzygium syzygioides* (Miq.) Amsh., Bogor, Kebun Raya, Java, 6.xi.1977, D. Noordam, no. 1100-3-1. Paratypes: 42 apterous viviparous ♀♀, the same data as the holotype, nos. 1100-1 to 1100-5; *Syzygium racemosum* (Bl.) DC., Bogor Keb. R., 25.ix.1976, nos. 765; *Syzygium racemosum* (Bl.) DC., Bogor Keb. R., 7.xi.1976, no.795, larvae only; *Syzygium lineatum* (DC.) Merr. & Perry, Bogor Keb. R., 3.vii.1977, no.972-1, and 12.viii.1977, no. 1005; and 25.viii.1977, no. 1009; *Syzygium syzygioides* (Miq.) Amsh., Bogor Keb. R., 12.xii.1977, no. 1169; all D. Noordam, RMNH, Leiden.

Life specimens.— Apterous viviparous ♀ (pl. 13). Head pale brown. Body shiny dark brown or blackish brown. Antennal segments I, II and the basal part of III pale brown, rest of the antennae black. Eyes red. Legs pale brown, the tarsi dark grey. Siphunculi black. Cauda dirty white or pale brown. Larvae green with brown hairs; head and cauda pale brown; siphunculi of smallest larvae grey, in larger larvae black; antennae pale brown, to the end darker; on the green larvae faintly observable or lacking a somewhat brown spot anterior to the siphunculi and a median spot.

Macerated specimens (figs. 294-301; described from eight specimens).— Body length 1.26-1.54 mm, 1.6-1.8 times as long as it is wide.

Head.— Head brown or pale brown, dorsally smooth, the frons convex in outline, the middle protruding 6-35 μ; head across the eyes 374-433 μ, dorsally anteriorly one hair at each side and 5-7 in the middle; between the eyes 5-7 sturdy hairs plus,

sometimes, 1-4 tiny hairs; the sturdy hairs have tips with 2-6 teeth, length of the hairs 65-71 μ; between the ocular tubercles 1-11 tiny hairs in a transverse row, 3-16 μ long. Antennae (fig. 301) with six segments, segments I, II, and about 15 μ of the base of III, and the distal part of the processus terminalis the same colour as the head, the rest usually darker, brown or black; the antennae 1.15-1.42 mm long, 0.83-0.94 times as long as the body, and 2.90-3.58 times as long as the width of the head across the eyes; segments I-II almost smooth, segment I with 5-8 hairs, segment II with 4-6, of segment II, 47-72 μ long; segment III dorsally and ventrally with smooth imbrications, 279-338 μ long, 2.07-2.45 times as long as segment IV, 1.58-1.95 times as long as segment V, 0.56-0.69 times as long as segment VI, with 16-23 hairs of different lengths, the longest 64-79 μ long; segment IV dorsally and ventrally with smooth imbrications, 118-149 μ long, 0.66-0.86 times as long as segment V, with 5-6 hairs, 55-67 μ long; segment V with smooth imbrications, 171-208 μ long, 0.34-0.38 times as long as segment VI, with 5-7 hairs, 59-74 μ long; segment VI with smooth imbrications, 467-588 μ long, 1.41-1.53 times as long as the processus terminalis, the base with 5-7 hairs, 47-63 μ long; the processus terminalis 310-417 μ long, with four apical hairs and 4-8 over its length. The eyes colourless, the ocular tubercle the same colour as the head, diameter of the ommatidia of the ocular tubercle 18-22 μ. Ultimate rostral segment (fig. 298) 145-170 μ long, 1.54-1.74 times as long as the second tarsal segment of the hind leg; stylets 668-766 μ long.

Thorax.— Prothorax the same colour as the head smooth dorsally, with 14-20 hairs. Mesothorax and metathorax the same colour as the head; the mesothorax dorsally with 13-23 hairs, most hairs sturdy and the tips with teeth, 49-65 μ long. The leg, the femora and the basal half of the tibiae brown, darker than the head, the distal part of the tibiae and the first tarsal segments paler, and paler than the head, the second tarsal segments about as dark as the head; all segments with imbrications, those of the distal part of the tibiae with some tiny spinulae. Tibia of the fore leg 370-425 μ long, 0.93-1.04 times as long as the width of the head across the eyes. Tibia of the hind leg, hairs 37-51 μ long, the basal hair 29-45 μ long; distally four bristles, 17-20 μ long, four μ wide near the base. First tarsal segments with seven hairs (fig. 300). Second tarsal segment of the hind leg (fig. 299), length of the dorsoapical hairs 20-22 μ, of the lateroapical hairs 36-40 μ, and of the empodial hairs 18-23 μ. Length of segments of the hind leg: femur plus trochanter 358-476 μ, tibia 436-547 μ, 1.12-1.23 times as long as the femur, and 1.17-1.36 times as long as the width of the head across the eyes, first tarsal segment 31-37 μ , second tarsal segment 88-98 μ.

Abdomen.— Abdominal margins and central area the same colour, brown, darker than the head; the margins and the central area separated from each other by a paler brown area, which results from a less sclerotic area at the ventral side between the margins and the central shield, proceeding distally up to the spiracle of the fourth ventral segment. A groove between metanotum and abdominal tergite I, and between tergites VII and VIII, but the margins of the abdomen without segmental borders. Spinulae are lacking dorsally, but ventrally are present on the lateral sides from segment I onwards, and a few spinulae are present ventrally to the siphunculi; length of spinulae 2-6 μ. Imbrications with small spinulae observable in some areas of the ventral shield. The number of marginal hairs on each of segments I-V range from 2-7, each tergite I-V with 10-20 hairs in 1-3 transverse rows; tergite VI presum-

ably with 4-7 hairs; the marginal and dorsal hairs brown, with 2-7 teeth (fig. 295); on tergite IV the longest hair 74-108 μ, the shortest 16-56 μ; tergite VII with one anterior hair in the middle, and two hairs along the posterior margin, 75-102 μ long, the tips with some teeth or with one point; laterally on tergite VII one small hair. Tergite VIII brown, a plate with spinulose imbrications, 223-259 μ wide, standing upwards as a transverse vertical wall 48-53 μ, with two hairs pointing forward, 51-67 μ long. Ventral hairs slender with sharp points, in the middle area 39-59 μ long. Siphunculi wholly black, with a convex inner side and a straight outer side, 358-425 μ long, 0.26-0.29 times as long as the body, 0.92-1.00 times as long as the width of the head across the eyes; 49-69 μ wide at the base, 67-100 μ at the widest part, which is in the middle; the siphunculi 3.9-5.4 times as long as the widest part; the basal 0.1 part of the siphunculi reticulate observable at a magnification of 100, almost without spinulae; the siphunculi distal to the reticulum (fig. 296) smooth almost without imbrications, but with 10-15 spinulae arranged in transverse rows; the density of spinulae increases in the distal 0.2 part to about 20 in each row, the rows 6-8 μ from each other, the spinulae six μ long; hairs numerous, with sharp points or 2-3 teeth, 110-134 μ long, the first basal hair 25-92 μ long; the distal half of the siphunculi gradually tapering to the end, without a constriction, to the narrowest distal part with a diameter of 30-37 μ, expanding from there to the flange, which is 1.16-1.32 times wider than the narrowest part. Cauda (fig. 297) pale brown, 133-167 μ wide, 55-78 μ long, with a rounded posterior margin, interrupted by a process 22-35 μ long (in one specimen 18 μ); with 7-9 hairs, 70-100 μ long, slender and with somewhat threadlike ends. Subanal plate brown or pale brown, with 18-24 hairs, 95-118 μ long. Subgenital plate transversely elliptical, e.g. 326 μ wide and 145 μ long, with anteriorly spinulose imbrications and posteriorly spinulae; anterior hairs two, 53-75 μ long, posterior hairs 11-20, 6-7 of which are large, 80-98 μ long and located at the sides, while the other hairs are 10-45 μ long and located in the middle area. Gonapophyses three, the lateral with 2-4 hairs, the middle with 4-5, 8-16 μ long.

First stage larva of apterous viviparous ♀ (fig. 302; description of one specimen).— Body length 724 μ (590-795 μ in 15 specimens), 2.5 times as long as it is wide. Head across the eyes 273 μ, with four anterior hairs and two posterior, 49 μ long. Antennae with five segments, 559 μ long, segment III, 110 μ long, 1.37 times as long as segment IV and 0.36 times as long as segment V; segment IV, 80 μ long, 0.26 times as long as segment V; segment V, 303 μ long, 1.40 times as long as the processus terminalis. The ultimate rostral segment 125 μ long. Tibia of the fore leg 191 μ long, 0.70 times as long as the width of the head across the eyes. Abdominal tergites I-VI with one marginal hair at each side and four dorsal hairs, each on a very pale brown or colourless sclerite; the hairs with 2-7 teeth; hairs on tergite VI, 65 μ long. Siphunculi pale brown, on abdominal segment VI, triangular, with a rounded tip, 72 μ long and 57 μ wide at the base, almost smooth, without spinulae and hairs. Segment VII with a marginal tubercle, protruding backwards, nipple-shaped, 41 μ long, 31 μ wide at the base, smooth, provided at the tip with a hair, 96 μ long; in the middle two hairs, 88 μ long, 70 μ from each other, on the posterior side of the smooth sclerite of tergite VII. Tergite VIII almost colourless, smooth but in other specimens with spinulose imbrications, 88 μ wide, with two nipple-shaped tubercles which occupy the greater part of the tergite, and protrude backwards; each tubercle 29 μ long (the process of the hair not

included), and 19 μ wide at the base, with a hair on top, 90 μ long. The cauda with a broadly rounded posterior margin, without a process, with two hairs, 35 μ long.

Host plant records.— The specimens were collected in Java: *Syzygium racemosum* (Bl.) DC., Bogor Keb. R., 25.ix.1976, 7.xi.1976; *Syzygium lineatum* Merr. & Perry, Bogor Keb. R., 3.vii.1977, 12.viii.1977, 25.viii.1977; *Syzygium syzygioides* (Miq.) Amsh., Bogor, Keb. R., 6.xi.1977, 12.xii.1977; all D. Noordam, RMNH, Leiden.

The aphids live on the lower side of leaves, on the stems of young developing shoots, and adult specimens sometimes in the axil of adult leaves.

Alatae were not collected.

Etymology.— "Nigricans", blackish, referring to the colour of adult specimens in life.

Greenidea (Trichosiphum) pallidipes spec. nov.
(figs. 303-319)

Types.— Holotype (apterous viviparous ♀), from *Castanopsis javanica* (Bl.) DC., Cibodas (1400 m), Java, 18.xii.1977, D. Noordam, no. 1184-1-1. Paratypes: 43 apterous viviparous females and one alate viviparous ♀, the same data as the holotype, and 30.i.1977, no. 917; 8.iv.1977, no. 952; no. 1184; 26.ii.1978, no. 1282; *C. argentea* (Bl.) DC., Mt. Patuha (1900 m), 15.viii.1976, no. 722-3; *Lithocarpus Bennettii* (Miq.) Rehd., Bogor Keb. R., 22.xii.1976, no. 822-1; *Castanea crenata* Sieb. & Zucc., Cibodas (1400 m), 8.iv.1977, no. 951-1 and 18.xii.1977, no.1179; *Quercus glauca* Thunb., Bogor Keb. R., 25.xi.1977, no. 1141. All D. Noordam, RMNH, Leiden.

Life specimens.— Apterous viviparous ♀ (pl. 14). Head, thorax, margins of the abdomen, abdominal segments VII and VIII, and the cauda pale brown; central area of the abdomen shiny dark brown. The head and thorax sometimes with a greenish tinge. Antennal segments I, II and III as the head, the end of segment III and the rest of the antennae darker, brown or blackish, the processus terminalis paler than the base. Eyes red, ocular tubercle black. Legs pale brown, distal part of the second tarsal segments blackish. Siphunculi brown, the base paler, the siphunculi to the distal part darker. Larvae green, later stages with grey spots; antennae pale brown, the basal part of the last segment paler; siphunculi brown, slightly darker to the end.

Macerated specimens (figs. 303-310; described from 10 specimens).— Body length 1.33-2.15 mm, 1.5-2.0 times as long as it is wide.

Head.— Head pale brown, dorsally smooth, the frons convex in outline, the middle protruding 2-31 μ; head across the eyes 370-543 μ, dorsally anteriorly one hair at each side and 6-9 in the middle; between the eyes four sturdy hairs (in one specimen six) and sometimes 2-4 tiny hairs; the sturdy hairs have tips with 2-7 teeth, length of the hairs 55-94 μ; between the ocular tubercles 1-6 tiny hairs in a transverse row, 4-18 μ long. Antennae (fig. 307) with six segments, pale brown, but the area around the primary rhinaria, and sometimes the distal end of segments III-IV and the processus terminalis brown; the antennae 1.05-1.96 mm long, 0.76-1.09 times as long as the body, and 2.78-4.03 times as long as the width of the head across the eyes; segments I-II almost smooth, segment I with 5-8 hairs, segment II with 4-6, of segment II, 56-102 μ long; segment III dorsally and ventrally with smooth imbrications, 216-504 μ long, 1.68-2.12 times as long as segment IV, 1.42-1.83 times as long as segment V,

0.45-0.64 times as long as segment VI, with 7-22 hairs of different lengths, the longest 58-96 μ; segment IV dorsally and ventrally with smooth imbrications, 118-259 μ long, 0.74-0.88 times as long as segment V, with 4-8 hairs, 57-90 μ long; segment V with smooth imbrications, 148-295 μ long, 0.30-0.39 times as long as segment VI, with 4-7 hairs, 72-102 μ long; segment VI with smooth imbrications, 465-846 μ long, 1.37-1.50 times as long as the processus terminalis, the base with 6-8 hairs, 51-80 μ long; the processus terminalis 310-606 μ long, with four apical hairs and 6-10 over its length. The eyes colourless, the ocular tubercle brown or pale brown, diameter of the ommatidia of the ocular tubercle 20 μ. Ultimate rostral segment (fig. 306) 210-263 μ long, 1.98-2.77 times as long as the second tarsal segment of the hind leg; stylets 833-951 μ long.

Thorax.— Prothorax the same colour as the head, fused with the head, smooth dorsally, with 16-25 hairs. Mesothorax and metathorax slightly darker than the head; the mesothorax dorsally with 16-23 hairs, most hairs sturdy and the tips with teeth, 43-84 μ long. The leg, the femora as dark as the head, the tibiae and the tarsi slightly darker, all segments with imbrications, those of the distal part of the tibiae with some tiny spinulae. Tibia of the fore leg 366-645 μ long, 0.97-1.27 times as long as the width of the head across the eyes. Tibia of the hind leg, hairs 39-59 μ long, the basal hair 12-55 μ long; distally four bristles, 20-25 μ long, 3-5 μ wide near the base. First tarsal segments with seven hairs (fig. 308). Second tarsal segment of the hind leg (fig. 310), length of the dorsoapical hairs 18-25 μ, of the lateroapical hairs 39-48 μ, and of the empodial hairs 20-28 μ. Length of the segments of the hind leg: femur plus trochanter 373-677 μ, tibia 480-928 μ, 1.26-1.39 times as long as the femur, and 1.27-1.72 times as long as the width of the head across the eyes, first tarsal segment 31-41 μ, second tarsal segment 92-112 μ.

Abdomen.— Abdomen outside the borders of the margins the same colour as the head, to the inner side gradually darker, brown, and tergites I and II the same colour as the head. The central area brown or dark brown, separated from the margins by a paler brown curved area, which results from a less sclerotic area at the ventral side between the margins and the central shield, proceeding distally up to the spiracles of the fourth segment. A groove between metanotum and abdominal tergite I, between tergites I and II, VII and VIII, but the margins of the abdomen without segmental borders. Spinulae are lacking dorsally, but ventrally are present on the lateral sides from segment I to, only a few, ventrally to the siphunculi; length of the spinulae 2-8 μ. Imbrications with small spinulae observable in some areas of the ventral shield. The number of marginal hairs on each of segments I-V presumably ranges from 2-7, each of tergites I-V with 10-20 hairs in 1-3 transverse rows; tergite VI presumably with 5-7 hairs; the marginal and dorsal hairs brown, with 2-7 teeth (fig. 304); on tergite IV the longest hair 63-118 μ, the shortest 16-57 μ; tergite VII pale brown, with one anterior hair in the middle, and two hairs along the posterior margin, 81-113 μ long, the tips with some teeth or with one point; laterally on tergite VII one hair, 12-40 μ long. Tergite VIII pale brown, a plate with spinulose imbrications, 216-326 μ wide, standing upwards as a transverse vertical wall 51-77 μ, with two hairs pointing forward, 45-100 μ long. Ventral hairs (fig. 304) slender, the tips with one point, somewhat threadlike, in the middle area 40-61 μ long. Siphunculi the basal part with the network pale brown or brown and from there to the distal part gradually darker,

brown or black, with a convex inner side and a straight outer side, 310-732 μ long, 0.25-0.38 times as long as the body, 0.82-1.52 times as long as the width of the head across the eyes; 47-78 μ wide at the base, 78-137 μ at the widest part, which is in the middle; the siphunculi 3.4-7.1 times as long as the widest part; the basal 0.1 part of the siphunculi reticulate observable at a magnification of 100, with some spinulae; the siphunculi distal to the reticulum (fig. 305) smooth or here and there with a network observable at a magnification of 500, with 10-15 spinulae arranged in transverse rows; the density of spinulae increases in the distal 0.3 part to about 20 in each row, the rows 5-8 μ from each other, the spinulae 8-10 μ long; hairs brown, numerous, with sharp points or 2-3 teeth, 125-167 μ long, the first basal hair 31-108 μ long; the distal half of the siphunculi gradually tapering to the end, without a constriction, to the narrowest distal part with a diameter of 34-48 μ, expanding from there to the flange, which is 1.13-1.50 times wider than the narrowest part. Cauda (fig. 309) pale brown, 150-224 μ wide, 88-137 μ long, with a rounded posterior margin, interrupted by a process 33-53 μ long, with 8-9 hairs, 84-112 μ long, slender and with somewhat threadlike ends. Subanal plate pale brown, with 16-23 hairs, 106-168 μ long. Subgenital plate transversely elliptical, e.g. 410 μ wide and 151 μ long, anteriorly with spinulose imbrications and posteriorly with spinulae; anterior hairs 2-4, 51-72 μ long, posterior hairs 7-14, 5-8 of which are large, 69-100 μ long and located at the sides, while the other hairs are 10-43 μ long and located in the middle area. Gonapophyses three, the lateral with 3-4 hairs, the middle with 4-5, 12-28 μ long.

Life specimens.— Alate viviparous ♀. In life colours not known.

Macerated specimens (figs. 311-318; described from one specimen).— Body length 2.40 mm, 2.4 times as long as it is wide.

Head (fig. 311).— Brown, dorsally smooth, width of the head across the eyes 492 μ; dorsally 16 hairs, 10 of which on the part anterior to the lateral sides, and one of them at each side; between and posterior to the paired ocelli six hairs, brown, the tips with small pennons, 110 μ long. Antennae (fig. 316) segments I and II the same colour as the head, the basal 40 μ of segment III and the processus terminalis brown, the rest of the antennae black; antennae with six segments, 3.03 mm long, 1.26 times as long as the body, 6.16 times as long as the width of the head across the eyes; segments I and II with a few spinulose imbrications and spinulae, hair on segment II, 119 μ long; segment III over its whole length with smooth imbrications, 842 μ long, 1.91 times as long as segment IV, 1.93 times as long as segment V, and 0.78 times as long as segment VI, with 16-18 transversely elliptical or roundish rhinaria, lacking on the distal 200-250 μ of the segment, with 19-20 hairs, 131 μ long (in two damaged specimens of presumably this species, collected 9.vi.1918, segment III with 26-29 rhinaria); segment IV with smooth imbrications, 441 μ long, 1.01 times as long as segment V, with eight hairs, 121 μ long; segment V with smooth imbrications, 437 μ long, 0.40 times as long as segment VI, with 6-7 hairs, 135 μ long; segment VI, 1.08 mm long, 1.43 times as long as the processus terminalis, the base with seven hairs, 78 μ long; the processus terminalis 755 μ long, with four apical hairs, and 10 over its length. The eyes almost colourless, the ocular tubercle brown, diameter of the ommatidia of the ocular tubercle 20 μ. Ultimate rostral segment (fig. 313) 292 μ long, 2.52 times as long as the second tarsal segment of the hind leg; length of the stylets 1.13 mm.

Thorax.— Prothorax brown, dorsally, including the margins, with 20 hairs. Mesothorax brown, with brown hairs (fig. 314), 135 µ long. Medial vein of the fore wing (fig. 312) twice branched, hind wing with two oblique veins. Legs, femora paler brown than the head, the distal part darker, with smooth imbrications. The tibia of the fore leg 984 µ long, 2.00 times as long as the width of the head across the eyes; tibiae with a dark brown base and distal part, in between paler brown, with smooth or spinulose imbrications, distal half of the tibiae on the ventral sides with spines, up to 18 µ long, distally four bristles, 27 µ long; length of hairs of the hind tibiae 108 µ, the basal hair 72 µ long. First tarsal segments with seven hairs. Length of dorsoapical hair of the second tarsal segment of the hind leg (fig. 317) 25 µ, of the lateroapical hair 27 µ, and of the empodial hair 26 µ. Length of segments of the hind leg: femur plus trochanter 869 µ, tibia 1.34 mm, 1.51 times as long as the femur, and 2.67 times as long as the width of the head across the eyes, first tarsal segment 39 µ, second tarsal segment 116 µ.

Abdomen.— Marginal sclerites brown with a colourless area between segments I-VI; between tergites I-II and II-III distinct muscular plates, and the tergites of I and II with only small brown sclerites; tergites III-VI brown sclerites, fused with each other, with narrow colourless areas between the tergites and the marginal sclerites (as in figs. 290 and 291). On each marginal sclerite of segment I two hairs, of segment II, 2-3; of segments III-V, 3-5, and on segment VI, ventrally located, two; the dorsum smooth, on each of tergites II-V about 8-10 hairs, on tergite VI five hairs; on tergite IV (fig. 314) long hairs 55 µ, short hairs 29 µ; ventral hairs 88 µ long; on tergite VII one anterior hair in the middle and two hairs along the posterior margin (fig. 314), 57 µ long, and a lateral hair at each side, 45 µ long. Tergite VIII pale brown, a transversely elliptical plate, 306 µ wide, 65 µ long, with spinulose imbrications, with two hairs in the middle along the posterior margin (fig. 314), 60 µ from each other, 80 µ and 110 µ long. Siphunculi (fig. 318) dark brown, cylindrical with the distal 100 µ slightly curved outwards, 1.93 mm long, 0.80 times as long as the body, 3.93 times as long as the width of the head across the eyes; 108 µ wide at the base, 67 µ wide at the cylindrical part just distal to the base, 28.9 times as long as the last diameter, with transverse linear imbrications with interconnections, somewhat reticulate; small spinulae are lacking on imbrications of the base, a few are present on imbrications 500 µ from the end, but densely distributed spinulae in transverse rows are only present in the distal 100 µ, spinulae eight µ long; siphunculi in the distal 100 µ gradually tapering to the narrowest distal part with a diameter of 39 µ, expanding from there to the flange, which is 1.51 times wider than the narrowest part; with numerous brown hairs, with thin tips, 287 µ long. Cauda (fig. 315) pale brown, 240 µ wide, 153 µ long, with a median process, 37 µ long; the cauda with eight hairs, 136 µ long. Subanal plate pale brown, with 22 hairs, 178 µ long. Subgenital plate 413 µ wide, 160 µ long, with spinulose imbrications, anterior hairs two, 86 µ long, posterior hairs seven, the longest 121 µ, but two of these in the middle area, 40 µ long. Gonapophyses three, the lateral with four hairs, the middle with four, 22 µ long.

First stage larva of apterous viviparous ♀ (fig. 319; description of one specimen).— Body length 779 µ (645-850 µ in 14 specimens), 2.7 times as long as it is wide. Head across the eyes 271 µ, with four anterior hairs, and in a transverse row between the eyes four anterior and two posterior hairs, 45 µ long. Antennae with five segments,

519 μ long, segment III, 98 μ long, 1.26 times as long as segment IV, and 0.37 times as long as segment V; segment IV, 78 μ long, 0.29 times as long as segment V; segment V, 267 μ long, 1.44 times as long as the processus terminalis. The ultimate rostral segment 159 μ long. Tibia of the fore leg 181 μ long, 0.67 times as long as the width of the head across the eyes. Abdominal tergites I-VI with one marginal hair at each side and four dorsal hairs, each on a pale brown sclerite; the hairs with 2-7 teeth; hairs on tergite IV, 35 μ long, on tergite VI, 57 μ long. Siphunculi pale brown, on abdominal segment VI, triangular, with rounded tips, 92 μ long and 48 μ wide at the base, almost smooth, without spinulae and hairs. Segment VII with a marginal tubercle, protruding backwards, nipple-shaped, 45 μ long, 27 μ wide at the base, smooth, provided at the tip with a hair, 102 μ long; in the middle two hairs, 75 μ long, 92 μ from each other, on the posterior side of the smooth sclerite of tergite VII. Tergite VIII pale brown, with spinulose imbrications, 114 μ wide, with two nipple-shaped tubercles which occupy the greater part of the tergite, and protrude backwards; each tubercle 35 μ long (the process of the hair not included), and 24 μ wide at the base, with a hair on top, 77 μ long. The cauda with a broadly rounded posterior margin, without a process, with two hairs, 37 μ long.

Host plant records.— The specimens were collected in Java: *Quercus* branchlets, Bogor, 9.vi.1918, P. v.d. Goot, det. P. v.d. Goot *Greenidea* spec., damaged apterae and alatae, which presumably belong to the species described here, LUW, Wageningen; *Castanopsis argentea* (Bl.) DC., Mt. Patuha (1900 m), 15.viii.1976; *C. javanica* (Bl.) DC., Cibodas (1400 m), 30.i.1977, 8.iv.1977, 18.xii.1977, 26.ii.1978; *Castanea crenata* Sieb. & Zucc., Cibodas (1400 m), 8.iv.1977, 18.xii.1977, 26.ii.1978 (nos. 1275 and 1276-2); *Lithocarpus Bennettii* (Miq.) Rehd., Bogor Keb. R., 22.xii. 1976; *Quercus glauca* Thunb., Bogor Keb. R., 22.xii.1976; all last 10 D. Noordam, RMNH, Leiden.

The aphids live on young parts of developing shoots, but sometimes also on the brown bark of older branches.

Alatae or larvae of alatae were collected 9.vi.1918, 8-IV -1977, 26.ii.1978.

Etymology.— "Pallidipes", pale foot, referring to the pale legs of the aphid in life.

Discussion.— This species and *G. (Trichosiphum) flacourtiae* are separated from *G. (Trichosiphum) psidii* in the key based on apterae on the grounds of a paler colour of the base of the siphunculi only; and in the key based on alatae the specimens of these three species are distinguished on the number of rhinaria of antennal segment III. It is doubtful if these diagnostic characteristics are sufficient to separate these species. The quite different hosts of the three species, *Distylium stellare* of *G. (Trichosiphum) flacourtiae*, Fagaceae of *G. (Trichosiphum) pallidipes* separate them from *G. (Trichosiphum) psidii*, which lives on many hosts but I assume not on the hosts of the other two species. For this reason the three species are upheld.

Greenidea (Trichosiphum) psidii van der Goot, 1917
(figs. 320-339)

Greenidea psidii van der Goot, 1917: 138.

Trichosiphum formosanum Maki, 1918: 340.

Greenidea (Trichosiphum) formosana (Maki, 1917); Eastop & Hille Ris Lambers, 1976: 210.

Greenidea (Trichosiphum) formosana heeri Raychaudhuri, Ghosh, Banerjee and Ghosh, 1973: 66; Raychaudhuri & Chatterjee, 1980: 345.

Types. Neotype (an apterous viviparous ♀) here designated, from *Psidium guajava* Linnaeus, Sindanglaya (1100 m), Java, 20.i.1977, D. Noordam, no. 886-1-2, RMNH, Leiden. As neotype, a specimen is chosen which agrees fairly well with the description of van der Goot (1917: 138) which means an aptera of a collection with alatae: the aptera large, with long siphunculi.

Introduction.— *Greenidea (Trichosiphum) psidii* is the most commonly occurring species of the Greenideini, no doubt because the host plant *Psidium guajava* grows everywhere. In addition, the aphid is found on several other hosts belonging to different plant families.

Life specimens.— Apterous viviparous ♀ (pl. 15). Head and thorax pale brown, abdomen shiny brown, frequently two darker transverse bands on the middle of the abdomen and a dark patch in the middle on segments V-VII, with a paler patch behind, as in fig. 327. Antennae pale brown, the part with rhinaria on segments V and VI darker. Eyes red, the ocular tubercle dark red. Legs pale brown. Siphunculi base and end brown or black, darker than the middle part. Cauda pale brown or whitish. Larvae when small whitish, in larger larvae the posterior part of the abdomen brown or orange, the abdomen anteriorly brown with green.

Macerated specimens (figs. 320-328; described from 20 specimens).— Body length 1.49-2.31 mm, 1.6-1.9 times as long as it is wide.

Head.— Head pale brown, dorsally smooth, the frons convex in outline, the middle protruding 8-38 µ; head across the eyes 393-559 µ, dorsally anteriorly one hair at each side and 6-9 in the middle; between the eyes 5-9 hairs, 4-6 of these sturdy, brown, the tips with 2-4 teeth, 80-125 µ long, the other 2-4 smaller, usually in the middle, 5-78 µ long; between the ocular tubercles 3-7 tiny hairs in a transverse row, 4-29 µ long. µntennae (fig. 325) with six segments, segments I-V, and the processus terminalis the same colour as the head, but the distal end of segment III, the distal part of segment IV and V and the base of segment VI brown, 1.45-2.27 mm long, 0.91-1.08 times as long as the body, and 3.65-4.54 times as long as the width of the head across the eyes; segments I-II almost smooth, segment I with 6-9 (in one specimen 11) hairs, segment II with 4-5 (in two specimens 6-7) hairs, of segment II, 86-123 µ long; segment III dorsally and ventrally with smooth imbrications, 312-527 µ long, 1.76-2.43 times as long as segment IV, 1.44-1.68 times as long as segment V, 0.49-0.62 times as long as segment VI, with 15-23 hairs of different lengths, the longest 92-135 µ; segment IV dorsally and ventrally with smooth imbrications, 167-291 µ long, 0.77-0.91 times as long as segment V, with 5-9 hairs, 80-118 µ long; segment V with smooth imbrications, 216-336 µ long, 0.31-0.38 times as long as segment VI, with 5-8 hairs, 80-133 µ long; segment VI with smooth imbrications, 617-972 µ long, 1.39-1.50 times as long as the processus terminalis, the base with 7-9 hairs, 65-102 µ long; the processus terminalis 417-693 µ long, with four apical hairs and 6-12 over its length. The eyes colourless, the ocular tubercle about the same colour as the head, diameter of the ommatidia of the ocular tubercle 18-22 µ. Ultimate rostral segment (fig. 323) 214-253 µ long, 1.84-2.30 times as long as the second tarsal segment of the hind leg; stylets 826-1050 µ long.

Thorax.— Prothorax the same colour as the head, fused with the head, smooth dorsally, with 15-22 hairs. Mesothorax and metathorax the same colour as the head; the mesothorax dorsally with 17-24 hairs, most hairs sturdy, brown, and the tips with

2-5 teeth, 67-123 μ long. The legs, the femora the same colour as the head, the tibiae and tarsi slightly darker. All segments with imbrications, those of the distal part of the tibiae with some tiny spinulae. Tibia of the fore leg 429-724 μ long, 1.09-1.39 times as long as the width of the head across the eyes. Tibia of the hind leg, hairs 41-65 μ long, the basal hair 20-47 μ; distally four bristles, 21-25 μ long, 4-6 μ wide near the base. First tarsal segments with seven hairs (fig. 324). Second tarsal segment of the hind leg (fig. 326), length of the dorsoapical hairs 18-25 μ, of the lateroapical hairs 39-47 μ, and of the empodial hairs 19-29 μ. Length of the segments of the hind leg: femur plus trochanter 456-763 μ, tibia 606-1015 μ, 1.26-1.37 times as long as the femur, and 1.42-1.93 times as long as the width of the head across the eyes, first tarsal segment 35-45 μ, second tarsal segment 98-131 μ.

Abdomen.— Abdominal margins pale brown, as dark as the head, but to the inner side gradually darker brown, and tergites I and II as dark as the head. The central area brown, separated from the margins by a paler brown curved area, which results from a less sclerotic area at the ventral side between the margins and the central shield, proceeding distally up to the spiracles of the fourth segment. A groove between metanotum and abdominal tergite I, between tergites I and II, VII and VIII, but the margins of the abdomen without segmental borders. Spinulae are lacking dorsally, but ventrally they are present on the lateral sides from segment I till, only a few, ventrally to the siphunculi, in this area hairs are lacking; length of the spinulae 2-8 μ. Imbrications with small spinulae observable in some areas of the ventral shield. The number of marginal hairs on each of segments I-V presumably ranges from 2-8, each tergite I-V with 10-25 hairs in 1-3 transverse rows; tergite VI presumably with 4-6 hairs; the marginal and dorsal hairs brown, with 2-7 teeth (fig. 321); on tergite IV the longest hairs 110-151 μ, the shortest 20-65 μ; tergite VII pale brown, with one anterior hair in the middle, and two hairs along the posterior margin, 100-139 μ long, the tips with some teeth; laterally on tergite VII one hair, 14-43 μ long. Tergite VIII pale brown, a plate with spinulose imbrications, 267-373 μ wide, standing upwards as a transverse vertical wall 46-93 μ, with two hairs pointing forward, 41-82 μ long. Ventral hairs (fig. 321) slender, the tips with one point, somewhat threadlike, in the middle area 55-82 μ long. Siphunculi the basal part with the network brown and from there to the distal part paler brown, the distal 50-200 μ again slightly darker than the middle part, with a convex inner side and a straight outer side, 464-834 μ long, 0.29-0.39 times as long as the body, 1.17-1.60 times as long as the width of the head across the eyes; 59-86 μ wide at the base, 80-143 μ at the widest part, which is at 0.2-0.5 of its length; the siphunculi 4.5-7.7 times as long as the widest part; the basal 0.1 part of the siphunculi reticulate observable at a magnification of 100, with some spinulae; the siphunculi distal to the reticulum (fig. 322) smooth, with 10-15 spinulae arranged in transverse rows; the density of the spinulae increases in the distal 0.2-0.5 part to about 20 in each row, the rows 5-8 μ from each other, the spinulae 8-10 μ long; hairs brown, numerous, with sharp points or 2-3 teeth, 172-220 μ long, the first basal hair 40-131 μ long; the distal half of the siphunculi gradually tapering to the end, without a constriction, to the narrowest distal part with a diameter of 32-47 μ, expanding from there to the flange, which is 1.16-1.38 times wider than the narrowest part. Cauda (fig. 328) pale brown, 173-255 μ wide, 86-145 μ long, with a rounded posterior margin, interrupted in the middle by a process 35-58

μ long, with 8-9 hairs, 98-147 μ long, slender and with somewhat threadlike ends. Subanal plate pale brown, with 18-26 hairs, 137-188 μ long. Subgenital plate transversely elliptical, e.g. 413 μ wide, and 151 μ long, anteriorly with spinulose imbrications, and posteriorly with spinulae; anterior hairs two, 51-92 μ long, posterior hairs 8-11, 4-7 of which are large, 88-139 μ long and located at the sides, while the other hairs are 10-76 μ long and located in the middle area. Gonapophyses three, the lateral with three hairs, the middle with 4-5, 10-16 μ long.

Life specimens.— Alate viviparous ♀ (pl. 16): head, mesothorax, last abdominal segment, cauda and legs pale brown, the prothorax brown with a green hue. Antennae, siphunculi, abdomen, knees, the distal end of the tibiae and the tarsi black; around the siphunculi and some patches marginally on the abdomen with paler markings (figs. 335, 336). Eyes red, ocular tubercles darker red. Pterostigma brownish grey.

Macerated specimens (figs. 329-338; described from seven specimens).— Body length 1.74-2.23 mm, 2.0-2.5 times as long as it is wide.

Head.— Head (fig. 329) pale brown or brown, dorsally smooth, width of the head across the eyes 460-523 μ; dorsally 16-19 hairs 9-13 of which anterior to the paired ocelli, of which one at each side; 2-4 between the paired ocelli, and 2-4 posterior to the paired ocelli, hairs between the paired ocelli 69-121 μ long. Antennae (fig. 330) segments I and II, and the basal 20 μ of segment III dark brown, darker than the head, the rest of the antennae black (some evidently bleached specimens not included); antennae with six segments, 2.23-2.54 mm long, 1.11-1.24 times as long as the body, and 4.70-5.03 times as long as the width of the head across the eyes; segments I and II dorsally with some spinulose imbrications, segment II with a hair 82-131 μ long; segment III over its whole length with smooth imbrications, 456-645 μ long, 1.71-2.06 times as long as segment IV, 1.32-1.88 times as long as segment V, and 0.61-0.65 times as long as segment VI, with 21-31 transversely elliptical or roundish rhinaria, lacking on the distal 50-130 μ of the segment, with 14-20 hairs, 88-133 μ long; segment IV with smooth imbrications, 267-316 μ long, 0.77-0.92 times as long as segment V, with 6-10 hairs, 80-129 μ long; segment V with smooth imbrications, 310-350 μ long, 0.33-0.39 times as long as segment VI, with 6-9 hairs, 90-131 μ long; segment VI, 893-1051 μ long, 1.40-1.44 times as long as the processus terminalis, the base with 6-9 hairs, 45-88 μ long; the processus terminalis 618-748 μ long, with four apical hairs, and 8-11 over its length. The eyes almost colourless, the ocular tubercle pale brown, diameter of the ommatidia of the ocular tubercle 20-22 μ. Ultimate rostral segment (fig. 331) 217-261 μ long, 1.75-2.26 times as long as the second tarsal segment of the hind leg; length of the stylets 904-1045 μ.

Thorax.— Prothorax pale brown, dorsally, including the margins, with 17-24 hairs. Mesothorax brown, with brown hairs (fig. 334), 102-137 μ long. Medial vein of the fore wing (fig. 332) twice branched, hind wing with two oblique veins. Legs, femora same colour as the head, but distally darker, with almost smooth imbrications. The tibia of the fore leg 669-846 μ long, 1.44-1.68 times as long as the width of the head across the eyes; tibiae with dark brown base and distal part, in between paler brown, with smooth or spinulose imbrications, distal half of the tibiae on the ventral sides with spines, up to 14-18 μ long; distally four bristles, 22-27 μ long; length of hairs of the hind tibia 71-108 μ, the basal hair 45-74 μ long. First tarsal seg-

ments with seven hairs. Length of dorsoapical hair of the second tarsal segment of the hind leg (fig. 333) 20-25 μ, of the lateroapical hair 20-23 μ, and of the empodial hair 23-27 μ. Length of the segments of the hind leg: femur plus trochanter 606-803 μ, tibia 850-1133 μ, 1.40-1.42 times as long as the femur, and 1.83-2.25 times as long as the width of the head across the eyes, first tarsal segment 35-40 μ, second tarsal segment 104-122 μ.

Abdomen (figs. 335-336).— Marginal sclerites brown with a colourless area between segments I-VI; between tergites I-II and II-III distinct muscular plates, and the tergites of I and II with only small brown sclerites, tergites III-VI brown sclerites, fused with each other and with the marginal sclerites, with only some colourless areas between the tergites. On each marginal sclerite of segment I (in one specimen) two hairs, of segment II four, segment III five, segment IV, 5-6, segment V, 4-5, and on segment VI, ventrally located two; the dorsum smooth, on each of tergites II-V about 10-20 hairs, on tergite VI, 5-6 hairs; on tergite IV long hairs (fig. 334) 38-55 μ, in one specimen 78 μ, short hairs 22-37 μ; ventral hairs (fig. 334) in the middle 55-84 μ long; on tergite VII (fig. 334) one anterior hair in the middle and two hairs along the posterior margin, 43-82 μ long, and a lateral hair at each side, 20-41 μ long. Tergite VIII almost colourless, a transversely elliptical plate 255-350 μ wide, 51-78 μ long, with spinulose imbrications, with two hairs in the middle along the posterior margin (fig. 334), 60-82 μ (in one specimen 33 μ) from each other, 76-94 μ long. siphunculi (fig. 338) black, cylindrical with the distal 100-200 μ sometimes slightly curved outwards, 1.25-1.67 mm long, 0.71-0.80 times as long as the body, 2.70-3.31 times as long as the width of the head across the eyes; 75-106 μ wide at the base, 61-94 μ wide at the cylindrical part just distal to the base, 17.8-25.2 times as long as the last diameter, with transverse linear imbrications with interconnections, reticulate; spinulae are lacking on the imbrications of the base, some are present on the imbrications 200-500 μ from the end, but only in the distal 100 μ they are densely distributed in transverse rows, the spinulae 8-10 μ long; siphunculi in the distal 100 μ gradually tapering to the narrowest distal part with a diameter of 38-46 μ, expanding from there to the flange, which is 1.23-1.44 times wider than the narrowest part; with numerous brown hairs, with sharp points or thin tips, 208-306 μ long. Cauda (fig. 337) almost colourless, 140-224 μ wide, 69-130 μ long, with a median process, 29-31 μ long, with 8-9 hairs, 105-135 μ long. Subanal plate pale brown, with 21-24 hairs, 127-188 μ long. Subgenital plate e.g. 355 μ wide, 147 μ long, with spinulose imbrications, anterior hairs 2-3, 69-86 μ long, posterior hairs 7-13, of which 5-7 lateral, large, 98-139 μ long, and 2-7 small hairs in the middle, 12-74 μ long. Gonapophyses three, the lateral with 3-4 hairs, the middle with 4-6, 10-22 μ long.

First stage larva of apterous viviparous ♀ (fig. 339; description of one specimen).— Body length 854 μ (574-889 μ in 18 specimens), 2.2 times as long as it is wide. Head across the eyes 299 μ, with four anterior hairs, and in a transverse row between the eyes four anterior and two posterior hairs, 55 μ long. Antennae with five segments, 700 μ long, segment III, 137 μ long, 1.38 times as long as segment IV, and 0.36 times as long as segment V; segment IV, 99 μ long, 0.26 times as long as segment V; segment V, 381 μ long, 1.35 times as long as the processus terminalis. The ultimate rostral segment 166 μ long. Tibia of the fore leg 241 μ long, 0.81 times as long as the width of the head across the eyes. Abdominal segments I-VI with one marginal hair

at each side and four dorsal hairs, each on a pale brown or colourless sclerite; the hairs with 2-8 teeth; hairs on tergite IV, 65 μ long, on tergite VI, 86 μ. Siphunculi pale brown, on abdominal segment VI, triangular, with rounded tips, 107 μ long and 72 μ wide at the base, almost smooth, without spinulae and hairs. Segment VII with a marginal tubercle, protruding backwards, nipple-shaped, 57 μ long, 33 μ wide at the base, smooth, provided at the tip with a hair, 108 μ long; in the middle two hairs, 108 μ long, 104 μ from each other, on the posterior side of the smooth sclerite of tergite VII. Tergite VIII pale brown or colourless, with indistinct spinulose imbrications, 137 μ wide, with two nipple-shaped tubercles which occupy the greater part of the tergite, and protrude backwards; each tubercle 41 μ long (the process of the hair not included), and 31 μ wide at the base, with a hair on top, 94 μ long. The cauda with a broadly rounded posterior margin, without a process, with two hairs, 41 μ long.

Host plant records.— The specimens were collected in Java: *Psidium guajava* Linnaeus, Salatiga (570 m), vii-1915, P. v.d. Goot (1917: 140), the material is lost; *Eugenia*, Manggis, 7.viii.1919, P. v.d. Goot, LUW, Wageningen; *Eugenia* is a synonym of *Syzygium; Psidium guajava* Linnaeus, Tjikopo, Buitenzorg, 10.vi.1947, Sijpkens; *Melaleuca leucadendra* (Linnaeus) Linnaeus, Sempolan, Djember (500 m), 22.x.1948, F.W. Rappard; *Psidium guajava* Linnaeus, Malang (450 m), 5.ix.1948, 6.i.1951, 10.iii.1951, 15.iii.1951, F.W. Rappard; *Scurrula atropurpurea* (Bl.) Dans., Malang (450 m), 11.viii.1951, F.W. Rappard; the last seven all BMNH, London; *Psidium guajava* Linnaeus, Bogor, 3.iv.1975, 5.ii.1977; *Psidium guajava* Linnaeus, Sindanglaya (1100 m), 19.v.1975, 3.vi.1976, 13.x.1976, 12.i.1977; 20.i.1977, 1.xii.1977; *Melaleuca leucadendra* (Linnaeus) Linnaeus, Sindanglaya, 19.v.1975; *Lagerstroemia* spec., Bandung, 29.ix.1975; *Psidium guajava* Linnaeus, Bogor Keb. R., 18.ii.1976; *Eucalyptus torelliana* F.v.Muell., Cibodas (1400 m), 27.vi.1976, 18.xii.1976; *Melaleuca bracteata* F. v. Muell., Cibodas (1400 m), 27.vi.1976; *Scurrula philippensis* (Cham. & Schlecht.) G. Don., Banjer, 6.viii.1976; *Melaleuca leucadendra* (Linnaeus) Linnaeus, Cibodas, 17.x.1976, 30.i.1977; *Syzygium aqueum* (Burm.f.), Alst., Sindanglaya, 20.i.1977, 30.viii.1977, 3.iii.1978; *Syzygium aqueum* (Burm.f.), Alst., Bandung, 3.viii.1977; *Psidium guajava* Linnaeus, Lawang (500 m), 29.xii.1977; *Syzygium aromaticum* (Linnaeus) Merr. & Perry, Garut, 5.ii.1978; the last 23 samples D. Noordam, RMNH, Leiden.

The aphids live on the lower side of leaves of developing shoots, in particular along the main vein, also on developing shoots, and separate specimens sometimes in the axil of shoots; on *Melaleuca bracteata* between the needle-shaped leaves. Touching gently a branch containing aphids causes them to run very rapidly in all directions. Alatae (according to notes by Rappard) hidden inside just unfolding top leaves.

Alatae or larvae of alatae were collected vii-1915, 10.vi.1947, 6.i.1951, 10.iii.1951, 15.iii.1951, 3.iv.1975, 29.ix.1975, 3.vi.1976, 27.vi.1976, 6.viii.1976, 13.x.1976, 20.i.1977, 5.ii.1977, 3.viii.1977, 30.viii.1977, 1.xii.1977, 29.xii.1977, 5.ii.1978, 3.iii.1978.

Etymology.— "Psidii", of *Psidium*, a genus of the Myrtaceae, from tropical America, but very often naturalized on Java or cultivated.

Genus *Greenideoida* van der Goot, 1917
(figs. 340-373)

Greenideoida van der Goot, 1917: 140 (type species: *Greenideoida elongata* van der Goot, 1917).

Life specimens (two species).— Apterous viviparous ♀. In life: Head white, abdomen white or pale yellow. Macerated specimens. -Body 1.48-2.45 mm long, 2.1-3.3 times as long as it is wide. The head colourless, dorsally with or without spinulae, width across the eyes 290-409 µ. Anteriorly in the middle 4-6 hairs, between the eyes 2-4 hairs, 27-41 µ long in *G. elongata*, or two hairs 86-119 µ long in *G. fransseni*. Antennae with five segments, 1.18-1.77 mm long, 0.67-0.87 times as long as the body, 3.8-4.6 times as long as the width of the head across the eyes; length of hairs on segment III, 33-63 µ, segment IV with 3-12 hairs, 16-51 µ long, the base of segment V with 2-5 hairs, 10-29 µ long; the processus terminalis with four apical hairs, and 0-3 over its length. Eyes with numerous ommatidia, and the ocular tubercle with three ommatidia. Ultimate rostral segment 90-127 µ long, 0.96-1.16 times as long as the second tarsal segment of the hind leg; length of the stylets 325-423 µ long. The prothorax fused with the head, with 8-9 hairs. Tibia of the fore leg 393-590 µ long, 1.20-1.55 times as long as the width of the head across the eyes. Tibia of the hind leg without coarse imbrications, length of hairs 18-33 µ. First tarsal segments with five hairs. Spinulae dorsally on the abdomen observable at a magnification of 200 in *G. elongata*, but these are lacking in *G. fransseni*. Length of hairs on tergite IV, 14-18 µ in *G. elongata*, and 96-114 µ in *G. fransseni*, on tergite VII, 45-118 µ long, on tergite VIII, 65-88 µ long. Siphunculi 932-1590 µ long, 0.50-0.74 times as long as the body, 2.9-4.0 times as long as the width of the head across the eyes in *G. elongata*, and 634-865 µ long, 0.42-0.47 times as long as the body, and 2.0-2.6 times as long as the width of the head across the eyes in *G. fransseni*; a reticulum is lacking, spinulae are present and more numerous and in transverse lines in the distal end; length of hairs 72-112 µ. Cauda without a median process, with 5-6 hairs, 61-90 µ long. Subanal plate with 15-18 hairs, 74-104 µ long. Subgenital plate with 2-6 anterior hairs, 31-57 µ long, and 7-11 posterior hairs, 45-69 µ long. Gonapophyses three, the lateral with 1-3 hairs, the middle with 4-6 hairs, 12-25 µ long.

Life specimens.— Alate viviparous ♀ (one species). The head grey, the abdomen whitish and in the middle with a dark spot; pterostigma dark grey.

Macerated specimen.— Body length 1.39-2.11 mm, 2.6-3.2 times as long as it is wide. The head across the eyes 332-399 µ wide, posterior to the paired ocelli with four hairs, 22-37 µ long. Antennae with five segments, 1.24-1.78 mm long, 0.80-0.98 times as long as the body, and 3.5-4.8 times as long as the width of the head across the eyes, segment III with 9-15 rhinaria, secondary rhinaria on the other segments lacking; segment IV, 236-326 µ long, 0.52-0.59 times as long as segment V, the processus terminalis 244-295 µ long. Ultimate rostral segment 112-123 µ long, 1.07-1.14 times as long as the second tarsal segment of the hind leg; stylets 393-420 µ long. Medial vein of the fore wing once branched, hind wing without oblique veins. First tarsal segments with five hairs. Length of the dorsoapical hair of the second tarsal segment of the hind leg 4-6 µ, and of the lateroapical hair 28-37 µ. Hairs on tergite IV, 14-23 µ long, ventrally on the middle of the abdomen 31-41 µ long. Siphunculi brown, 1.13-1.68 mm long, 0.67-0.87 times as long as the body, 3.0-4.5 times as long as the width of the head across the eyes, 20.6-30.6 times as long as the width of the cylindrical part just distal to the base, the basal 100-150 µ smooth, distal to this part with imbrications and spinulae, the distal 100 µ spinulae more densely distributed, the spinulae 6-8 µ long; the siphunculi with numerous hairs, 90-102 µ long. Cauda

without a median process, with 6-8 hairs, 73-86 µ long. Subanal plate with 15-19 hairs, 88-104 µ long. Subgenital plate with 9-16 anterior hairs, 39-51 µ long, and 10-14 posterior hairs, 51-74 µ long. Gonapophyses three, the lateral with three hairs, the middle with 5-6, 10-21 µ long.

First stage larva of apterous viviparous ♀ (one species).— Body length 715 µ. Antennae with four segments. Eyes with facets are lacking, ocular tubercles with three ommatidia. The ultimate rostral segment 72 µ long. Tibia of the fore leg 151 µ long, 0.69 times as long as the width of the head across the eyes. Abdominal segment I with one marginal hair at each side and two dorsal hairs, tergites II-VI each with four hairs. Siphunculi on abdominal segment VI, nipple-shaped, without spinulae and hairs. Segment VII with a nipple-shaped marginal tubercle, and in the middle of the segment two hairs. Tergite VIII with two nipple-shaped tubercles, each with a hair on top. The cauda without a median process.

Etymology.— "Greenideoida", resembling *Greenidea*.

Discussion.— van der Goot (1917: 130, 132, 136, 139, 141) states that the tip of the ultimate rostral segment of *Greenidea* is separated from the basal part, and that in *Greenideoida* the tip is not separated from the basal part. Raychaudhuri (1956: 7) also states that the rostrum of *Greenideoida* is not distinctly subdivided in segments IV and V, this in contrast to *Greenidea* and other genera; see also Raychaudhuri & Chatterjee (1980: 323). I was not able to observe a distinct difference between the rostrum of *Greenideoida* and the other Greenidinae. In all species it seems that a division between segments IV and V is visible as an inward curvature of the base of segment V, see e.g. fig. 345.

Greenideoida elongata van der Goot, 1917
(figs. 340-362)

Greenideoida elongata van der Goot, 1917: 142.
Greenideoida vandermeermohri Takahashi, 1935: 1; Raychaudhuri 1956: 70; Eastop & Hille Ris Lambers 1976: 210 (synonymy).

Type.— Neotype here designated, apterous viviparous ♀ from *Bridelia monoica* Lour. Merr., Bogor, 11.iv.1975, D. Noordam, no. 237 slide 2, RMNH, Leiden.

Van der Goot left no types, and the material is lost. Here a neotype is chosen which fits the description of van der Goot well.

Life specimens.— Apterous viviparous ♀ (pl. 17). Head, thorax, abdomen white. Antennae white with three black rings, namely at the distal 0.1 of segment III, and around the rhinaria of segments IV and V. Eyes red, the ocular tubercles slightly darker. Legs white, the tarsi darker. Siphunculi pale brown, gradually darker to the distal part, the end black.

Macerated specimens (figs. 340-351; described from nine specimens).— Body length 1.48-2.45 mm, 2.5-3.3 times as long as it is wide.

Head.— Head colourless, dorsally with spinulae, blunt or pointed, wide spaced, 1-2 µ large (fig. 342), the frons (fig. 341) in protruding 2-8 µ in the middle, the antennal tubercles 3-16 µ, head across the eyes 312-409 µ, anteriorly usually six hairs in the middle; between the eyes a transverse row of four hairs (fig. 351), the tips blunt or rounded, 27-41 µ long, tiny hairs and posterior hairs are lacking. Antennae (fig. 349)

with five segments, colourless but the distal end of segment III pale brown, the area around the rhinaria of segments IV and V brown, the processus terminalis pale brown; the antennae 1.18-1.77 mm long, 0.67-0.87 times as long as the body, 3.8-4.6 times as long as the width of the head across the eyes; segment I with imbrications with tiny spinulae, with 5-6 hairs; segment II with spinulose imbrications and separate spinulae, with 4-5 hairs (in one specimen three), 49-62 µ long; segment III dorsally and ventrally with spinulose imbrications, 441-755 µ long, 2.24-2.71 times as long as segment IV, 1.15-1.41 times as long as segment V, with 24-39 hairs of different lengths, the longest 47-63 µ; segment IV with almost smooth imbrications, 1.81-299 µ long, 0.44-0.53 times as long as segment V, with 5-12 hairs, 35-51 µ long; segment V with smooth imbrications, 411-562 µ long, 1.74-1.93 times as long the processus terminalis, the base with 4-5 hairs (in one specimen three), 23-29 µ long; the processus terminalis 216-301 µ long, with four apical hairs and 1-3 over its length. The eyes colourless, the ocular tubercle very pale brown, diameter of the ommatidia of the ocular tubercle 16-19 µ. Ultimate rostral segment (fig. 345) 108-127 µ long, 0.96-1.16 times as long as the second tarsal segment of the hind leg, segment IV in one specimen with two apical setae and 10 other hairs, 82 µ long, segment V, 30 µ long; stylets 384-423 µ long.

Thorax.— Prothorax colourless, fused with the head, dorsally with spinulae, with 8-9 hairs. Mesothorax and metathorax dorsally with spinulae; the mesothorax dorsally with 8-10 hairs, marginal hairs 43 µ long, hairs in the middle 14 µ long, the tips of all blunt or with a tiny pennon. Legs very pale brown, the tibiae and tarsi sometimes slightly darker; the femora with spinulose imbrications and ventrally with spinulae, 2-5 µ long. Tibiae with spinulose imbrications, the basal half only on the ventral side, the spinulae tiny and separate spines on the distal part almost lacking; tibia of the fore leg 441-590 µ long, 1.36-1.55 times as long as the width of the head across the eyes. Tibia of the hind leg, hairs 18-23 µ long, the basal hair 13-20 µ; distally four hairs, not bristle-shaped. First tarsal segments with five hairs (fig. 346), the longest hair 22-33 µ. Second tarsal segment of the hind leg (fig. 347), length of the dorsoapical hairs 3-6 µ, of the lateroapical hairs 29-35 µ, and of the empodial hairs 16-21 µ. Length of segments of the hind leg: femur plus trochanter 456-642 µ, tibia 567-783 µ, 1.18-1.30 times as long as the femur, and 1.79-1.98 times as long as the width of the head across the eyes, first tarsal segment 33-37 µ, second tarsal segment 97-118 µ.

Abdomen.— Abdomen colourless, a groove between metanotum and abdominal tergite I, between tergites I and II, VII and VIII, marginally between abdominal segments I and II a distinct border, but not between the next segments. Spinulae (fig. 343) arranged in transverse rows are observable dorsally at a magnification of 200 or more, on segments I-V, usually blunt, 1-4 µ; ventrally spinulae present but difficult to observe. The number of marginal hairs on each of segments I-V ranges from 2-8, the longest hair on segment V, 59-67 µ. The number of dorsal hairs, the marginal hairs not included, are given below for tergites I-VI of 32 specimens, the number of specimens are added in parentheses: tergite I four hairs (30), five hairs (1), six hairs (1); tergite II four hairs (10), five (17), six (5); tergite III four hairs (4), five (10), six (13), seven (5); tergite IV five hairs (11), six (14), seven (6), eight (1); tergite V four hairs (2), five (14), six (12), seven (4), eight (3), nine (2); tergite VI four hairs (29), five (2), six (1). The hairs are arranged in a transverse row, but with a larger number of hairs,

some are located outside the row; the hairs are capitate (fig. 351) but usually the tips have collapsed and look blunt; length of hair on tergite IV (fig. 351), 14-18 µ. Tergite VII with one anterior hair in the middle in two specimens only, and two hairs along the posterior margin, 45-56 µ long, the tips usually blunt (fig. 351); laterally on tergite VII one hair, 24-43 µ long. Tergite VIII (fig. 348) a plate with spinulose imbrications, 182-283 µ wide, 47-78 µ long, in the middle with a tubercle about 50 µ wide and 15-20 µ high, with two hairs (fig. 351) 77-88 µ long. Ventral hairs (fig. 351) slender, the tips somewhat threadlike, in the middle area 27-49 µ long. Siphunculi almost colourless or very pale brown, but the distal 150 µ brown, with a convex inner side and a concave or straight outer side, 932-1590 µ long, 0.50-0.74 times as long as the body, 2.9-4.0 times as long as the width of the head across the eyes; 65-100 µ wide at the base, 78-121 µ at the widest part, which is at 0.15-0.30 of its length; the siphunculi 10.4-17.3 times as long as the widest part; the basal 50 µ smooth with a few spinulae, a reticulate is lacking; distally to this the basal half (fig. 344) with spinulose imbrications or as the distal half with separate spinulae, widely spaced, 5-10 in one transverse line, the distal dark part densely covered with spinulae, 10-20 in a transverse line, the lines 6-10 µ from each other, the spinulae 6-8 µ long; hairs colourless or very pale brown, numerous with threadlike ends, 78-92 µ long, the first basal hair 31-53 µ long; the siphunculi gradually tapering, the distal 100 µ more strong, to the end, without a constriction, to the narrowest distal part with a diameter of 33-42 µ, expanding from there to the flange, which is 1.02-1.19 times wider than the narrowest part. Cauda (fig. 350) colourless, 143-177 µ wide, 40-69 µ long, with a somewhat triangular posterior margin with a rounded tip, without a process, with 5-6 hairs, 74-90 µ long, slender and with somewhat threadlike ends. Subanal plate colourless, with 16-18 hairs, 88-104 µ long. Subgenital plate transversely elliptical, e.g. 186 µ wide, and 120 µ long, with spinulose imbrications; anterior hairs 2-6, 31-57 µ long, posterior hairs 6-11, located at the sides, 45-69 µ long. Gonapophyses three, the lateral with 2-3 hairs, the middle with 4-6, 8-17 µ long.

Life specimens.— Alate viviparous ♀ (pl. 18). Head and prothorax grey, mesothorax brownish grey, abdomen in the middle anteriorly and posteriorly a whitish yellow spot, and in the area in between these spots pale to dark grey or almost black. Around the siphunculi and anterior to this three whitish yellow spots. Eyes red. Antennae black. Legs grey. Siphunculi black. Cauda whitish yellow. Rostrum white with a black end. Pterostigma dark grey.

Macerated specimens (figs. 352-362; described from seven specimens).— Body length 1.39-2.11 mm, 2.6-3.2 times as long as it is wide.

Head.— Head (fig. 352) pale brown or brown, the paired ocelli darker, dorsally smooth, width of the head across the eyes 332-399 µ; dorsally 9-13 hairs, 5-9 of which anterior to the paired ocelli; between the paired ocelli hairs are lacking, posterior to the paired ocelli four hairs, 22-37 µ long. Antennae (fig. 357) the same colour as the head, the basal 25 µ of segment III, and usually also the greater part of segments IV and V paler; antennae with five segments, 1.24-1.78 mm long, 0.80-0.98 times as long as the body, and 3.55-4.78 times as long as the width of the head across the eyes; segments I and II dorsally and ventrally with spinulose imbrications and spinulae; segment III over its whole length with spinulose imbrications, 590-759 µ long, 2.23-2.50 times as long as segment IV, 1.19-1.42 times as long as segment V, with 9-15 trans-

versely elliptical or roundish rhinaria, lacking in the distal 150-350 μ of the segment, with 26-30 hairs, 45-49 μ long; segment IV with smooth and almost smooth imbrications, 236-326 μ long, 0.52-0.59 times as long as segment V, with 9-13 hairs, 42-52 μ long; segment V with smooth imbrications, 450-556 μ long, 1.84-1.99 times as long as the processus terminalis, the base with 5-6 hairs, 22-27 μ long; the processus terminalis 244-295 μ long, with four apical hairs, and 2-3 over its length. The eyes colourless, the ocular tubercle brown, diameter of the ommatidia of the ocular tubercle 14-18 μ. The ultimate rostral segment (fig. 354) 112-123 μ long, 1.07-1.14 times as long as the second tarsal segment of the hind leg; length of the stylets 393-420 μ.

Thorax.— Prothorax the same colour as the head, the margins and dorsally in the middle with spinulae, 1-2 μ long and wide, with 8-11 hairs. Mesothorax brown, hairs (fig. 359) 21-23 μ long. Medial vein of the fore wing (fig. 353) once branched, hind wing without oblique veins. Legs, the femora pale brown, the distal part darker, with smooth and spinulose imbrications. Tibia of the fore leg 578-689 μ long, 1.55-1.85 times the width of the head across the eyes. The tibiae brown or pale brown, the base and the middle part sometimes paler, with smooth and spinulose imbrications, distal half of the tibiae on the ventral sides with spines, up to 10-14 μ long; distally four almost normal hairs; length of hairs of the hind tibia 27-35 μ, the basal hair 17-20 μ long. First tarsal segments (fig. 356) with five hairs, the longest of the hind leg 23-27 μ. Length of the dorsoapical hair of the second tarsal segment of the hind leg (fig. 355) 4-6 μ, of the lateroapical hair 28-37 μ, and of the empodial hair 17-22 μ. Length of the segments of the hind leg: femur plus trochanter 535-657 μ, tibia 712-846 μ, 1.29-1.35 times as long as the femur, and 1.91-2.27 times as long as the width of the head across the eyes, first tarsal segment 31-36 μ, second tarsal segment 98-112 μ.

Abdomen (fig. 360).— Marginal sclerites of abdominal segments I and II inconspicuous, of segments III-V brown, with a wide colourless area between the segments, the sclerites are smooth, without spinulae. Tergites I and II each with two brown separate plates which are interrupted in the middle. Tergites III-V a brown sclerotic plate, fused with the marginal sclerites, tergite III interrupted in the middle by a colourless area, and each tergite with some roundish colourless or pale brown muscular plates; the tergites are smooth, but the middle area with spinulae, blunt, 1-2 μ long and wide (fig. 361); the marginal sclerites each with 2-6 hairs, the tergites each with 4-6 hairs. On tergite VI four hairs; on tergite IV long hairs (fig. 359) 14-23 μ, 0.52-0.80 times as long as the diameter of the articulate of antennal segment III, short hairs 12-14 μ, 0.41-0.48 times as long as the diameter of the articulate of antennal segment III. The ventral side smooth, only posteriorly some indistinct spinulose imbrications; hairs in the middle area (fig. 359) 31-41 μ long. On tergite VII usually an anterior hair is lacking, along the posterior margin two hairs (fig. 359), 25-53 μ long, and a lateral hair at each side, 25-30 μ long. Tergite VIII a transversely elliptical plate 186-240 μ wide and 45-51 μ long, with spinulose imbrications, colourless, but with a pale brown tubercle in the middle e.g. 68 μ wide and 15 μ high, with two hairs, e.g. 23 μ from each other, 78-100 μ long. Siphunculi (fig. 362) brown, the basal 50 μ paler, cylindrical, 1.13-1.68 mm long, 0.67-0.87 times as long as the body, 3.0-4.5 times as long as the width of the head across the eyes; 65-86 μ wide at the base, 51-61 μ wide at the cylindrical part just distal to the base, 20.6-30.6 times as long as this last diameter, the basal 100-150 μ smooth, distal to this part with transverse imbrications with

some spinulae, a reticulate is lacking, the distal 100 µ spinulae are more densely distributed, 10-15 in transverse rows, the spinulae 6-8 µ long; the siphunculi in the distal 60 µ gradually tapering to the narrowest distal part with a diameter of 31-36 µ, expanding from there to the flange, which is 1.17-1.29 times wider than the narrowest part; with numerous colourless or pale brown hairs with thin tips, 90-102 µ long. Cauda (fig. 358) almost colourless, with a somewhat triangular posterior margin with a rounded tip, without a process, 141-165 µ wide, 57-71 µ long, with 6-8 hairs, 73-86 µ long. Subanal plate very pale brown, with 15-19 hairs, 88-104 µ long. Subgenital plate e.g. 186 µ wide, 121 µ long, with spinulose imbrications, anterior hairs 9-16, 39-51 µ long, and 10-14 posterior hairs, 8-14 of which lateral, large, 51-74 µ long, and 1-2 small hairs in the middle, 16-23 µ long. Gonapophyses three, the lateral with three hairs, the middle with 5-6, 10-21 µ long.

First stage larvae are not available.

Host plant records.— The specimens were collected in Java: *Bridelia monoica* (Lour.) Merr. (*B. tomentosa* synonym), Kepoeh (200 m), ii.1913; shrub, Songoriti (980 m), Mt. Kawi, vi.1914; Salatiga (570 m), .ii.1915; *Bridelia*, Bogor, 28.v.1918; all P. v.d. Goot, in van der Goot, 1917:145, and on slides, material lost or fragments in the collection at the LUW, Wageningen; *Bridelia monoica* (Lour.) Merr., Bogor, 11.iv.1975, 27.iv.1975, 2.xii.1977, 4.xii.1977; *Bridelia monoica* (Lour.) Merr., Bogor Keb. R., 12.iv.1975, 22.iv.1975, 2.v.1976, 6.vi.1976, 19.xii.1976, 8.i.1978; *Bridelia minutiflora* Hook., Bogor Keb. R., 30.iv.1975; the last 11 samples D. Noordam, RMNH, Leiden.

The aphids live on the lower side or sometimes the upper side of leaves. Alatae separate on the lower side of young leaves or the youngest part of shoots. The leaves are sometimes transversely folded by ants.

Alatae or larvae of alatae were collected ii.1915, 28.v.1918, 27.iv.1975, 30.iv.1975, 2.v.1976, 6.vi.1976, 19.xii.1976, 2.xii.1977, 4.xii.1977, 8.i.1978.

Etymology.— "Elongata", elongate, referring to the oblong shape of the body of apterae (van der Goot 1917: 129).

Greenideoida fransseni spec. nov.
(figs. 363-373)

Types.— Holotype (apterous viviparous ♀), from *Bridelia tomentosa* (syn. of *B. monoica* (Lour.) Merr.), Buitenzorg, Java, 5.iii.1932, Franssen. Paratypes: 20 apterous viviparous ♀♀, the same data as the holotype, and *Bridelia monoica* (Lour.) Merr., Bogor Keb. R., Java, 12.iv.1975, D. Noordam. Holotype and paratypes Franssen, BMNH, London, and paratypes also LUW, Wageningen; paratypes D. Noordam, RMNH, Leiden.

Life specimens.— Apterous viviparous ♀. Head, antennae, siphunculi and legs whitish or colourless, the body pale yellow. Antennae with three black rings. Eyes red.

Macerated specimens (figs. 363-372; described from eight specimens).— Body length 1.51-1.84 mm, 2.1-2.2 times as long as it is wide.

Head.— Head colourless, dorsally without spinulae, the middle of the frons protruding 8-16 µ; head across the eyes 290-369 µ, anteriorly 4-6 hairs in the middle; between the eyes two sturdy hairs, pale brown, with sharp points, 86-120 µ long,

near the base 7-9 μ wide (fig. 372), posterior hairs are lacking. Antennae (fig. 371) with five segments, colourless, but the distal end of segment III and the area around the rhinaria of segments IV and V brown or pale brown; the antennae 1.22-1.60 mm long, 0.77-0.87 times as long as the body, 4.0-4.8 times as long as the width of the head across the eyes; segment I with a few spinulose imbrications, with 3-4 hairs; segment II with a few spinulose imbrications, with 4-5 hairs, 72-92 μ long; segment III dorsally and ventrally with smooth imbrications, 441-582 μ long, 1.74-2.02 times as long as segment IV, 0.96-1.03 times as long as segment V, with 3-6 hairs, only one of these sturdy 33-74 μ long; segment IV with smooth imbrications, 218-305 μ long, 0.48-0.57 times as long as segment V, with 3-6 hairs, 16-35 μ long; segment V with smooth imbrications, 456-574 μ long, 1.83-1.93 times as long as the processus terminalis, the base with 2-4 hairs, 10-16 μ long; the processus terminalis 248-314 μ long, with four apical hairs and 0-1 over its length. The eyes colourless, the ocular tubercle almost colourless, diameter of the ommatidia of the ocular tubercle 16 μ. Ultimate rostral segment (fig. 368) 90-106 μ long, 0.98-1.11 times as long as the second tarsal segment of the hind leg; in one specimen segment IV, 76 μ long, segment V, 25 μ long; stylets 325-365 μ long.

Thorax.— Prothorax colourless, fused with the head, dorsally with spinulae, with eight hairs. Mesothorax and metathorax dorsally without spinulae; the mesothorax dorsally, including marginal hairs, with 7-11 hairs of different lengths, the sturdy hairs 88-106 μ long, the tips of all hairs pointed. The legs almost colourless; the femora with spinulose imbrications. Tibiae with spinulose imbrications, separate spines on the distal half are lacking; tibia of the fore leg 393-476 μ long, 1.20-1.48 times as long as the width of the head across the eyes. Tibia of the hind leg, hairs 25-33 μ long, the basal hair 12-16 μ; distally four hairs, not bristle-shaped. First tarsal segments with five hairs (fig. 370), the longest hair 31-39 μ. Second tarsal segment of the hind leg (fig. 371), length of the dorsoapical hairs 12-17 μ, of the lateroapical hairs 33-41 μ, and of the empodial hairs 18-23 μ. Length of the segments of the hind leg: femur plus trochanter 385-468 μ, tibia 501-626 μ, 1.29-1.36 times as long as the femur, and 1.49-1.93 times as long as the width of the head across the eyes, first tarsal segment 32-37 μ, second tarsal segment 92-104 μ.

Abdomen.— Abdomen colourless, a groove between metanotum and abdominal tergite I, between tergites I and II, VII and VIII, marginally a distinct border between abdominal segments I and II, but not between the next segments. Spinulae are lacking dorsally and ventrally. Segments I-III each with one marginal hair, segments IV and V each, at each side, with 3-4 marginal hairs, the longest hairs on segment V, 110-129 μ. Tergites I-V each with 4-5 hairs in a transverse row, the tips of all hairs with sharp points; length of hair on tergite IV (fig. 372) 96-118 μ, 8-9 μ wide near the base. Tergite VI with four hairs. Tergite VII with one anterior hair in the middle in one specimen, and two hairs along the posterior margin (fig. 372), 92-118 μ long. Tergite VIII (fig. 366) a plate with spinulose imbrications 220-248 μ wide, 55-63 μ long, in the middle with a tubercle, 70-100 μ wide and 15-22 μ high, with two hairs (fig. 372), 69-86 μ long. Ventral hairs (fig. 372) slender, the tips somewhat threadlike, in the middle area 45-59 μ long. Siphunculi almost colourless, with a convex inner side and a straight outer side, 634-865 μ long, 0.41-0.47 times as long as the body, and 2.0-2.6 times as long as the width of the head across the eyes; 74-110 μ wide at the base, 80-

130 μ at the widest part, which is at 0.3-0.4 of its length; the siphunculi 6.3-10.8 times as long as the widest part; smooth with a few or some spinulose imbrications (fig. 365), but the distal 100 μ with separate spinulae, 15-20 in transverse lines, the lines 5-10 μ from each other, the spinulae 6-9 μ long; hairs very pale brown, numerous, the tips with sharp points, 104-120 μ long, the first basal hair 63-93 μ long; the siphunculi gradually tapering, the distal 100 μ more strongly, to the end, without a constriction, to the narrowest distal part with a diameter of 32-53 μ, expanding from there to the flange, which is either not observable or 1.04-1.19 times wider than the narrowest part. Cauda (fig. 367) colourless, 159-184 μ wide, 45-84 μ long, with a somewhat triangular posterior margin with a rounded tip, without a process, with six hairs, 61-74 μ long, slender and with somewhat threadlike ends. Subanal plate colourless, with 13-17 hairs, 74-104 μ long. Subgenital plate transversely elliptical, e.g. 204 μ wide, and 123 μ long, with indistinct spinulose imbrications; anterior hairs 2-3, 51-69 μ long, posterior hairs 7-9, located at the sides, 51-69 μ long. Gonapophyses three, the lateral with 2-3 hairs, the middle with 4-5, 16-31 μ long.

First stage larva of apterous viviparous ♀ (fig. 373; description of one pale specimen).— Body length 715 μ, about 2.7 times as long as it is wide. Head across the eyes 220 μ, with four anterior hairs, and two hairs in the middle, 65 μ long; posterior hairs are lacking. Antennae with four segments, 364 μ long, segment III, 115 μ long, 0.64 times as long as segment IV; segment IV, 180 μ long, 1.70 times as long as the processus terminalis. The ultimate rostral segment 72 μ long. Tibia of the fore leg 151 μ long, 0.69 times as long as the width of the head across the eyes. Abdominal segment I with one marginal hair at each side and two dorsal hairs, the hairs with sharp points; tergites II-VI each with four hairs, hairs on tergite IV, 57 μ long, on tergite VI, 53 μ long. Siphunculi on abdominal segment VI, nipple-shaped, 74 μ long and 43 μ wide at the base, smooth, without spinulae and hairs. Segment VII with a marginal tubercle, protruding backwards, nipple-shaped, 22 μ long, 29 μ wide at the base, smooth, provided at the tip with a hair, 69 μ long; in the middle two hairs, 69 μ long. Tergite VIII with two nipple-shaped tubercles which protrude backwards; each tubercle 27 μ long, and 23 μ wide at the base, with a hair on top, 69 μ long. The cauda with a broadly rounded posterior margin, without a process, with two hairs, 31 μ long.

Host plant records.— The specimens were collected in Java: *Bridelia monoica* (Lour.) Merr., Bogor, 5.iii.1932, C. Franssen, BMNH, London and LUW, Wageningen; *Bridelia monoica* (Lour.) Merr., Bogor Keb. R., 12.iv.1975, D. Noordam, RMNH, Leiden.

The aphids live separately on leaves.

Alatae were not collected.

Etymology.— "Fransseni", from Dr C.J.H. Franssen, who collected this aphid for the first time. The name which Dr D. Hille Ris Lambers intended to give to this species.

Greenideoida hannae van der Goot, 1917
(fig. 364)

Greenideoida hannae van der Goot, 1917: 145; Eastop & Hille Ris Lambers, 1976: 210.

Van der Goot (1917) collected apterae from this aphid, but alatae were lacking.

The material is lost, and the lack of a median process on the cauda seems to be the reason why this species was considered by van der Goot to be a *Greenideoida*. Raychaudhuri (1956: 101) states that the species shows characteristics which are more typical of *Eutrichosiphum* than of *Greenideoida*. van der Goot's description is insufficient to be able to identify this aphid well, but a translation of the original description is given below:

Colour.— Body whitish or very pale greenish white. Eyes red. Antennae colourless, the end black. Legs whitish. Tarsus somewhat darker. Siphunculi greyish brown.

Morphological characters.— Length of the body 2.35 mm; width 1.26 mm. Length of antennae 1.40 mm. Length of siphunculi 0.68 mm. Length of the cauda - mm. Body oblong; the whole dorsal side with numerous irregularly arranged moderately long bristles, which are usually somewhat expanded at the tips. Eyes with facets, but the number of facets few (about 15-20); ocular tubercle extending only a little. Antennae slightly longer than half the length of the body, with some bristles, with six segments; relative lengths of the distal segments 105, 63, 50, 52. Primary rhinaria seemingly without a fringe of hairs. Rostrum a little beyond the hind part of the coxae. Siphunculi (fig. 364) moderately long (about 1/4 the length of the body, rather thick, towards the end distincly more narrow, with long bristles, which are slightly extended at the tip; the integument with rows of spinulae, which are more distict near to the tip. Cauda hardly extended, only a little acuminate. Rudimentary gonapophyses three, with rather short small hairs; the middle gonapophysis sometimes apparently divided. Legs normal shape.

Biology.— I found this extraordinary aphid only once, in the second half of December 1913 in rather small groups on young fleshy tips of branches of a shrub of *Streblus* close to the Bahoeng waterfall (near Lawang). I did not succeed in discovering even one alata. Distribution: Bahoeng waterfall (about 300 m). Remark. This species is named to commemorate Mrs. Joh. Jeswiet-Hagedoorn, who unfortunately died prematurely.

Genus *Mesotrichosiphum* Calilung, 1967
(figs. 374-381)

Mesotrichosiphum Calilung, 1967: 89.

Life specimens (one species and data from another species from Calilung 1967).— Body length 1.18-1.38 mm, 1.6-1.7 times as long as it is wide. The head pale brown, width across the eyes 303 µ, the frons protruding with regard to the sides 10 µ, anteriorly eight hairs, between the eyes two hairs, 27 µ long, and five tiny hairs 5-7 µ long; between the ocular tubercles a transverse row of four tiny hairs. Antennae with four segments, 488 µ long, 0.41 times as long as the body, 1.6 times as long as the width of the head across the eyes; antennal segment III, 1.3-1.9 times as long as segment IV; length of hair on segment III, 22 µ; the last segment 176 µ long, 2.7-3.0 times as long as the processus terminalis; the processus terminalis with four apical hairs, over its length hairs are lacking. Eyes with about 16 facets, the ocular tubercle with three ommatidia. Ultimate rostral segment 121-140 µ long, 1.70-2.0 times as long as

the second tarsal segment of the hind leg; length of the stylets 664 µ. The prothorax fused with the head, with two or three hairs at each side marginally and two hairs dorsally in the middle. Tibia of the fore leg 200 µ long, 0.66 times as long as the width of the head across the eyes. Tibia of the hind leg without coarse imbrications, with 6-8 sturdy hairs, 25-28 µ long. First tarsal segments with five hairs. The tergites of abdominal segments II-VII one plate with on each segment hairs in 1-2 transverse rows, on tergite IV eight µ long, ventral hairs in the middle area of the abdomen 22-25 µ long. Siphunculi 220-340 µ long, 0.19-0.25 times as long as the body, 0.73 times as long as the width of the head across the eyes; the surface smooth, without a reticulate, the basal 20 µ bare, the rest densely covered with spinulose imbrications and spinulae, the rows with spinulae on the distal end almost the same as on the other part; each siphunculus with about 20 hairs, 80 µ long. Cauda with eight hairs, 65 µ long. Subanal plate presumably with 12-14 hairs, 92 µ long. Subgenital plate with two anterior hairs, 24 µ long, and four posterior hairs, 74 µ long. Gonapophyses three, the lateral presumably with three hairs, the middle with five, 6 µ long.

Alate viviparous ♀.— Body length 1.36 mm, 2.7 times as long as it is wide. Antennae with five segments, segment III with 13-15 rhinaria, secondary rhinaria on the other segments lacking, segment IV, 130 µ long, segment V, 200 µ long, the processus terminalis 100 µ long. Ultimate rostral segment 130 µ long, 1.44 times as long as the second tarsal segment of the hind Medial vein of the fore wing twice branched. First tarsal segments with five hairs. Siphunculi 490 µ long, 0.36 times as long as the body, with 15-20 hairs, 250 µ long.

Etymology.— "Mesotrichosiphum", middle or intermediate *Trichosiphum.*

Mesotrichosiphum brevisetosum spec. nov.
(figs. 374-381)

Type.— Holotype (apterous viviparous ♀), from *Lithocarpus Bennettii* (Miq.) Rehd., Bogor Keb. R., Java, 22.xii.1976, D. Noordam, no. 822-2, RMNH, Leiden.

Life specimens.— Apterous viviparous ♀ not known.

Macerated specimen (figs. 374-381; described from one specimen).— Body length 1.18 mm, 1.7 times as long as it is wide.

Head.— Head pale brown, dorsally smooth, the frons convex in outline, the middle protruding 10 µ; head across the eyes 303 µ, anteriorly at each side two hairs, one of them dorsally, the other just ventrally, 7-12 µ long, more to the middle at each side two hairs, 30 µ long and some tiny hairs; between the eyes two hairs, 27 µ long and five tiny hairs 5-7 µ long; between the ocular tubercles a transverse row of four tiny hairs; all hairs with sharp points. Antennae (fig. 381) with four segments, segment I and II and the basal half of segment III the same colour as the head, the distal part of segment III and the base of segment IV blackish brown, the processus terminalis slightly paler, 488 µ long, 0.41 times as long as the body and 1.6 times as long as the width of the head across the eyes; segments I-II almost smooth, segment I with five hairs, segment II with 4-5, of segment II, 58 µ long; segment III dorsally and ventrally with smooth imbrications, 236 µ long, 1.3 times as long as segment IV, with 10-11 hairs of different lengths, the longest 22 µ; segment IV with smooth imbrications, 176 µ long, 3.0 times as long as the processus terminalis, the base with three hairs, eight µ

long; the processus terminalis 59 μ long, with four apical hairs, and hairs over its length lacking. The eyes colourless, the ocular tubercles pale brown, diameter of the ommatidia of the ocular tubercle 25 μ. Ultimate rostral segment (fig. 378) 121 μ long, 1.70 times as long as the second tarsal segment of the hind leg, hairs on the middle of the segment eight μ long; stylets 664 μ long.

Thorax.— Prothorax the same colour as the head, fused with the head, smooth dorsally, with at each side one hair, and two dorsal hairs near the posterior margin. Mesothorax and metathorax the same colour as the head, with a marked colourless area between the three thoracic segments; the mesothorax dorsally with 13 tiny hairs, 5-10 μ long. The legs, the femora the same colour as the head, the tibiae and tarsi slightly darker than the head, but the distal part of the tibiae paler. The femora with many imbrications, smooth or with blunt spinulae of about one μ, the tibiae smooth, with distally a few imbrications, the second tarsal segments with several imbrications. Tibia of the fore leg 200 μ long, 0.66 times as long as the width of the head across the eyes. Tibia of the hind leg with 6-8 sturdy brown bristles over its length, e.g. 25 μ long, and four μ wide near the base, and some slender hairs, 25 μ long; length of the basal hair 10 μ; distally four bristles 18 μ long, 2-3 μ wide near the base. First tarsal segments with five hairs (fig. 379). Second tarsal segment of the hind leg (fig. 380), length of the dorsoapical hairs 17 μ, of the lateroapical hairs 31 μ, and of the empodial hairs 20 μ. Length of the segments of the hind leg: femur plus trochanter 236 μ, tibia 240 μ, 1.02 times as long as the femur, and 0.79 times as long as the width of the head across the eyes, first tarsal segment 27 μ, second tarsal segment 71 μ.

Abdomen.— The outermost borders of the abdomen pale brown, as dark as the head, but most of the margins darker than the head; tergites I and II as dark as the head. The central area brown as most of the margins, separated from the margins by a paler brown curved area, which results from a less sclerotic area at the ventral side between the margins and the central shield, proceeding distally up to the spiracles of the fourth segment. A groove between metanotum and abdominal tergite I, between tergites I and II, VII and VIII, but the margins of the abdomen without segmental borders. Spinulae are lacking dorsally, but ventrally they are present on the lateral sides of segment II; length of the spinulae 1-4 μ. Imbrications are not observable on the ventral shield. Marginal hairs of segments I-V at each side about 40, regularly distributed over its whole length, some hairs sturdy, pale brown, blunt or the tips with two teeth, 18-25 μ long, three μ wide near the base, most hairs of the same type but 6-10 μ long (fig. 375a); tergites I-V each with 12-20 hairs, somewhat irregularly arranged in 1-3 transverse rows, tergite VI presumably with six hairs; the hairs are pale brown, the tips sharp, blunt or with some teeth (fig. 375b), on tergite IV eight μ long; tergite VII with two hairs along the posterior margin, 27 μ long, 144 μ from each other, with sharp or blunt tips; lateral to these hairs one hair, 12 μ long. Tergite VIII pale brown, a plate with spinulose imbrications, 192 μ wide, 48 μ long, with two hairs pointing to the posterior side, 47 μ long. Ventral hairs (fig. 375c) in the middle area slender, 22-25 μ long, hairs to the margins sturdy, the tips pointed, blunt or with teeth, 6-14 μ long. Siphunculi evenly brown, darker than the body, with a convex inner side and a slightly convex outer side, 220 μ long, 0.19 times as long as the body, 0.73 times as long as the width of the head across the eyes, 43 μ wide at the base, 75 μ at the widest part, which is in the middle; the siphunculi 2.9 times as long as the

widest part; the surface is smooth, without a network, the basal 20 μ bare, the rest densely covered with spinulose imbrications and separate spinulae, about 20 on a transverse line, the spinulae of the base 6-7 μ long, the distal spinulae 4-6 μ; the rows with spinulae on the distal end almost the same as on the other part; hairs (fig. 376) brown, about 20 on each siphunculus, with sharp points or 2-3 teeth, 80 μ long, the first basal hair 18 μ long; the distal half of the siphunculi gradually tapering to the end, without a constriction, to the narrowest distal part with a diameter of 33 μ, expanding from there to the flange, which is 1.06 times wider than the narrowest part. Cauda (fig. 377) pale brown, 131 μ wide, 53 μ long, with a rounded posterior margin, without a process, presumably with eight hairs, 65 μ long, slender and with somewhat threadlike ends. Subanal plate pale brown, with presumably 14 hairs, 92 μ long. Subgenital plate transversely elliptical, 220 μ wide, and 70 μ long, anteriorly and in the middle with spinulose imbrications, the sides with coarse spinulae, 4-6 μ long, anterior hairs two, 24 μ long, posterior hairs four, two of which lateral 14 μ long, and two slightly more to the middle 74 μ long, all pointing forwards, hairs in the middle are lacking. Gonapophyses three, the middle presumably with five hairs, the lateral with three, six μ long.

Host plant record.— The specimen was collected in Java on *Lithocarpus Bennettii* (Miq.) Rehd., Bogor Keb. R., 22.xii.1976, D. Noordam, RMNH, Leiden.

Etymology.— "Brevisetosum", with short bristles, referring to the short bristles on the legs and on the body.

Discussion.— Only one specimen of this aphid is in existence. It was present in a collection of *Greenidea (Trichosiphum) pallidipes*, but overlooked when collecting, so nothing is known about its colour in life. The body of the specimen does not contain embryos. So rather little is known about this aphid, but because it has many characteristics it is described here.

Genus *Mollitrichosiphum* Suenaga, 1934
(figs 383-410)

Mollitrichosiphum Suenaga, 1934: 798 (type species: *Greenidea tenuicorpus* (Okajima, 1908)).

Apterous viviparous ♀, one species.— In life: Head pale brown, abdomen pale brown, with a greyish green line along the lateral sides and one in the middle, or abdomen greyish green. Macerated specimens: body 1.89-2.78 mm long, 2.2-2.8 times as long as it is wide. The head pale brown, width across the eyes 412-531 μ, the frons straight in outline, antennal tubercles protruding 12-31 μ, the frons dorsally with 4-6 hairs, between the eyes six hairs, 137-190 μ long. Antennae with six segments, 1.70-2.55 mm long, 0.85-1.00 times as long as the body, 4.4-5.1 times as long as the width of the head across the eyes; antennal segment III, 3.7-4.5 times as long as segment IV; the last segment 486-590 μ long, 1.61-1.75 times as long as the processus terminalis, the base of the segment with 4-7 hairs; length of hair on antennal segment III, 169-255 μ, the processus terminalis with four apical hairs, and 4-7 over its length. Eyes with numerous ommatidia, ocular tubercle with three ommatidia. Ultimate rostral segment 247-284 μ long, 1.97-2.24 times as long as the second tarsal segment of the hind leg; length of stylets 861-1090 μ. The prothorax fused with the head, dorsally

with 15-21 hairs. Tibia of the fore leg 630-1188 µ long, 1.47-2.38 times as long as the width of the head across the eyes. The hind tibia shows a bent in the middle of about 30 degrees, the basal half on the posterior side with 17-22 transverse ridges, and that area without spinulae or hairs. First tarsal segments with seven hairs; length of the dorsoapical hair of the second tarsal segment of the hind leg 31-43 µ, of the empodial hair 47-56 µ. The tergites of abdominal segments II-VII one plate with on each segment hairs in 1-3 transverse rows, on tergite IV, 190-208 µ long, and ventrally in the middle of the abdomen 69-114 µ long. The lateral sides of segments I-III dorsally, and ventrally segments I-IV with small spinulae, but ventrally on segments III-IV an extensive area with blunt spinulae, 4-10 µ long. Siphunculi 1.30-2.03 mm long, 0.65-0.80 times as long as the body, 3.0-4.1 times as long as the width of the head across the eyes, the base of the siphunculi with spinulose imbrications, without a reticulate; the distal 100-200 µ with spinulae arranged in transverse rows; the siphunculi over their whole length with numerous hairs, 185-260 µ long, with a flange, 1.1-1.3 times wider than the narrowest distal part. Cauda with 6-8 hairs, 96-137 µ long, without a median process. Subanal plate with 15-23 hairs, 125-167 µ long. Subgenital plate with 5-10 anterior hairs, 78-159 µ long, and 9-13 posterior hairs, 110-184 µ long. Gonapophyses three, the lateral with 3-5 hairs, the middle with 6-10, 8-17 µ long.

Alate viviparous ♀.— In life head brown, abdomen black, at the siphunculi green. Pterostigma black. Macerated specimens: Body length 2.40-3.12 mm, 2.5-3.1 times as long as it is wide. Head brown, width of the head across the eyes 464-539 µ, posteriorly between the eyes 5-6 hairs, 116-185 µ long. Antennae with six segments, 2.30-2.78 mm long, 0.83-1.03 times as long as the body, and 4.7-5.4 times as long as the width of the head across the eyes, segment III with 17-26 (in one specimen 13-14) rhinaria; segment III, 1.9-2.5 times as long as segment VI; the processus terminalis 294-365 µ long; longest hair of segment IV, 180-248 µ. Ultimate rostral segment 240-290 µ long, 1.92-2.18 times as long as the second tarsal segment of the hind leg; stylets 843-999 µ long. Medial vein of the fore wing twice branched, hind wing with two oblique veins. First tarsal segments with seven hairs. Length of hairs of the hind tibia 106-185 µ , the basal hair 129-208 µ long, the hind tibia with 16-26 transverse ridges. Length of the dorsoapical hair of the second tarsal segment of the hind leg 33-43 µ, and of the lateroapical hair 46-58 µ. The ventral side of the abdomen with an extensive area with spinulae. Hairs on tergite IV, 94-135 µ long, ventrally on the middle of the abdomen 69-98 µ long. Siphunculi black, 2.47-3.30 mm long, 0.95-1.18 times as long as the body, and 5.1-6.4 times as long as the width of the head across the eyes, 33.7-40.2 times as long as the diameter of the cylindrical part just distal to the base, with spinulose imbrications without a reticulum; spinulae densely distributed on the distal 200-300 µ, length of the spinulae 13-18 µ; with numerous hairs, 250-335 µ long. Cauda without a median process, with 6-7 hairs, 106-155 µ long. Subanal plate with 19-22 hairs, 125-167 µ long. Subgenital plate with 6-10 anterior hairs, 98-133 µ long, and with 10-14 posterior hairs, 131-196 µ long. Gonapophyses three, the lateral with 4-6 hairs, the middle with 8-11, 20-37 µ long.

First stage larva of apterous viviparous ♀.— Body length 755-1010 µ. Antennae with five segments. Eyes with or without some facets, ocular tubercle with three ommatidia. The ultimate rostral segment 188 µ long. Tibia of the fore leg 257 µ long, 1.00 times as long as the width of the head across the eyes. Abdominal tergites I-VI

each with four hairs. Siphunculi on abdominal segment VI, triangular, without spinulae and hairs. Segment VII with a nipple-shaped marginal tubercle and in the middle with two rather flat tubercles, each with a hair on top. Tergite VIII with two nipple-shaped tubercles which are united in the middle, each with a hair on top. The cauda without a median process.

Etymology.— "Mollitrichosiphum", soft *Trichosiphum*.

Mollitrichosiphum (M.) tenuicorpus (Okajima, 1908)
(figs. 382-410)

Trichosiphum tenuicorpus Okajima, 1908: 22.
Greenidea tenuicorpus; Takahashi, 1924: 55.
Paratrichosiphum tenuicorpus.; Takahashi, 1931: 32.
Metatrichosiphon (Neotrichosiphon) tenuicorpus; Raychaudhuri, 1956: 88.
M. tenuicorpus; Eastop & Hille Ris Lambers, 1976: 285.
M.(Mollitrichosiphum) tenuicorpus; Raychaudhuri & Chatterjee, 1980: 355.

Types.— Unknown.

Life specimens.— Apterous viviparous ♀ (pl. 31). Head pale brown. Prothorax, mesothorax and metathorax pale brown with a green line in length along the lateral sides. Abdomen pale brown, with a green line along the lateral sides and one in the middle, or mesothorax, metathorax and abdomen greyish green. Antennal segments I, II and the base of III pale brown, the rest of the antennae blackish or paler and the processus terminalis grey. Eyes red, the ocular tubercle black. Legs brown, the tarsi black. Siphunculi, the base brown, or blackish or the ends of the siphunculi slightly paler. Cauda greyish green. Larvae as adult, but the cauda pale brown, the siphunculi pale brown, and hairs on small grey sclerites, in some collections the abdomen with more distinct brown patches; the smallest larvae with white head, body and siphunculi, with some yellow anterior to the siphunculi, only small green spots, and pale brown antennae and legs.

Macerated specimens (figs. 383-395; described from 11 specimens).— Body length 1.89-2.78 mm, 2.2-2.8 times as long as it is wide.

Head.— Head pale brown, a few spinulae on the antennal tubercles, but the rest of the head dorsally smooth; the frons in the middle straight in outline, the antennal tubercles protruding 12-31 µ, but in one specimen only four µ; head across the eyes 412-531 µ, dorsally anteriorly 4-6 hairs in the middle, lateral hairs are lacking; between the eyes six hairs, all sturdy, pale brown, with thin ends or tiny pennons, 137-190 µ long; tiny hairs between the ocular tubercles are lacking. Antennae (fig. 394) with six segments, segments I and II the same colour as the head, the basal 0.3-0.5 part of segment III slightly paler, the distal part of segment III to the base of segment VI darker than the head, the processus terminalis paler than the base of the segment around the rhinaria, 1.70-2.55 mm long, 0.85-1.00 times as long as the body, and 4.4-5.1 times as long as the width of the head across the eyes; segment I and especially ventrally segment II with spinulae or spinulose imbrications, segment I with 6-8 hairs, segment II with 4-5 hairs, of segment II, 120-176 µ long; segment III dorsally smooth, ventrally with imbrications with 0-2 spinulae, 780-1157 µ long, 3.75-4.52 times as long as segment IV, 3.06-4.40 times as long as segment V and 1.58-2.05

times as long as segment VI, with 45-78 hairs of different lengths, the longest 169-255 µ; segment IV dorsally smooth, ventrally with almost smooth imbrications, 208-283 µ long, 0.82-0.97 times as long as segment V, with 6-13 hairs, 167-228 µ long; segment V dorsally with some smooth imbrications, ventrally with more, 238-314 µ long, 0.46-0.54 times as long as segment VI, with 7-12 hairs, 141-200 µ long; segment VI with smooth imbrications, 486-590 µ long, 1.61-1.75 times as long as the processus terminalis, the base with 4-7 hairs, 102-143 µ long; the processus terminalis 281-354 µ long, with four apical hairs, and 4-7 over its length. The eyes almost colourless, the ocular tubercle darker than the head, diameter of the ommatidia of the ocular tubercle 18-20 µ. Ultimate rostral segment (fig. 395) 247-284 µ long, 1.97-2.24 times as long as the second tarsal segment of the hind leg; stylets 861-1090 µ long.

Thorax.— Prothorax the same colour as the head, fused with the head, along the posterior margin with some spinulae, with 15-21 hairs. Mesothorax and metathorax the same colour as the head, the lateral sides, and dorsally in the middle with spinulae, the mesothorax dorsally with 14-25 hairs, all hairs brown, long, slender, with thin ends, 104-178 µ long. The legs about the same colour as the head, the tarsi slightly darker. The femora with spinulose imbrications, the tibiae with spinulae, the second tarsal segments with smooth imbrications. Tibia of the fore leg 630-1188 µ long, 1.47-2.38 times as long as the width of the head across the eyes. The hind tibia (fig. 383, 384, 390), with the dorsal side upwards, shows a bend in the middle of about 30 degrees forwards; the basal half on the posterior side with 17-22 transverse ridges, and that area without spinulae or hairs; hairs 92-157 µ long, the basal hair 188-163 µ long; four distal hairs are not sturdy, about 35 µ long. First tarsal segments with seven hairs (fig. 392). Second tarsal segment of the hind leg (fig. 393), length of dorsoapical hairs 31-43 µ, of the lateroapical hairs 43-57 µ, and of the empodial hairs 31-43 µ. Length of segments of the hind leg: femur plus trochanter 527-795 µ, tibia 850-1252 µ, 1.43-1.61 times as long as the femur, and 1.93-2.38 times as long as the width of the head across the eyes, first tarsal segment 42-53 µ, second tarsal segment 118-139 µ.

Abdomen.— Abdominal margins very pale brown, sometimes with some small ventral, slightly darker, sclerites; the tergum usually with two longitudinal bands, but the spinal area always paler. A groove between metanotum and abdominal tergite I, between tergites I and II, VII and VIII; sometimes the margins of the anterior segments with distinct segmental borders. Tergites I, II and usually also tergite III (fig. 385) with pointed spinulae in the middle, 2-4 µ long. The lateral sides of segments I-III dorsally with small pointed spinulae, of segments I-IV ventrally pointed and blunt spinulae; ventrally on segments III-IV (fig. 386) an extensive area with blunt spinulae, 4-10 µ long, 4-8 µ wide, lacking in the median area of the venter. A few imbrications with small spinulae observable, ventrally on anterior segments and anterior to the siphunculi. The marginal hairs rather regularly scattered, presumably ranging on each of segments I-V from 2-10, each tergite I-V with 8-20 hairs in 1-3 transverse rows; tergite VI presumably with 6-11 hairs; the marginal and dorsal hairs pale brown, with thin ends (fig. 391), on tergite IV the longest hair 190-208 µ, the shortest 49-86 µ; tergite VII pale brown, with 3-4 hairs anteriorly in the middle, and two hairs along the posterior margin, 141-189 µ long; laterally on tergite VII one hair at each side, 104-182 µ long. Tergite VIII (fig. 388) pale brown, a plate with spinulose

imbrications, 174-275 μ wide, 40-70 μ long, with two hairs, 127-179 μ long. Ventral hairs (fig. 391) slender, with thin ends, in the middle area 69-114 μ long. Siphunculi, the basal part pale brown, as dark as the head or slightly darker, gradually darker to the distal end, pale brown to dark brown, the extreme end again paler, straight or somewhat curved, 1.30-2.03 mm long, 0.65-0.80 times as long as the body, 3.0-4.1 times as long as the width of the head across the eyes; 118-174 μ wide at the base, 108-174 μ at the widest part, which is near the base; the siphunculi 9.0-15.0 times as long as the widest part; the base of the siphunculi (fig. 387a) with spinulose imbrications, without a reticulum; the imbrications distally decrease in number and become indistinct, and this part is almost smooth (fig. 387b); the distal 200-500 μ with separate spinulae which in the distal 100-200 μ are arranged in transverse rows in numbers of 15-20, the rows 6-10 μ from each other, the spinulae 12-15 μ long; hairs brown, numerous, the tips threadlike, 185-260 μ long, the first basal hair 69-150 μ long; the siphunculi gradually tapering from the base, without a constriction, to the narrowest distal part with a diameter of 71-112 μ, expanding from there to the flange, which is 1.07-1.29 times wider than the narrowest part. Cauda (fig. 389) pale brown or almost colourless, 155-202 μ wide, 67-108 μ long, with rounded posterior margin, without a process, with 6-8 hairs, 96-137 μ long, slender and with threadlike ends. Subanal plate very pale brown, with 15-23 hairs, 125-167 μ long. Subgenital plate transversely elliptical, e.g. 346 μ wide, and 228 μ long, with spinulose imbrications, anterior hairs 5-10, 78-159 μ long, posterior hairs 9-13, 110-184 μ long, small posterior hairs in the middle are lacking. Gonapophyses three, the lateral with 3-5 hairs, the middle with 6-10, 22-39 μ long.

Life specimens.— Alate viviparous ♀. (pl. 32). Head brown, prothorax and mesothorax as the head, but the lateral sides and at the base of the wings green; abdomen black, at the siphunculi green. Antennal segments I and II brown, the rest of the antennae black. Legs brown, paler than the head, but the end of the tibiae black. Eyes red, the ocular tubercles black. Siphunculi black. Pterostigma black. The wings extend backwards in the middle between the siphunculi extending obliquely backwards.

Macerated specimens (figs. 396-408; described from 14 specimens).— Body length 2.40-3.12 mm, 2.5-3.1 times as long as it is wide.

Head.— Head (fig. 396) brown, dorsally smooth, width of the head across the eyes 464-539 μ; dorsally anteriorly 6-7 hairs, two of which (in one specimen three) are sometimes located transversely between the paired ocelli, and posteriorly between the eyes 5-6 hairs; the hairs brown, with thin ends, in the middle 116-185 μ long. Antennae (fig. 400), segments I and II, the basal 30 μ of segment III and the processus terminalis brown, the rest of the antennae darker, black to brown; antennae with six segments, 2.30-2.78 mm long, 0.83-1.03 times as long as the body, and 4.75-5.37 times as long as the width of the head across the eyes; segments I and II dorsally and ventrally with some spinulose imbrications, segment II with a hair 123-182 μ long; segment III smooth, without imbrications, 1.01-1.45 mm long, 3.73-4.33 times as long as segment IV, 3.41-4.47 times as long as segment V, and 1.90-2.54 times as long as segment VI, with 17-26 (in one specimen 13-14) roundish rhinaria, lacking on the distal 35-350 μ of the segment, with 56-75 hairs, 236-280 μ long; segment IV ventrally with some imbrications, 251-334 μ long, 0.85-1.05 times as long as segment V, with 9-14

hairs, 180-248 μ long; segment V dorsally and ventrally with almost smooth imbrications, 295-330 μ long, 0.52-0.59 times as long as segment VI, with 8-13 hairs, 141-212 μ long; segment VI, 510-596 μ long, 1.59-1.75 times as long as the processus terminalis, the base with 4-11 hairs, 98-147 μ long; the processus terminalis 294-365 μ long, with four apical hairs, and 4-7 over its length. The eyes pale brown or colourless, the ocular tubercle brown or black, diameter of the ommatidia of the ocular tubercle 16-20 μ. Ultimate rostral segment (fig. 399) 240-290 μ long, 1.92-2.18 times as long as the second tarsal segment of the hind leg; length of the stylets 843-999 μ.

Thorax.— Prothorax the same colour as the head, dorsally, including the margins with 15-22 hairs. Mesothorax the same colour as the head, with pale brown hairs (fig. 406), 143-180 μ long. Medial vein of the fore wing (fig. 397) twice branched, the radial sector almost straight (Raychaudhuri, 1956: 80, 91), but with variation (fig. 401), and about as in *Greenidea rappardi, G. schimae, G. (Trichosiphum) fulva* and *Greenideoida elongata;* hind wing with two oblique veins. Legs, femora paler than the head, but distally the dorsal side as the head, distally with spinulae. The tibia of the fore leg 877-1062 μ long, 1.85-2.05 times as long as the width of the head across the eyes; tibiae of the fore and mid leg about as dark as the head, the basal part of the hind tibiae usually paler than the head; the distal part of the tibiae with spinulae of about 6-8 μ long, the base of the fore and mid leg smooth, of the hind leg (fig. 405) with 16-26 transverse ridges; the distal half of the tibiae ventrally with spines, 22-27 μ long, distally four normal hairs, not bristle-like; length of hairs of the hind tibia 106-185 μ long, the basal hair 129-208 μ long. First tarsal segments with seven hairs (fig. 402). Length of the dorsoapical hair of the second tarsal segment of the hind leg (fig. 403) 33-43 μ, the lateroapical hairs 46-58 μ, and the empodial hair 31-40 μ. Length of the segments of the hind leg: femur plus trochanter 661-846 μ, tibia 1.03-1.29 mm, 1.53-1.67 times as long as the femur, and 2.23-2.46 times as long as the width of the head across the eyes, first tarsal segment 40-48 μ, second tarsal segment 125-141 μ.

Abdomen (fig. 404).— Abdominal segment I a brown transverse band, the marginal sclerites fused with the tergite. A colourless area between abdominal segments I and II with brown muscular plates. Marginal sclerites of segments II-VI fused with tergites II-VII with a small transverse pale area between tergites II and III, VI and VII and around the siphunculi. On each marginal sclerite of segment I two hairs, of segment II, 4-5, and of segments III-V, 5-10, and on segment VI ventrally located about six; the dorsum smooth, on tergite I, 4-6 hairs, segment II, 5-9; segment III, 10-15; segment IV, 11-16; segment V, 11-19; segment VI, 5-8; on tergite IV long hairs 94-135 μ long, short hairs 49-92 μ long; ventral side with an area with spinulae (fig. 407) as in apterae, and hairs are lacking in this area; ventral hairs medial and posterior to the area with spinulae, in the middle 69-98 μ long; tergite VII (fig. 406) with 3-4 hairs anteriorly in the middle and two along the posterior margin, 71-110 μ long, and a lateral hair at each side 50-85 μ long. Tergite VIII pale brown or brown, a transversely elliptical plate, 220-318 μ wide, 53-79 μ long, with spinulose imbrications, with two hairs (fig. 406) in the middle along the posterior margin, 22-41 μ from each other, 53-139 μ long. Siphunculi (figs. 404, 408) black, the distal end paler, cylindrical with the distal 100-200 μ sometimes slightly curved outwards, 2.47-3.30 mm long, 0.95-1.18 times as long as the body, 5.1-6.4 times as long as the width of the head across the eyes; 122-180 μ wide at the base, 69-92 μ wide at the cylindrical part just distal to the

base, 33.7-40.2 times as long as this last diameter, the basal 100-200 μ with spinulose imbrications without a network, distal to this area the siphunculi are smooth or provided with a pattern of irregular dots and dashes; in the distal 200-300 μ spinulae are densely distributed in transverse rows, the spinulae 13-18 μ long; siphunculi in the distal 100-150 μ gradually tapering to the narrowest distal part with a diameter of 69-106 μ, expanding from there to the flange, which is 1.06-1.30 times wider than the narrowest part; with numerous brown hairs, with colourless threadlike ends, 250-335 μ long. Cauda (fig. 398) pale brown, broadly rounded or triangular with rounded tip, 159-236 μ wide, 76-106 μ long, without a median process, with 6-7 hairs, 106-155 μ long. Subanal plate pale brown, with 19-22 hairs, 125-167 μ long. Subgenital plate e.g. 358 μ wide, 228 μ long, with spinulose imbrications, anterior hairs 6-10, 98-133 μ long, posterior hairs 10-14, 131-196 μ long, small hairs posteriorly are lacking in the middle. Gonapophyses three, the lateral with 4-6 hairs, the middle with 8-11, 20-37 μ long.

First stage larva of apterous viviparous ♀ (fig. 409; description of one specimen).— Body length 967 μ (755-1010 μ in six specimens), 2.6 times as long as it is wide. Head across the eyes 257 μ, with four anterior hairs, and in a transverse row between the eyes four anterior and two posterior hairs, 125 μ long. Antennae with five segments, 776 μ long; segment III, 255 μ long, 1.96 times as long as segment IV, and 0.83 times as long as segment V, length of hair 151 μ; segment IV, 130 μ long, 0.42 times as long as segment V; segment V, 306 μ long, 1.56 times as long as the processus terminalis, length of hair on the base of the segment 170 μ. The ultimate rostral segment 188 μ long. Tibia of the fore leg 257 μ long, 1.00 times as long as the width of the head across the eyes. The hind tibia with about 25 transverse ridges with spinulae, and colourless spinulae (fig. 410) are observable on the ventral side of the abdomen. Abdominal segments I-VI with one marginal hair at each side and four dorsal hairs; the hairs with threadlike ends, on tergite IV, 127 μ long, on tergite VI, 143 μ long. Siphunculi pale brown, on abdominal segment VI, nipple-shaped with rounded tips, 121 μ long and 53 μ wide at the base, almost smooth, without spinulae or hairs. Segment VII with a marginal tubercle, protruding backwards, semicircular in view, 16 μ long, 33 μ wide at the base, smooth, provided at the tip with a hair, 161 μ long; in the middle two hairs, 161 μ long, 80 μ from each other. Tergite VIII two tubercles, almost the same shape as the lateral tubercles of segment VII, but sometimes without an incision in the middle, each 21 μ long and 40 μ wide at the base, with a hair on top, 150 μ long. The cauda with a broadly rounded posterior margin, without a process, with two hairs, 43 μ long.

Host plant records.— The specimens were collected in Java: *Castanopsis acuminatissima* (Bl.) A. DC. (syn. *Quercus fagiformis),* Bogor, 12.xii.1931, C. Franssen, LUW, Wageningen; *Castanopsis acuminatissima* (Bl.) A. DC., Bogor Keb. R., 24.v.1975; *Castanopsis javanica* (Bl.) DC., Bogor Keb. R., 9.vi.1975; *Quercus glauca* Thunb., Bogor Keb. R., 3.ix.1976; *Castanopsis cuspidata* Schottky, Bogor Keb. R., 3.ix.1976; *Castanopsis acuminatissima* (Bl.) A. DC., Bogor Keb. R., 3.ix.1976; *Castanopsis javanica* (Bl.) DC., Bogor Keb. R., 31.x.1976; *Castanopsis acuminatissima* (Bl.) A. DC., Dieng (2000 m), 2.i.1977; *Castanopsis javanica* (Bl.) DC., Cibodas (1400 m), 30.i.1977; *Castanopsis cuspidata* Schottky, Bogor Keb. R., 6.ii.1977; 21.xi.1977, 25.xi.1977; *Castanopsis acuminatissima* (Bl.) A. DC., Bogor Keb. R., 6.ii.1977; *Castanopsis javanica* (Bl.) DC., Bogor Keb. R.,

2.ix.1977; *Castanopsis javanica* (Bl.) DC., Cibodas (1400 m), 18.xii.1977; *Castanea crenata* Sieb. & Zucc., Cibodas (1400 m), 18.xii.1977, 26.ii.1978; the last 16 D. Noordam, all RMNH, Leiden.

The aphids live on the lower side of young leaves and on developing shoots. Sometimes alatae are present on the lower side of young leaves with small larvae, but without adult apterae.

Alatae or larvae of alatae were present in all collections mentioned here, except in that of 9.vi.1975 and 30.i.1977.

Etymology.— "Tenuicorpus", with slender body.

Subgenus *Metatrichosiphon* Raychaudhuri, 1956
(figs. 411-460)

Metatrichosiphon Raychaudhuri 1956: 79. (Type species: *Trichosiphum nigrofasciatum* Maki, 1916).

Life specimens (two species).— Apterous viviparous ♀. In life yellowish or brownish. Macerated specimens: Body 1.11-2.58 mm long, 1.8-2.3 times as long as it is wide. The head colourless or pale brown, the frons straight or with lateral prominences and a median prominence, protruding up to 6-18 µ; width of the head across the eyes 295-472 µ, the frons dorsally with 7-10 hairs, between the eyes six hairs, 78-177 µ long. Antennae with five or six segments, 614-1620 µ long, 0.45-0.74 times as long as the body, 2.1-3.2 times as long as the width of the head across the eyes; the last segment 240-484 µ long, the base of the segment with three hairs. Eyes with numerous ommatidia, ocular tubercle with three ommatidia. Ultimate rostral segment 143-229 µ long, 1.41-1.90 times as long as the second tarsal segment of the hind leg; length of stylets 570-936 µ. The prothorax fused with the head, dorsally with 13-26 hairs. Tibia of the fore leg 244-606 µ long, 0.83-1.36 times as long as the width of the head across the eyes. The hind tibia over 0.9 of its length with 27-100 (in one tiny specimen 20) transverse ridges, and that area without spinulae or hairs. First tarsal segments with seven hairs; length of the dorsoapical hair of the second tarsal segment of the hind leg 12-23 µ, of the empodial hair 24-31 µ. Length of hairs on tergite IV, 96-167 µ, and ventrally in the middle of the abdomen 26-48 µ. Ventrally on segments II-VI an extensive area with spinulae, 2-8 µ long. Siphunculi 291-967 µ long, 0.25-0.47 times as long as the body, 1.0-2.1 times as long as the width of the head across the eyes. Cauda without a median process.

Alate viviparous ♀.— Macerated specimens: body length 1.45-2.21 mm, 2.1-3.2 times as long as it is wide. Head width across the eyes 389-449 µ. Antennae with six segments, 1.63-1.88 mm long, 0.86-1.18 times as long as the body, and 3.8-4.2 times as long as the width of the head across the eyes, segment III with 8-18 rhinaria; segment III, 1.00-1.54 times as long as segment VI, the processus terminalis 362-433 µ long; longest hair of segment IV, 127-145 µ. Ultimate rostral segment 167-188 µ long, 1.54-1.59 times as long as the second tarsal segment of the hind leg; stylets 640-719 µ long. Medial vein of the fore wing twice branched, hind wing with two oblique veins. First tarsal segments with seven hairs. Length of the basal hair of the hind tibia 31-80 µ, the hind tibia with 65-80 transverse ridges. Length of the dorsoapical hair of the second tarsal segment of the hind leg 19-23 µ, and of the lateroapical hair 20-28 µ. Ven-

trally an extensive area of the abdomen with spinulae. Hairs on tergite IV, 56-90 μ long, ventrally on the middle of the abdomen 47-61 μ long. Siphunculi 834-1243 μ long, 0.48-0.71 times as long as the body, and 2.1-2.7 times as long as the width of the head across the eyes, 11.6-16.9 times as long as the diameter of the cylindrical part just distal to the base, with transverse imbrications, sometimes showing a network, most distinct at the base of the siphunculi. Cauda without a median process.

First stage larva of apterous viviparous ♀ (one species).— Body length 622-920 μ. Antennae with four segments, length of hair on segment III, 53 μ, on the base of the last segment 51 μ. The ultimate rostral segment 133 μ long. Siphunculi nipple-shaped, 84 μ long, without spinulae or hairs. Segment VII with a marginal tubercle, 41 μ long. Tergite VIII with two nipple-shaped tubercles, each 27 μ long.

Etymology.— "Metatrichosiphon", related to or associated with *Trichosiphon*, Greek ending "on" with the Latinized transliteration "um", Trichosiphum.

Mollitrichosiphum (Metatrichosiphon) elongatum (Takahashi, 1940)
(figs. 411-430)

Eutrichosiphum elongatum Takahashi, 1940: 386.
Eutrichosiphum (Ditrichosiphon) elongatum; Raychaudhuri, 1956: 21; Eastop & Hille Ris Lambers 1976: 198.
Paratrichosiphum javanicum Raychaudhuri, 1956: 93.
Mollitrichosiphum javanicum; Raychaudhuri & Chatterjee, 1980: 327.

Van der Goot collected this aphid and described it in his manuscript (unpublished). Some of the material has been preserved but so much bleached that in the next description most characteristics are taken from material collected on Formosa by Takahashi.

Life specimens.— Apterous viviparous ♀. Body yellowish or light yellowish green with scattered dark greenish patches on the dorsum. Eyes red. Antennal segment III pale brown, the distal segments black. Siphunculi pale yellowish, with the apex brownish. Cauda pale yellowish green (van der Goot unpublished).

Macerated specimens (figs. 411-424; described from 7-9 specimens, six from these Formosa 6.viii.1939).— Body length 1.63-2.58 mm, 2.0-2.3 times as long as it is wide.

Head.— Head colourless, with lateral prominences and a median prominence, protruding 12-18 μ; width of the head across the eyes 377-449 μ, dorsally anteriorly 8-9 hairs; between the eyes 6-10 hairs (fig. 420), colourless, with thin ends, 118-177 μ long, but sometimes some of the hairs much smaller; between the ocular tubercle in the median area two hairs, with thin ends. Antennae (fig. 419) in specimens from Formosa with five segments, in specimens from Java with six or sometimes with five segments, colourless, but the two distal segments with some pale brown. Length of the antennae 1.06-1.62 mm, 0.45-0.74 times as long as the body, 2.7-3.1 times as long as the width of the head across the eyes; segments I and II smooth, segment I with six hairs, segment II with four, of segment II, 63-114 μ long; in antennae with five segments, segment III ventrally with smooth imbrications, 464-650 μ long, 3.0-3.4 times as long as segment IV, 1.42-1.68 times as long as segment V, and 2.02-3.51 times as long as the processus terminalis, with 15-20 hairs of different lengths, the longest

141-173 μ; segment IV dorsally and ventrally with smooth imbrications, 149-202 μ long, 0.46-0.53 times as long as segment V, with 3-4 hairs, 121-169 μ long; segment V with smooth imbrications, 326-400 μ long, 1.82-2.10 times as long as the processus terminalis, the base with 3-4 hairs, 65-96 μ long; the processus terminalis 172-208 μ long, with four apical hairs and 2-3 over its length. In antennae with six segments, segment III, 437-650 μ long, 3.6-4.5 times as long as segment IV, 2.9-3.6 times as long as segment V, and 1.30-1.53 times as long as segment VI, with 19 hairs, 169 μ long; segment IV dorsally and ventrally with smooth imbrications, 112-190 μ long, 0.75-0.85 times as long as segment V, with four hairs, 141 μ long; segment V with smooth imbrications, 149-160 μ long, 0.42-0.44 times as long as segment VI, with five hairs, 161 μ long; segment VI with smooth imbrications, 336-380 μ long, 1.55-1.58 times as long as the processus terminalis, the base with three hairs, 135 μ long; the processus terminalis 216-240 μ long, with four apical hairs, and three over its length. The eyes and ocular tubercles colourless, diameter of the ommatidia of the ocular tubercle 20 μ. Ultimate rostral segment (fig. 418) 190-229 μ long, 1.63-1.90 times as long as the second tarsal segment of the hind leg; stylets 651-936 μ long.

Thorax.— Prothorax fused with the head, along the posterior margin with a few spinulae, with 14-17 hairs. Mesothorax and metathorax the lateral sides and the anterior margins with spinulae; the mesothorax dorsally with 21-25 hairs, slender with sharp tips or thin ends, 137-167 μ long. The femora with spinulose imbrications, the tibiae distally with a few imbrications, but transverse ridges on the hind tibiae, see below; the second tarsal segments with smooth imbrications; tibia of the fore leg 480-606 μ long, 1.21-1.36 times as long as the width of the head across the eyes. The tibia of the hind leg (figs. 414-416) over 0.9 of its length with 60-92 transverse ridges, the distal 0.1 with a few almost smooth imbrications; hairs 41-53 μ long; distal hairs are not sturdy, 22-23 μ long. First tarsal segments with seven hairs (fig. 423). Second tarsal segment of the hind leg (fig. 424), length of dorsoapical hairs, 16-20 μ, of the lateroapical hairs 41-47 μ, and of the empodial hairs 25-31 μ. Length of segments of the hind leg: femur plus trochanter 515-645 μ, tibia 708-936 μ, 1.37-1.47 times as long as the femur, and 1.88-2.08 times as long as the width of the head across the eyes, first tarsal segment 36-47 μ, second tarsal segment 100-129 μ.

Abdomen.— Abdomen colourless. A groove between metanotum and tergite I, between tergites I and II, VII and VIII, but the lateral sides of the abdomen without segmental borders. Spinulae dorsally on the anterior borders of segments I-III, and sometimes IV and V, 2-6 μ long (fig. 412); ventrally spinulae are present on the lateral sides of segments I-VII; ventrally on segments II-VI (fig. 413) an extensive area with sharp or blunt spinulae, in the middle of the area 4-6 μ long, also present in the median area of the venter. The marginal hairs ranging on each of segments I-V from 3-10, each tergite I-V with 8-20 hairs in 1-3 transverse rows; tergite VI presumably with 8-10 hairs; the marginal and dorsal hairs with sharp tips (fig. 420) and sometimes with two teeth, on tergite IV the longest hair 137-167 μ, the shortest 59-110 μ; tergite VII (fig. 417) with, along the posterior margin, two hairs in the middle, 150-186 μ long, and a lateral hair at each side, 63-92 μ long. Tergite VIII (fig. 417) a plate with spinulose imbrications, with two hairs, 56-106 μ long. Ventral hairs slender, with thin ends, in the middle area 33-47 μ long. Siphunculi colourless or pale brown, 637-900 μ long, 0.29-0.42 times as long as the body, 1.62-2.00 times as long as the

width of the head across the eyes; 41-86 μ wide at the base, 98-166 μ at the widest part, which is about in the middle; the siphunculi 4.3-7.0 times as long as the widest part; the basal 50 μ with spinulae and sometimes with a few imbrications, without a reticulum (fig. 421); over its whole length with spinulae, in the distal 100 μ arranged in transverse rows, the spinulae 8-10 μ long; hairs colourless, with thin ends, 186-216 μ long, the first basal hair 88-143 μ long; the siphunculi gradually tapering from the middle, without constriction, to the narrowest distal part, with a diameter of 33-51 μ, expanding from there to the flange, which is 1.14-1.17 times wider than the narrowest part. Cauda (fig.422) 176-225 μ wide, 69-84 μ long, with a rounded posterior margin, without a process, with 8-9 hairs, 72-112 μ long, slender and with threadlike ends. Subanal plate with 13-16 hairs, 92-123 μ long. Subgenital plate with 2-3 anterior hairs, 63-80 μ long, posterior hairs 7-11, 96-137 μ long. Gonapophyses three, the lateral with 2-3 hairs, the middle with 4-5, 14-20 μ long.

Life specimens.— Alate viviparous ♀. Head greyish, thorax dull green, abdomen greenish black. Eyes red. Antennae black. Legs greenish brown but the tarsi and basal half of the tibiae black. Cauda greenish. Pterostigma greyish black (van der Goot unpublished).

Macerated specimens (figs. 425-430; described from one bleached and damaged specimen, and van der Goot unpublished).— Body length 1.45-1.82 mm, 2.8-3.2 times as long as it is wide.

Head (fig. 425).— Dorsally smooth, width of the head across the eyes 389 μ; dorsally anteriorly 10 hairs, between the paired ocelli four hairs in a transverse row, and posteriorly between the eyes six hairs; the hairs colourless, with thin ends, in the middle 139 μ long, tiny hairs are lacking. Antennae with six segments, 1.71 mm long, 1.18 times as long as the body, segment III, 3.7 times as long as segment IV, 3.4 times as long as segment V, and 1.54 times as long as segment VI, with eight rhinaria on the basal half; segment IV, 0.91 times as long as segment V; segment V, 0.46 times as long as segment VI; segment VI, 1.60 times as long as the processus terminalis. The eyes colourless, the ocular tubercle pale brown, diameter of the ommatidia of the ocular tubercle 20 μ. Ultimate rostral segment (fig. 426) 188 μ long; length of the stylets 621 μ.

Thorax.— Length of hair on the mesonotum 100 μ. Medial vein of the fore wing twice branched, hind wing with two oblique veins. The tibiae near the distal end with only a few spinulose imbrications; the distal half of the tibiae ventrally with spines, 14 μ long; the tibiae of the hind leg over 0.9 of its length (fig. 429) with 75 transverse ridges, and on that area hairs are lacking; hairs 84 μ long, the basal hairs 12 and 31 μ long, four distal hairs almost normal, 23 μ long. First tarsal segments with seven hairs. Length of the dorsoapical hair of the second tarsal segment of presumably the mid leg (fig. 430) 20 μ long, the lateroapical hairs 22 μ long, and the empodial hair 23 μ long. Length of the femur plus trochanter of the hind leg 590 μ, tibia 881 μ, 1.49 times as long as the femur, and 2.26 times as long as the width of the head across the eyes.

Abdomen.— On tergite IV (fig. 428) long hair 71 μ long. The ventral side also in the middle area with spinulae, 2-4 μ long. Tergite VII with two hairs along the posterior margin (fig. 428), 80 μ long. Ventral hairs (fig. 428) slender, 35-50 μ long. Siphunculi (fig. 427) cylindrical, 834-1030 μ long, 0.46-0.71 times as long as the body, 2.1

times as long as the width of the head across the eyes; 88 µ wide at the base, 72 µ wide at the narrowest part near the base, the siphunculi 11.6 times as long as the width of the narrowest part, with transverse imbrications, showing a network in the basal part, the distal 100 µ densely covered with spinulae in transverse rows.

Host plant records.— The specimens were collected in Java on *Quercus* spec., Mt. Dieng (2000-2570 m), 20.ix.1916, P. v.d. Goot; *Quercus* spec. Mt. Merbaboe (1800 m), vi.1916, P. v.d. Goot; *Quercus* spec., Mt. Tjikoray (2500 m), 1916, P. v.d. Goot, BMNH, London, and LUW, Wageningen, or the material is lost.

The aphids live on the lower side of leaves.

Alatae, one alata was collected towards the middle of June 1916, van der Goot (unpublished).

Etymology.— " Elongatum", slender, long in proportion to width.

Mollitrichosiphum (Metatrichosiphon) syzygii spec. nov.
(figs. 431-460)

Types.— Holotype (apterous viviparous ♀, from *Syzygium antisepticum* (Bl.) Merr. & Perry, Cibodas (1400 m), Java, 8.iv.1977, D. Noordam, no. 786-1-2. Paratypes 312 apterous viviparous ♀♀ and 16 alate viviparous ♀♀, the same data as holotype nos. 786-1 and 786-2 to 786-8, and from the same plant, the same locality and same collector but the dates and numbers are: 15.ii.1976, no. 491-1, 491-2; 11.vii.1976, no. 687; 17.x.1976, no. 786; 30.i.1977, no. 921, 922-1, 923; 8.iv.1977, no. 953, 954-1, 954-2; 27.xi.1977, no. 1146, 1147; 26.ii.1978, no. 1273. All D. Noordam, RMNH, Leiden.

Life specimens.— Apterous viviparous ♀. (pl. 19). Head and thorax pale brown. In large specimens with long slender siphunculi the margins of the abdomen and the posterior part of the abdomen pale brown as the head, and on the middle of the abdomen a shiny brown patch, which is lacking sometimes, the siphunculi usually darker than the lateral sides of the abdomen, grey or brown. In small specimens with short thick siphunculi, the lateral sides are only slightly paler than the shiny dark brown or brownish black middle area of the abdomen, the siphunculi are brown or black, the end and sometimes the base paler. The large and small specimens are from different populations but sometimes mixed. Segments I-III of the antennae the same colour as the head, segment V and the distal part of segment IV darker. Eyes red, the ocular tubercles black. Legs the same colour as the head. Cauda pale brown. Larvae white, later dirty yellow or pale green with grey spots, with a hair in the centre of each spot.

Macerated specimens (figs. 431-446; described from 16 specimens).— Body length 1.10-2.30 mm, 1.8-2.0 times as long as it is wide.

Head.— Head pale brown, dorsally smooth, a median frontal prominence and the lateral prominences protruding 0-6 µ; head across the eyes 295-472 µ, dorsally anteriorly one hair at each side and 5-7 in the middle; between the eyes 8-10 hairs (fig. 437), all sturdy, pale brown, with sharp tips, 78-150 µ long; Between the ocular tubercles 0-4 sturdy hairs in a transverse row, tiny hairs are lacking. Antennae (fig. 443) with five or six segments; in antennae with six segments, segments I-IV about as dark as the head, the distal part of segment V, and segment VI somewhat darker than the head; in antennae with five segments, the distal part of segment IV, and segment

V usually darker than the head, the base of segment III paler. Length of the antennae 614-1470 µ, 0.55-0.70 times as long as the body, 2.1-3.2 times as long as the width of the head across the eyes; segments I and II smooth, segment I with 5-7 hairs, segment II with 3-5 hairs, on segment II, 53-114 µ long; in antennae with five segments, segment III ventrally with smooth imbrications, 192-600 µ long, 2.1-2.9 times as long as segment IV, 0.80-1.24 times as long as segment V, and 1.10-1.90 times as long as the processus terminalis, with 9-19 hairs of different lengths, the longest 80-135 µ; segment IV dorsally and ventrally with smooth imbrications, 88-220 µ long, 0.37-0.43 times as long as segment V, with 3-6 hairs, 76-139 µ long; segment V with smooth imbrications, 240-484 µ long, 1.47-1.61 times as long as the processus terminalis, the base with 2-5 hairs, 59-133 µ long; the processus terminalis 149-316 µ long, with four apical hairs and 2-5 over its length. In antennae with six segments, segment III, 306-606 µ long, 2.66-3.67 times as long as segment IV, 1.9-3.5 times as long as segment V, and 0.74-1.26 times as long as segment VI, with 12-19 hairs, 114-141 µ long; segment IV dorsally and ventrally with smooth imbrications, 130-165 µ long, 0.70-0.95 times as long as segment V, with 3-7 hairs, 118-139 µ long; segment V with smooth imbrications, 169-196 µ long, 0.36-0.41 times as long as segment VI, with 4-7 hairs, 114-133 µ long; segments VI with smooth imbrications, 433-480 µ long, 1.44-1.49 times as long as the processus terminalis, the base with three hairs, 90-114 µ long; the processus terminalis 149-332 µ long, with four apical hairs, and 4-5 over its length. The eyes almost colourless, the ocular tubercle darker than the head, diameter of the ommatidia of the ocular tubercle 16-20 µ. Ultimate rostral segment (fig. 438) 143-186 µ long, 1.41-1.89 times as long as the second tarsal segment of the hind leg; stylets 570-755 µ long.

Thorax.— Prothorax the same colour as the head, fused with the head, along the posterior margin with a few spinulae, with 13-26 hairs. Mesothorax and metathorax the same colour as the head, the lateral sides, mainly ventrally, and the anterior margins with spinulae; the mesothorax dorsally with 14-28 hairs, all hairs brown, sturdy with sharp tips, 63-131 µ long. The legs about the same colour as the head, the distal part of the femora and the basal part of the tibiae in small specimens sometimes darker. The femora with spinulose imbrications, the tibiae (fig. 444) almost without imbrications and spinulae, but transverse ridges on the hind tibiae, see below; the second tarsal segments with smooth imbrications. Tibia of the fore leg 244-543 µ long, 0.83-1.17 times as long as the width of the head across the eyes. The hind tibia (fig. 444) shows, with the dorsal side upwards, a bend over its whole length of about 20 degrees forwards; over 0.9 of its length are 20-100 transverse ridges (figs. 432, 433), each with 1-10 blunt spinulae; the distal 0.1 with a few spinulose imbrications; hairs 49-78 µ long, the basal hair 35-61 µ long; four distal hairs are not sturdy, 18-25 µ long. First tarsal segments with seven hairs (fig. 434). Second tarsal segment of the hind leg (fig. 446), length of the dorsoapical hairs 14-23 µ, of the lateroapical hairs 34-49 µ, and of the empodial hairs 24-31 µ. Length of segments of the hind leg: femur plus trochanter 259-567 µ, tibia 348-748 µ, 1.24-1.35 times as long as the femur, and 1.16-1.61 times as long as the width of the head across the eyes, first tarsal segment 32-45 µ, second tarsal segment 80-125 µ.

Abdomen.— With large specimens with long siphunculi (fig. 431), margins and part of the dorsal shield pale brown, and the central shield separated from the lateral

sides by a very pale brown curved area, resulting from a less sclerotic area at the ventral side between the margins and the central shield, proceeding distally up to the spiracles of the fourth segment; the dorsal central shield in the middle with a brown patch. A groove between metanotum and abdominal tergite I, between tergites I and II, VII and VIII, but the lateral sides of the abdomen without segmental borders. Spinulae dorsally on the anterior borders of segments I, II, and sometimes III, 2-5 μ long (fig. 435); ventrally spinulae are present on the lateral sides of segments I-V; ventrally on segments II-VI (fig. 436) an extensive area with sharp or blunt spinulae, in the middle of the area 4-8 μ long, 3-6 μ wide, also present in the median area of the venter. On segments II and VI ventrally spinulose imbrications are also present. The marginal hairs rather regularly scattered, presumably ranging on each of segments I-V from 2-10, each tergite I-V with 8-20 hairs in 1-3 transverse rows; tergite VI presumably with 6-8 hairs; the marginal and dorsal hairs pale brown or brown, with sharp tips (fig. 437), on tergite IV the longest hair 96-161 μ, the shortest 35-69 μ; tergite VII pale brown, with 1-5 hairs anteriorly, and two hairs along the posterior margin, 85-208 μ long; laterally on tergite VII one hair at each side, 28-72 μ long. Tergite VIII (fig. 439), pale brown or brown, a plate with spinulose imbrications, 198-350 μ wide and 40-70 μ long, frequently standing upwards with the two hairs pointing forward, 67-114 μ long. Ventral hairs (fig. 437) slender, with thin ends, in the middle area 20-55 μ long. Siphunculi (fig.431) in populations with large specimens pale brown or brown, in populations with small specimens (fig. 440) brown or black, the distal 0.2 part and sometimes also at the base slightly paler, almost straight (fig. 431) or siphunculi with a strong convex inner side and a concave outer side (fig. 440), 291-967 μ long, 0.25-0.47 times as long as the body, and 0.97-2.08 times as long as the width of the head across the eyes; 45-106 μ wide at the base, 63-141 μ at the widest part, which is about in the middle; the siphunculi 4.1-8.1 times as long as the widest part; spinulae are present over the whole length of the siphunculi, the basal 50 μ sometimes with imbrications, but without a reticulum (fig. 441); the distal 100 μ with spinulae arranged in transverse rows in numbers of 15-20, the rows 4-8 μ from each other, the spinulae 8-12 μ long; hairs pale brown or brown, the tips sharp, 112-192 μ long, the first basal hair 23-80 μ long; the siphunculi gradually tapering from the middle without a constriction to the narrowest distal part, with a diameter of 32-67 μ, expanding from there to the flange, which is 1.03-1.25 times wider than the narrowest part. Cauda (fig. 442) pale brown or brown, 110-200 μ wide, 33-76 μ long, with a rounded posterior margin, without a process, with 7-9 hairs, 57-104 μ long, slender and with threadlike ends. Subanal plate pale brown, with 12-18 hairs, 68-144 μ long. Subgenital plate transversely elliptical, e.g. 338 μ wide, and 141 μ long, with spinulose imbrications and some sturdy spinulae posteriorly along the lateral sides, anterior hairs 2-7, 43-98 μ long, posterior hairs 4-9, 84-120 μ long, small posterior hairs in the middle area are lacking. Gonapophyses three, the lateral with 2-3 hairs, the middle with 4-6, 8-17 μ long.

Life specimens.— Alate viviparous ♀. Head and mesothorax brown, prothorax and abdomen dark grey or black, but the anterior abdominal segments green; sometimes the abdomen dark green; between the siphunculi grey with anterior to it a green band from one siphunculus to the other. Antennae brown to black. Legs brown. Eyes red, the ocular tubercle black. Pterostigma dark brownish grey.

Macerated specimens (figs. 447-459; described from five specimens).— Body length 1.70-2.21 mm, 2.1-2.6 times as long as it is wide.

Head.— Head (fig. 448) brown, dorsally smooth, width of the head across the eyes 410-449 µ; dorsally anteriorly 6-8 hairs, between the paired ocelli 3-4 hairs in a transverse row, and posteriorly between the eyes 5-6 hairs; the hairs pale brown, with sharp points or thin ends, in the middle 88-151 µ long, tiny hairs are lacking. Antennae (fig. 451) dark brown, the basal 30 µ of segment III and the processus terminalis paler; antennae with six segments, 1.63-1.88 mm long, 0.86-0.99 times as long as the body, and 3.84-4.18 times as long as the width of the head across the eyes; segments I and II dorsally and ventrally with a few spinulae and spinulose imbrications, segment II with a hair 57-65 µ long; segment III dorsally and ventrally with some smooth imbrications, 539-708 µ long, 2.57-3.22 times as long as segment IV, 2.38-2.78 times as long as segment V, and 1.00-1.12 times as long as segment VI, with 13-18 transversely elliptical or roundish rhinaria over the whole length of the segment, with 15-19 hairs, 147-173 µ long; segment IV dorsally and ventrally with smooth imbrications, 195-220 µ long, 0.84-0.93 times as long as segment V, with 1-4 rhinaria and 4-5 hairs, 127-145 µ long; segment V with smooth imbrications, 226-255 µ long, 0.40-0.43 times as long as segment VI, with 4-7 hairs, 127-147 µ long; segment VI, 540-633 µ long, 1.46-1.53 times as long as the processus terminalis, the base with three hairs, 98-104 µ long; the processus terminalis 362-433 µ long, with four apical hairs, and 3-5 over its length. The eyes pale brown or colourless, the ocular tubercle brown, diameter of the ommatidia of the ocular tubercle 20 µ. Ultimate rostral segment (fig. 447) 167-180 µ long, 1.54-1.59 times as long as the second tarsal segment of the hind leg; length of the stylets 640-719 µ.

Thorax.— Prothorax the same colour as the head, dorsally, including the margins, with 12-19 hairs. The mesothorax the same colour as the head or darker, with pale brown hairs (fig. 457), 104-139 µ long. Medial vein of the fore wing (fig. 449) twice branched, the radial sector (fig. 450) slightly more curved than in *M. tenuicorpus*; hind wing with two oblique veins. Legs, femora the same colour as the head, the distal end dorsally slightly darker, with imbrications, smooth or with tiny spinulae. The tibia of the fore leg 685-803 µ long, 1.56-1.77 times as long as the width of the head across the eyes; tibiae as dark as the head, the middle part slightly paler, the tibiae near the distal end with only a few spinulose imbrications; the distal half of the tibiae ventrally with spines, 18-20 µ long; the tibiae of the hind leg over 0.9 of its length (fig. 452) with 65-80 transverse ridges, each with 1-10 tiny blunt spinulae; the hind tibia, with the dorsal side upwards, shows a bend in the middle of about 25 degrees forwards, hairs 90-102 µ long, the basal hair 72-80 µ, four distal hairs somewhat sturdy or normal, 22-23 µ long. First tarsal segments with seven hairs (fig. 456). Length of the dorsoapical hair of the second tarsal segment of the hind leg (fig. 458) 19-23 µ long, the lateroapical hairs 20-28 µ, and the empodial hair 24-27 µ. Length of the segments of the hind leg: femur plus trochanter 567-661 µ, tibia 812-947 µ, 1.37-1.47 times as long as the femur, and 1.84-2.03 times as long as the width of the head across the eyes, first tarsal segment 35-38 µ, second tarsal segment 106-114 µ.

Abdomen. (fig. 453).— Abdominal segment I a pale brown transverse narrow band, marginal sclerites II-VI fused with tergites II-VII, brown with some paler brown areas. On each marginal sclerite of segment I three hairs, on segment II, 4-5,

and on segments III-V, 5-8; the dorsum smooth, on tergite I, 3-6 hairs, segment II, 10-12; segment III, 13-16; segment IV, 16-18; segment V, 12-14; segment VI, six; on tergite IV long hairs (fig. 457) 56-90 µ, short hairs 30-37 µ. The ventral side marginally with spinulae (fig. 454), but also in the median area (fig. 455) sharp or blunt spinulae, in the middle area 4-6 µ long; in the area between the siphunculi imbrications with small spinulae. Tergite VII brown, with 3-4 hairs anteriorly in the middle, and two hairs along the posterior margin, 72-108 µ long, laterally one hair at each side, 31-45 µ long. Tergite VIII brown, a plate with spinulose imbrications, 271-314 µ wide, 46-59 µ long, with two hairs, 98-118 µ long. Ventral hairs (fig. 457) slender, with thin ends, in the middle area 47-61 µ long. Siphunculi brown, darker than the abdomen, but the distal 200 µ paler, straight, cylindrical or slightly widening in the distal half, 1.04-1.24 mm long, 0.48-0.63 times as long as the body, 2.5-2.7 times as long as the width of the head across the eyes; 82-108 µ wide at the base, 69-82 µ wide at the narrowest part near the base, the siphunculi 13.1-16.9 times as long as the width at the narrowest part, with transverse imbrications, sometimes showing a network, most distinct at the base of the siphunculi; the imbrications with some tiny spinulae; the distal 100-200 µ densely covered with spinulae in transverse rows, the spinulae 10-12 µ long; siphunculi in the distal 100-150 µ gradually tapering to the narrowest distal part with a diameter of 45-54 µ, expanding from there to the flange, which is 1.09-1.28 times wider than the narrowest part; with numerous brown hairs, with colourless thread-like ends, 224-267 µ long. Cauda (fig. 459) pale brown, broadly rounded, 157-178 µ wide, 50-61 µ long, without a median process, with 7-8 hairs, 92-108 µ long. Subanal plate pale brown, with 14-16 hairs, 92-120 µ long. Subgenital plate e.g. 287 µ wide, 182 µ long, with spinulose imbrications, anterior hairs four, 78-82 µ long, posterior hairs 7-9, 100-133 µ long, and the smallest hairs in the middle 35-59 µ long. Gonapophyses three, the lateral with 2-4 hairs, the middle with 4-5, 10-20 µ long.

First stage larva of apterous viviparous ♀ (fig. 460; description of one specimen).— Body length 920 µ (622-920 µ in 18 specimens), 2.4 times as long as it is wide. Head across the eyes 275 µ, with four anterior hairs, and in a transverse row between the eyes four anterior and two posterior hairs, 80 µ long. Antennae with four segments, 392 µ long, segment III, 136 µ long, 0.72 times as long as segment IV; segment IV, 189 µ long, 1.56 times as long as the processus terminalis. The ultimate rostral segment 133 µ long. Tibia of the fore leg 163 µ long, 0.59 times as long as the width of the head across the eyes. The hind tibia with about 25 transverse ridges with spinulae, and colourless spinulae are observable on the ventral side of the abdomen. Abdominal segments I-VI with one marginal hair at each side and four dorsal hairs, each on a pale brown sclerite; the hairs with sharp points, on tergite IV, 92 µ long, on tergite VI, 110 µ long. Siphunculi pale brown, on abdominal segment VI nipple-shaped with rounded tips, 84 µ long and 72 µ wide at the base, almost smooth, without spinulae or hairs. Segment VII with a marginal tubercle, protruding backwards, nipple-shaped, 41 µ long, 31 µ wide at the base, smooth, provided at the tip with a hair, 94 µ long; in the middle two hairs, each on a tubercle, 49 µ wide and 12 µ high, the hairs 127 µ long, 100 µ from each other. Tergite VIII the base with spinulose imbrications, in the middle with two tubercles, nipple-shaped, the base of the two in the median area fused, each tubercle 27 µ long, the base of the two together 49 µ wide; each tubercle with a hair on top, 102 µ long. The cauda with a broadly rounded posterior

margin, without a process, with two hairs, 41 μ long.

Host plant records.— The specimens were collected in Java on *Syzygium antisepticum* (Bl.) Merr. & Perry, Cibodas Mountain Gardens (1400 m), 15.ii.1976, 11.vii.1976, 17.x.1976, 30.i.1977, 8.iv.1977, 27.xi.1977, 26.ii.1978, D. Noordam, RMNH, Leiden.

The aphids live on the lower side of young red leaves and on developing shoots.

Alatae or larvae of alatae were collected 11.vii.1976, 17.x.1976, 30.i.1977, 8.iv.1977, 26.ii.1978.

Etymology.— "Syzygii", of *Syzygium* a genus of the Myrtaceae.

Genus *Pentatrichosiphum* Basu, 1969
(figs. 461-479)

Pentatrichosiphum Basu, 1969: 182 (type species: *Pentatrichosiphum luteum* Basu, 1969).
Greenideoida (Pentatrichosiphum); Raychaudhuri & Chatterjee, 1980: 350.

Life specimens (one species).— Head and abdomen yellow or yellowish white. Macerated specimens: Body 2.16-2.64 mm long, 2.2-2.4 times as it is wide. The head colourless, dorsally and ventrally without spinulae, width across the eyes 386-488 μ. Anteriorly dorsally 6-11 hairs, between the eyes 6-7 hairs, two of these in the middle more sturdy, 151-180 μ long, the tips pointed or with two teeth. Antennae with five segments, 964-1180 μ long, 0.42-0.54 times as long as the body, 2.2-3.1 times as long as the width of the head across the eyes; length of hairs on segment III, 147-178 μ; segment IV with three hairs, 131-161 μ long, the base of segment V with two hairs, 80-100 μ long; the processus terminalis with four apical hairs and zero over its length. Eyes with numerous facets, and the ocular tubercle with three ommatidia. Ultimate rostral segment 190-221 μ long, 1.75-1.96 times as long as the second tarsal segment of the hind leg; length of the stylets 720-770 μ long. The prothorax fused with the head, with 13-16 hairs. Tibia of the hind leg without coarse imbrications, length of hairs 69-87 μ. First tarsal segments with five hairs. Spinulae are lacking dorsally on the abdomen. Hairs dorsally on the abdomen with sharp points or with teeth, on tergite IV, 157-176 μ long, on tergite VII, 161-236 μ long, and on tergite VIII, 106-139 μ long. Siphunculi 1.12-1.32 mm long, with some spinulose imbrications, without reticulation, length of hairs 176-188 μ. Cauda with eight hairs, but in one specimen with nine hairs, 105-133 μ long. Subanal plate with 17-19 hairs, 139-155 μ long. Subgenital plate with 3-6 anterior hairs, 69-92 μ long, and 9-13 posterior hairs, 94-114 μ long. Gonapophyses three, the lateral with 4-5 hairs, the middle with 8-9, 10-23 μ long.

Life specimens.— Alate viviparous ♀ (one species). Pale yellow, with brown mesonotum and a grey spot on the abdomen. Pterostigma black with yellow. Macerated specimens.— Body length 1.67-2.29 mm, 2.2-2.7 times as long as it is wide. The head across the eyes 409-490 μ wide, posterior to the eyes with 5-6 hairs, in the middle 92-118 μ long. Antennae with five segments, 1.24-1.55 mm long, 0.64-0.75 times as long as the body, and 2.7-3.3 times as long as the width of the head across the eyes, segment III with 13-23 rhinaria; segment IV, 153-196 μ long, 0.33-0.38 times as long as segment V; the processus terminalis 291-369 μ long. Ultimate rostral segment 170-192 μ long, 1.55-1.80 times as long as the second tarsal segment of the hind leg; length of

the stylets 586-692 µ. Medial vein of the fore wing twice branched, hind wing with one oblique vein. First tarsal segments with five hairs. Length of the dorsoapical hair of the hind leg 14-16 µ, and of the lateroapical hair 29-39 µ. Hairs on tergite IV, 47-78 µ long, ventrally on the middle of the abdomen 55-67 µ long. Siphunculi 1.02-1.55 mm long, 0.53-0.74 times as long as the body, 2.5-3.2 times as long as the width of the head across the eyes, 14.3-20.9 times as long as the width of the cylindrical part just distal to the base, with a few indistinct spinulose imbrications and spinulae over its whole length, with numerous hairs, 185-232 µ long. Cauda without a median process, with 8-9 hairs, 94-112 µ long. Subanal plate with 16-19 hairs, 100-108 µ long. Subgenital plate with 4-7 anterior hairs, 69-76 µ long, and 8-11 posterior hairs, 78-94 µ long. Gonapophyses three, the lateral with 4-6 hairs, the middle with 9-12, 14-29 µ long.

Etymology.— "Pentatrichosiphum", *Trichosiphum* with five, referring to the first tarsal segments which bear five hairs.

Pentatrichosiphum luteum Basu, 1969
(figs. 461-479)

Pentatrichosiphum luteum Basu, 1969: 183.
Greenideoida (Pentatrichosiphum) luteum; Raychaudhuri & Chatterjee, 1980: 351.

Types.— Holotype (apterous viviparous ♀) on *Litsea polyantha.* India, Kalimpong, 22.xii.1965, A.N. Basu. Paratypes, apterous viviparous ♀♀ with data as for the holotype (Basu, 1969: 186).

Life specimens.— Apterous viviparous ♀ (pl. 20). Head, thorax and abdomen yellow or yellowish white. Antennae colourless, with three grey to black rings, namely the part with the rhinaria of the penultimate and last segment, and the distal part of the processus terminalis. Eyes red, the ocular tubercle black. Legs colourless, the tarsi black. Siphunculi colourless, but just anterior to the flange greyish black or violet red. Cauda yellowish white.

Macerated specimens (figs. 461-468; described from seven specimens).— Body length 2.16-2.64 mm, 2.2-2.4 times as long as it is wide.

Head.— Head colourless, dorsally smooth, the antennal tubercles dorsally and ventrally also without spinulae, the frons in the middle protruding 14-24 µ, antennal tubercles 4-8 µ; head across the eyes 386-488 µ, dorsally anteriorly 6-11 hairs in the middle; between the eyes six or sometimes seven hairs, colourless, with sharp points or with two dents, two of the hairs more sturdy, 151-180 µ long, the other hairs e.g. 70-90 µ long, tiny hairs are lacking. Antennae (fig. 467) with five segments (segments IV and V sometimes indistinctly separated), colourless but the surroundings of the rhinaria and the processus terminalis pale brown. Length of the antennae 964-1180 µ, 0.42-0.54 times as long as the body, 2.23-3.06 times as long as the width of the head across the eyes; segments I and II smooth, segments I and II each with four hairs, on segment II, 129-151 µ long; segment III smooth or with imbrications and spinulae, 410-456 µ long, 2.6-2.8 times as long as segment IV, 1.00-1.22 times as long as segment V, with 12-20 hairs of different lengths, the longest 147-178 µ; segment IV dorsally and ventrally with some smooth imbrications, 145-173 µ long, 0.36-0.43 times as

long as segment V, with three (in one antenna four) hairs, 131-161 μ long; segment V with smooth imbrications, 337-433 μ long, 1.45-1.68 times as long as the processus terminalis, the base with two hairs (in one antenna with one hair) 86-100 μ long; the processus terminalis 200-279 μ long, with four apical hairs and zero over its length. The eyes colourless, the ocular tubercle brown, diameter of the ommatidia of the ocular tubercle 17-20 μ. Ultimate rostral segment (fig. 464) 190-221 μ long, 1.75-1.96 times as long as the second tarsal segment of the hind leg; stylets 720-770 μ long.

Thorax.— Prothorax the same colour as the head, fused with the head, smooth, with 13-16 hairs. Mesothorax and metathorax colourless as the head, smooth; the mesothorax dorsally with 25-34 hairs, colourless, the tips of most hairs with two dents, 157-174 μ long, but smaller hairs 40-70 μ long. The legs colourless or the tibiae and tarsi very pale brown, with spinulose imbrications and spinulae, but frequently indistinct, and the most clear on the hind tibiae. Tibia of the fore leg 476-598 μ long, 1.15-1.50 times as long as the width of the head across the eyes. Tibia of the hind leg, hairs 69-87 μ long, the basal hair 49-74 μ long; distally four hairs, not bristle-shaped. First tarsal segments with five hairs (fig. 465), the longest 49-59 μ. Second tarsal segment of the hind leg (fig. 466), length of the dorsoapical hairs 12-19 μ, of the lateroapical hairs 41-47 μ, and of the empodial hairs 29-31 μ. Length of the segments of the hind leg: femur plus trochanter 472-555 μ, tibia 675-807 μ, 1.40-1.49 times as long as the femur, and 1.55-2.03 times as long as the width of the head across the eyes, first tarsal segment 39-47 μ, second tarsal segment 102-114 μ.

Abdomen.— Abdomen colourless, a groove between metanotum and abdominal tergite I, between tergites I and II, VII and VIII, marginally between abdominal segments I and II a distinct border, but not between the next segments. Some spinulae on the lateral sides of segments I and II, and sometimes also on other segments, blunt or pointed, 2-3 μ long and wide. The number of marginal hairs on each of segments I-V ranges from 6-13, the longest hairs on segment V, 170-198 μ long. The number of dorsal hairs of tergites I-VI, the marginal hairs not included, are given below: tergite I, 9-12; II, 18-23; III, 23-30; IV, 24-32; V, 22-30; VI, 7-11; the hairs (fig. 462) have tips with two teeth; length of hair on tergite IV, 157-176 μ. Tergite VII with 2-6 hairs, 0-4 of these anterior, and two larger hairs along the posterior margin, 159-244 μ long, pointed or with two dents; laterally on segment VII one hair, 51-100 μ long. Tergite VIII (fig. 463) a plate with spinulose imbrications, 235-385 μ wide, 71-104 μ long, in the middle with two hairs, 118-139 μ long. Ventral hairs (fig. 462b) slender, the tips somewhat threadlike, in the middle area 72-94 μ long. Siphunculi almost colourless, but the distal 50 μ pale brown, straight or bent outwards, with a convex inner side and a concave outer side, 1.12-1.32 mm long, 0.46-0.58 times as long as the body, 2.6-3.1 times as long as the width of the head across the eyes; 131-149 μ wide at the base, which is about the widest part of the siphunculi; the siphunculi 8.0-9.7 times as long as the widest part; the basal 100 μ with some spinulose imbrications without reticulum, the distal 300-500 μ with spinulae, the rest smooth; the distal 100 μ densely covered with spinulae, 15-20 in one transverse line, the lines about six μ from each other, the spinulae 10 μ long; the hairs colourless, numerous with sharp points or, rarely, two dents, 176-188 μ long, the first basal hair 65-137 μ long; the siphunculi gradually tapering to the end, without a constriction, to the narrowest distal part with a diameter of 55-71 μ, expanding from there to the flange, which is

1.04-1.16 times wider than the narrowest part. Cauda (fig. 468) colourless, 176-240 µ wide, 66-80 µ long, with a broadly rounded posterior margin, without a process, with eight, but in one specimen, nine hairs, 105-133 µ long, slender and with somewhat threadlike ends. Subanal plate colourless, with 17-19 hairs, 139-155 µ long. Subgenital plate transversely elliptical, e.g. 285 µ wide and 130 µ long, with indistinct spinulose imbrications; anterior hairs 3-6, 69-92 µ long, posterior hairs 7-13, 94-114 µ long. Gonapophyses three, the lateral with 4-5 hairs, the middle with 8-9, 10-23 µ long.

Life specimens.— Alate viviparous ♀. Pale yellow with a grey spot on the abdomen, and the mesonotum brown. Siphunculi grey. Pterostigma black with yellow.

Macerated specimens (figs. 469-479; described from five specimens).— Body length 1.67-2.29 mm, 2.2-2.7 times as long as it is wide.

Head.— Head (fig. 469) brown, dorsally smooth, width of the head across the eyes 409-490 µ; dorsally anteriorly 6-8 hairs, between the paired ocelli 2-8 hairs, and posteriorly between the eyes 5-6 hairs; the hairs pale brown, with sharp points or thin ends, in the middle 92-118 µ long. Antennae (fig. 475) the same colour as the head, the processus terminalis slightly paler; antennae with five segments, 1.24-1.55 mm long, 0.64-0.75 times as long as the body, and 2.71-3.28 times as long as the width of the head across the eyes; segment I dorsally with some spinulose imbrications or spinulae, the rest of segments I and II almost smooth; segment III with some smooth imbrications, 500-657 µ long, 3.09-3.50 times as long as segment IV, 1.13-1.28 times as long as segment V, with 13-23 transversely elliptical rhinaria over its whole length, with 9-15 hairs, 72-98 µ long; segment IV with smooth imbrications, 153-196 µ long, 0.33-0.38 times as long as segment V, with three hairs, 67-96 µ long; segment V with smooth imbrications, 444-515 µ long, 1.45-1.53 times as long as the processus terminalis, the base with two hairs, 53-71 µ long; the processus terminalis 291-369 µ long, with four apical hairs and none over its length. The eyes colourless, the ocular tubercle brown, diameter of the ommatidia of the ocular tubercle 16-18 µ. Ultimate rostral segment (fig. 470) 170-192 µ long, 1.55-1.80 times as long as the second tarsal segment of the hind leg; length of the stylets 586-692 µ.

Thorax.— Prothorax the same colour as the head, the lateral sides mainly anteriorly with spinulae, and the pronotum in the middle anteriorly with some spinulae, about two µ long and wide, with 12-15 hairs. Mesothorax brown, hairs (fig. 478) 71-138 µ long. Medial vein of the fore wing (fig. 471) twice branched, hind wing with one oblique vein. Legs brown, the basal part of the femora, and sometimes also the tibiae paler; femora and tibiae with spinulose imbrications and spinulae, the second tarsal segments with some spinulose imbrications or the imbrications indistinct. The tibia of the fore leg 606-854 µ long, 1.48-1.77 times the width of the head across the eyes. The distal half of the tibiae on the ventral sides with spines, up to 14-20 µ long; distally four almost normal hairs, not bristle-like; length of hairs of the hind tibia 62-65 µ, the basal hair 33-39 µ long. First tarsal segments (fig. 473) with five hairs, the longest of the hind leg 35-41 µ. Length of the dorsoapical hair of the second tarsal segment of the hind leg (fig. 474) 14-16 µ, of the lateroapical hair 29-39 µ, and of the empodial hair 25-29 µ. Lengths of the segments of the hind leg: femur plus trochanter 480-622 µ, tibia 700-983 µ, 1.46-1.63 times as long as the width of the head across the eyes, first tarsal segment 31-37 µ, second tarsal segment 94-117 µ.

Abdomen (fig. 476).— Marginal sclerites of segments I and II almost colourless, those of segments III-V with a brown patch which is sometimes united with the brown area of the tergites; the lateral sides with spinulae, 1-3 µ long and wide. Tergites I and II each with a transversely elongated brown plate which is not interrupted in the middle, both tergites with spinulae, 1-3 µ long. Between tergites II and III a transverse row of six brown muscular plates. Tergites III-V a brown sclerotic plate; the tergites are smooth, with at most some spinulae on the anterior lateral sides of tergite III. The marginal sclerites each with 4-6 hairs. Tergite I with 6-10 hairs, II with 9-16, III with 16-20, IV with 17-21, and V with 14-20. On tergite VI, 7-8 hairs; on tergite IV (fig. 478) long hairs 47-78 µ, 2.0-3.4 times as long as the diameter of the articulate of antennal segment III, short hairs 27-39 µ long, 1.3-1.7 times as long as the diameter of this articulate. The ventral side smooth, only 4-5 patches anterior to the siphunculus with spinulae (fig. 477), hairs in the middle area 55-67 µ long, 2.5-2.7 times as long as the diameter of the articulate of antennal segment III. On tergite VII one anterior hair (in one specimen two hairs), along the posterior margin two hairs (fig. 478), 47-59 µ long, and a lateral hair at each side, 29-47 µ long. Tergite VIII a transversely elliptical plate 216-263 µ wide and 49-80 µ long, with spinulose imbrications, very pale brown, with two hairs (fig. 478) in the middle, 32-43 µ from each other, 72-96 µ long. Siphunculi (fig. 479) brown, cylindrical, 1.02-1.55 mm long, 0.53-0.74 times as long as the body, 2.5-3.2 times as long as the width of the head across the eyes; 92-133 µ wide at the base, 63-98 µ wide at the cylindrical part just distal to the base, 14.3-20.9 times as long as this last diameter, with a few indistinct spinulose imbrications and spinulae over its whole length, a reticulum is lacking, the distal 100 µ spinulae are more densely distributed, about 15 in each transverse row, the spinulae 8-10 µ long; the siphunculi in the distal 100 µ slightly tapering to the narrowest distal part with a diameter of 50-63 µ, expanding from there to the flange, which is 1.09-1.26 times wider than the narrowest part; with numerous brown hairs with thin tips, 185-232 µ long. Cauda (fig. 472) pale brown, with a broadly rounded posterior margin, without a process, 188-212 µ wide, 69-78 µ long, with 8-9 hairs, 94-112 µ long. Subanal plate brown, with 16-19 hairs, 100-108 µ long. Subgenital plate e.g. about 210 µ wide, 125 µ long, with spinulose imbrications, anterior hairs 4-7, 69-76 µ long, and 8-11 posterior hairs, 78-94 µ long. Gonapophyses three, the lateral with 4-6 hairs, the middle with 9-12, 14-29 µ long.

First stage larvae are not available.

Host plant records.— The specimens were collected in Java: presumably *Persea americana* Mill., Sindanglaya (1100 m), 2.vi.1975; *Persea americana* Mill., Sindanglaya (1100 m), 20.i.1977; *Litsea amara* Bl., Sindanglaya (1100 m), 29.i.1977, 1.xi.1977; 28.ii.1978, all D. Noordam, RMNH, Leiden.

The aphids live on the lower side of developing leaves.

Etymology.— "Luteum", golden-yellow, referring to the colour of the apterae.

Genus *Schoutedenia* Rübsaamen, 1905
(figs. 480-521)

Schoutedenia Rübsaamen, 1905: 19 (type species: *Schoutedenia ralumensis* Rübsaamen, 1905).
Setaphis van der Goot, 1917: 153.

Cerciaphis Theobald, 1920: 149, 155; Eastop & Hille Ris Lambers, 1976: 392 (synonymy).
Setaphidia Strand, 1942: 149; Eastop & Hille Ris Lambers, 1976: 392 (synonymy).

Life specimens (two species, and partly the species *S. bougainvilleae* and *S. emblica*).— Yellow, brown or the abdomen green. Distal part of the antennae grey or black.

Macerated specimens.— Body 1.1-2.1 mm long, 1.4-1.7 times as long as it is wide. The head colourless or pale brown, with a reticulum, observable at magnifications above 100, the frons straight in outline, antennal tubercles lacking; head across the eyes 315-460 µ, dorsally anteriorly 3-5 hairs, between the eyes two hairs, posterior hairs are lacking; the hairs with blunt ends, 6-15 µ long. Antennae with five segments, 670-1210 µ long, 0.51-0.78 times as long as the body, and 1.8-3.2 times as long as the width of the head across the eyes; segment III, 225-530 µ long, 1.6-2.6 times as long as segment IV, 1.0-1.8 times as long as segment V, with 3-6 hairs, 8-18 µ long. The processus terminalis without hairs over its length. The eyes with three ommatidia. Ultimate rostral segment 81-126 µ long, 0.73-1.00 times as long as the second tarsal segment of the hind leg, with only two basal hairs, and six distal hairs; stylets 300-520 µ long. The prothorax fused with the head, the thoracic segments dorsally reticulated as on the head. All segments of the legs with imbrications with tiny spinulae, the four distal hairs of the hind tibiae not bristle-like. First tarsal segments with three hairs. Abdominal segments I-VII reticulated everywhere, spinulae are lacking. Segments I-VI at each side with one marginal hair, the tergite of each segment I-V with 4-5 hairs, length of hair on tergite IV, 5-15 µ, ventrally in the middle of the abdomen 10-20 µ. Tergite VII with two pale brown processi, pointing backwards, 176-345 µ long, e.g. 100 µ wide at the base, tapering gradually to the top, which is 6-8 µ wide, with transverse spinulose imbrications and longitudinal ridges, without hairs over its length, but with one hair on top, e.g. 14-20 µ long. Tergite VIII with transverse rows of spinulose imbrications with two hairs, 10-53 µ long. Siphunculi, a cone, e.g. 150 µ wide at the base, 40 µ wide at the top and 60 µ high, with concentric imbrications, with 3-6 hairs on the cone, 14-18 µ long. Cauda without a median processus, with four hairs, 60-91 µ long. Gonapophyses three, the lateral with 2-5 hairs, the middle with 3-8, 20-27 µ long.

Life specimens.— Alate viviparous ♀. Head brown or grey. Mesonotum brown or black. Abdomen yellow or green. Processi on tergite VII black. Veins of the fore wing bordered with brown or black.

Macerated specimens.— Body length 1.1-1.7 mm, 2.1-2.4 times as long as it is wide. Head brown, with some reticulum anteriorly at the lateral sides, but otherwise smooth; head across the eyes 330-435 µ, dorsally anteriorly 2-5 hairs, between the eyes 2-3 hairs, posteriorly hairs are lacking. Antennae brown, with five segments, 820-1170 µ long, 0.54-0.87 times as long as the body, and 2.2-3.1 times as long as the width of the head across the eyes, segment III with 18-47 rhinaria over the whole length, with 4-7 hairs, 8-18 µ long, segment IV with 2-12 rhinaria. Ultimate rostral segment 81-128 µ long, 0.70-0.98 times as long as the second tarsal segment of the hind leg, with only two basal hairs, and six distal hairs; stylets 305-540 µ long. Prothorax with a distinct reticulum, mesothorax without a reticulum. Veins of the fore wing brown and bordered at both sides with a brown band, the medial vein once branched. Hind wing without oblique veins, about 0.23 times as long as the fore

wing. The distal part of the tibiae ventrally without separate spines. First tarsal segments with three hairs. Abdominal segments I-VII dorsally reticulated everywhere, observable at a magnification of 300-500, spinulae are lacking. Segments I-VI at each side with one marginal hair, the tergite of each segment I-V with four hairs. Tergite VII with two brown processi, pointing backwards, 143-247 µ long, about 60 µ wide at the base, tapering gradually to the top which is 7-8 µ wide, and provided with one hair, 18-25 µ long; the surface of the processi with transverse spinulose imbrications and longitudinal ridges, without hairs. Tergite VIII with transverse concentric rows of spinulose imbrications with two hairs, 10-55 µ long. Siphunculi, truncated cones, with the distal 10 µ cylindrical, with concentric imbrications, in between with perpendicular ridges, with 2-6 hairs, without a flange. Cauda with four hairs, 55-83 µ long, without a median processus. Gonapophyses three, the lateral with 3-4 hairs, the middle with 5-7, 14-25 µ long.

First stage larva of apterous viviparous ♀.— Body length 551-748 µ, 1.8-1.9 times as long as it is wide. Antennae with four segments. The ultimate rostral segment 69-72 µ long. Abdominal segments I-VI with one marginal hair at each side, and two dorsal hairs, on tergite IV six µ long. Siphunculi flat, without hairs. Segment VII with two processi, 87-108 µ long, with one hair on top. Tergite VIII with two hairs, without a process. The cauda without a median process.

Etymology.— "Schoutedenia", name in honour of Dr H. Schouteden (Rübsaamen 1905: 19).

Schoutedenia lutea (van der Goot, 1917)
(figs. 480-500)

Setaphis luteus van der Goot, 1917: 154.
Schoutedenia lutea; Ghosh, A.K., M.R. Ghosh & Raychaudhuri, 1972: 337; Eastop & Hille Ris Lambers, 1976: 394, 392 (synonymy).

Types.— Neotype here designated, apterous viviparous ♀ from *Securinega virosa* (Willd.) Pax & K. Hofmann, Bogor, 5.xii.1977, D. Noordam, no. 1164-2-1, RMNH, Leiden.

The material collected by van der Goot has been lost. A neotype is designated which is consistent with the description by van der Goot (1917): body in life yellow, and the length of antennal segment III four times as long as the processus terminalis in apterous viviparous ♀.

Life specimens.— Apterous viviparous ♀ (pl. 21): yellow. Eyes red. Siphunculi the same colour as the body. Processi on tergite VII yellow or yellowish white. Tarsi black. Antennae colour as the head, but the end of antennal segment IV and segment V black.

Macerated specimens (figs. 480-489; described from eight specimens, but e.g. measurements of 78 antennae of collections 403, 1038, 1164 and 1215 of D. Noordam.— Body length 1.10-1.80 mm, 1.4-1.7 times as long as it is wide.

Head.— Head almost colourless, with a colourless reticulum, observable at magnifications above 100, the skin within the reticulum smooth; the frons straight in outline, antennal tubercles lacking; head across the eyes 340-435 µ, dorsally anteriorly 3-5 hairs; between the eyes two hairs, colourless, with blunt ends, 10-12 µ long (fig.

486), posterior hairs are lacking. Antennae (fig. 481) with five segments, 810-1080 µ long, 0.54-0.71 times as long as the body, and 2.1- 2.8 times as long as the width of the head across the eyes; segments I and II with a reticulum about as on the head; segment III colourless but distally sometimes pale brown, dorsally and ventrally with smooth imbrications, 310-450 µ long, 1.7-2.4 times as long as segment IV, 1.2-1.5 times as long as segment V, 0.74-0.91 times as long as segments IV + V, and 2.9-4.2 times as long as the processus terminalis in 78 antennae (3.3-4.2 times as long in 69 out of these 78 antennae, with 4-6 hairs, 10-12 µ long; segment IV colourless or distally brown, or in specimens intermediate to alatae wholly brown, with smooth imbrications, 155-230 µ long, 0.59-0.78 (in one antenna 0.84) times as long as segment V, with two hairs; segment V pale brown or brown, with one primary rhinarium and six accessory rhinaria, 238-313 µ long, 2.2-2.8 times as long as the processus terminalis, with one hair; processus terminalis 88-128 µ long, with four apical hairs, and zero over its length. The eyes colourless, with three ommatidia, ocular tubercles lacking. Ultimate rostral segment 86-98 µ long, 0.73-0.86 times as long as the second tarsal segment of the hind leg, with only two basal hairs, and six distal hairs; stylets 320-362 µ long.

Thorax.— Prothorax the same colour as the head, fused with the head, reticulated, with two hairs at each lateral side and two on the pronotum; Mesonotum reticulated as on the head, the lateral sides also reticulated, and the space enclosed by the netting, not smooth but with ridges (fig. 482); the lateral sides each with two hairs, the tergum with 4-6. The legs colourless, or very pale brown (or sometimes the tibiae brown), all segments with imbrications with tiny spinulae. Tibia of the fore leg 318-397 µ long, 0.75-0.96 times as long as the width of the head across the eyes. Tibia of the hind leg, hairs 18-23 µ long, the four distal hairs not sturdy. First tarsal segments with three hairs (fig. 488), the lateral 31-35 µ long. Second tarsal segment of the hind leg (fig. 487), length of the dorsoapical hairs 8-10 µ, of the lateroapical hairs 35-38 µ, and of the empodial hairs 22-23 µ. Length of segments of the hind leg; femur plus trochanter 364-456 µ, tibia 425-523 µ, 1.15-1.17 times the femur, and 1.00-1.26 times as long the width of the head across the eyes, first tarsal segment 40-48 µ, second tarsal segment 113-123 µ.

Abdomen.— abdomen colourless, segments I-VII reticulated everywhere, the coarse reticulum again with a finer one (figs. 483, 484). A groove between metanotum and abdominal tergite I, and indistinctly between tergites VII and VIII. Spinulae are lacking. Segments I-VI at each side with one marginal hair, the tergite of each segment I-V with 4-5 hairs, tergite VI between the siphunculi usually two, length of hair on tergite IV (fig. 486), 10-13 µ, length of hair ventrally in the middle of the abdomen 16-20 µ. Tergite VII with two pale brown processi, pointing backwards, 140-180 µ from each other, 190-275 µ long, about 100 µ wide at the base, tapering gradually to the top which is 6-8 µ wide, and provided with one hair, 15-19 µ long; the surface of the processi with transverse spinulose imbrications and longitudinal ridges (fig. 485), without hairs; laterally to the processi one hair, 14-18 µ long. Tergite VIII (fig. 497, of *S. viridis*) colourless, with transverse rows of spinulose imbrications with two hairs, sometimes hidden under the processi of tergite VII, 25-40 µ long. Siphunculi colourless or very pale brown, e.g. 150 µ wide at the base, 40 µ wide at the top and 60 µ high, with concentric imbrications with some interconnections and

the imbrications at the top with perpendicular ridges, with 3-5 hairs on the cone, 14-18 μ long. Cauda (fig. 489) colourless without distinct borders with tergite VIII and the subanal plate, usually observed in the mounts with tergite VIII the cauda, the anus and the subanal plate on one level, the cauda e.g. 185 μ wide and 50 μ long, with four hairs, 76-83 μ long. Subanal plate colourless, with 11-13 Hairs, 76-96 μ long. Subgenital plate colourless, elliptical, e.g. 215 μ wide, 160 μ long, anterior hairs two, 18-25 μ long, posterior hairs 9-12, 18-22 μ long, an area along the posterior margin in the middle of 50-90 μ without hairs. Gonaphyses three, the lateral with 2-5 hairs, the middle with 3-8, 20-23 μ long.

Life specimens.— Alate viviparous ♀ (pl. 22). Head brown or grey. Prothorax pale brown. Mesothorax brown. Abdomen yellow. Antennae black. Legs black, the base of the femora sometimes paler. Eyes red. Siphunculi grey. Processi on tergite VII black. Veins of the fore wing bordered brown.

Macerated specimens (figs. 490-498; described from eight specimens of collections 403, 1038, 1164, 1215 D. Noordam; measurements of 38-78 antennae and 90 fore wings).— Body length 1.24-1.67 mm, 2.1-2.4 times as long as it is wide.

Head.— Head (fig. 490) brown, around the ocelli darker, with a reticulum anteriorly at the lateral sides, less distinct around the posterior hairs, and almost lacking in the middle area, the skin within the reticulum smooth; the frons straight in outline, antennal tubercles lacking; width of the head across the eyes 375-420 μ, dorsally anteriorly 2-4 hairs; between the eyes two hairs, colourless, with blunt ends, 10-15 μ long (fig. 493), other posterior hairs are lacking. Antennae (fig. 495) brown, the two last segments slightly paler; antennae with five segments 960-1120 μ long, 0.65-0.87 times as long as the body, and 2.5-2.9 times as long as the width of the head across the eyes; segments I and II dorsally and ventrally with spinulose imbrications which are joined to a reticulum; segment II with a hair, 10-14 μ long; segment III dorsally and ventrally with smooth imbrications, 395-485 μ long, 1.9-2.3 times as long as segment IV, 1.4-1.7 times as long as segment V, 0.81-0.95 times as long as segments IV plus V, and 3.6-4.4 times as long as the processus terminalis, and segments III plus IV, 1.51-1.80 times as long as the width of head across the eyes, with 25-47 elliptical or roundish rhinaria over the whole length, with 4-7 hairs, 10-13 μ long; segment IV with smooth imbrications, 195-235 μ long, 0.69-0.82 times as long as segment V, with 2-9 roundish rhinaria, with two hairs; segment V with smooth imbrications, 247-303 μ long, 2.4-2.7 times as long as the processus terminalis, the base with one hair; processus terminalis 100-124 μ long, with four apical hairs, and zero over its length. The eyes brown, the ocular tubercle brown, diameter of the ommatidia of the ocular tubercle 14-18 μ. Ultimate rostral segment (fig. 494) 86-98 μ long, 0.73-0.90 times as long as the second tarsal segment of the hind leg, with only two basal hairs, and six distal hairs; stylets 310-350 μ long.

Thorax.— Prothorax pale brown, with a distinct reticulum, two hairs at each side and two dorsally. Mesothorax brown, without a reticulum, length of hairs 12 μ (fig. 493). Veins of the fore wing (fig. 491) brown and bordered at both sides with a brown band 10-25 μ wide, the medial vein once branched or, exceptionally, twice; distance at the apex of the fore wing between radius and media 1.0-1.5 times the shortest distance between radius and media in 90 wings (fig. 514, distance 1 divided by 2);radius and media are at the margin of the apex, not distinctly observable, and a point for

the end of these veins was chosen on the grounds of the perceptible part. Hind wing (fig. 491) without oblique veins, the area of the apex and around the subcosta brown, about 0.23 times as long as the fore wing. Legs brown, femora and tibiae with spinulose imbrications, the second tarsal segments with smooth imbrications. The tibia of the fore leg 389-488 µ long, 1.00-1.26 times as long as the width of the head across the eyes. Distal part of the tibiae ventrally without separate spines, the four distal hairs normal, not sturdy; length of hairs of the hind tibia 20-23 µ. First tarsal segment with three hairs, the lateral of the hind leg 33-35 µ long (fig. 498). Length of dorsoapical hair of the second tarsal segment of the hind leg (fig. 492) 12-14 µ, the lateroapical hairs 37 µ, and the empodial hair 22-23 µ. Length of the segments of the hind leg: femur plus trochanter 401-468 µ, tibia 480-590 µ, 1.19-1.27 times as long as the femur, and 1.23-1.53 times as long as the width of the head across the eyes, first tarsal segment 39-41 µ, second tarsal segment 108-118 µ.

Abdomen (fig. 496).— Colourless, segments I-VII dorsally reticulated everywhere, observable at a magnification of 300-500, the coarse reticulum sometimes again with a finer reticulum. A distinct groove between tergites VII and VIII. Spinulae are lacking. Segments I-VI at each side with one marginal hair, the tergite of segments I-V with four hairs, tergite VI between the siphunculi with two hairs, length of hair on tergite IV (fig. 493) 11-16 µ, length of hair ventrally in the middle of the abdomen 18-20 µ. Tergite VII with two brown processi, 140 -160 µ from each other, pointing backwards, 190-224 µ long, about 60 µ wide at the base, tapering gradually to the top which is 7-8 µ wide, and provided with one hair, 18-20 µ long; the surface of the processi with transverse spinulose imbrications and longitudinal ridges, without hairs; laterally to the processi one hair, 17-20 µ long. Tergite VIII colourless, with transverse concentric rows of spinulose imbrications (fig. 497), with two hairs, sometimes hidden under the processi of tergite VII, 18-37 µ long. Siphunculi pale brown, darker to the top, truncated cones, with the distal 10 µ cylindrical, e.g. 118 µ wide at the base, 35 µ at the top and 55 µ high, with concentric imbrications, in between with perpendicular ridges, with 3-5 hairs, 16-18 µ long, without a flange. Cauda colourless, oval e.g. 155 µ wide, 40 µ long, the anus in the mounts frequently pointing upwards between the cauda and the subanal plate, with four hairs, 68-78 µ long. Subanal plate colourless, with 12-15 hairs, 75-90 µ long. Subgenital plate colourless, elliptical, e.g. 165 µ wide, 114 µ long, anterior hairs two, 18-22 µ long, posterior hairs 7-12, 20-25 µ long, an area along the posterior margin in the middle of 50-60 µ without hairs. Gonapophyses three, the lateral with 3-4 hairs, the middle with 5-7, 14-18 µ long.

First stage larva of apterous viviparous female (fig. 499; description of one specimen).— Body length 748 µ, 1.9 times as long as it is wide. Head across the eyes 283 µ, with two anterior hairs, and two hairs between the eyes, six µ long. Antennae with four segments, 352 µ long; segment III, 142 µ long, 0.97 times as long as segment IV; segment IV, 147 µ long, 2.19 times as long as the processus terminalis, the processus terminalis 67 µ long. The ultimate rostral segment 69 µ long. Tibia of the fore leg 141 µ long, 0.50 times as long as the width of the head across the eyes. Abdominal segments I-VI with one marginal hair at each side and two dorsal hairs; the hairs with blunt tips, on tergite IV six µ long. Siphunculi colourless, flat, without hairs. Segment VII with two processi very pale brown, pointing backwards, with spinulose imbrica-

tions, 87 μ long, with one hair on top, seven μ long; with one lateral hair at each side, 10 μ long. Tergite VIII with two hairs, 22 μ long. The cauda without a process, with two hairs, 48 μ long.

Host plant records.— Specimens were collected in Java in the places and dates indicated, while the collectors are indicated by numbers between parentheses: van der Goot (1917), (1), the material has been lost; F.W. Rappard (2), BMNH, London; D. Noordam (3), RMNH, Leiden. Y is added for colour in life, yellow, G for green; *Securinega virosa* (Willd.), Pax & Hoffman (syn.: *Flueggea virosa*), Kepoeh (100 m), 1913, Plaboean (Waleri, 35 m), Salatiga (570 m), Buitenzorg (250 m), Selokatan (300 m), Y, (1); *Breynia racemosa, Glochidion obscurum*, G, (1); *Breynia cernua* (Poir.) M.A., Bondowoso, 7.xii.1948, Y (2); *Breynia cernua* (Poir.) M.A., Gerengredjo, Djember (50 m), 28.i.1950, Y, (2); Euphorbiaceae, Djember (100 m), 10.v.1950, Y, (2); *Breynia* spec., Bondowoso (300 m), 22.x.1950, Y, (2); host unknown, Gajam- S. Djember, 7.xi.1950, G., (2), alatae characteristics of *S. lutea; Sauropus androgynus* (Linnaeus) Merr., Wanareja (Tasikmalaya - Purwokerto), 3.viii.1975, Y, (3); *Securinega virosa* (Willd.) Pax & Hoffm., Bogor, 8.ix.1977, 5.xii.1977, Y, (3); *Securinega virosa* (Willd.), Pax & Hoffm., Purwodadi (300 m), 29.xii.1977, Y, (3).

The aphids live on the lower side of young leaves and on the youngest developing shoots, and on leaf stalks of developing leaves.

Alatae or larvae of alatae were present x.1914, 28.i.1950, 10.v.1950, 22.x.1950, 7.xi.1950, 3.viii.1975, 9.ix.1977, 5.xii.1977, 29.xii.1977.

Etymology.— "Lutea", yellow.

Discussion.— Van der Goot (1917) described two species, *Setaphis luteus* and *S. viridis*, mentioning two characteristics by which he distinguished one species from the other: the colour in life yellow and green, and the ratio of the length of antennal segment III to that of the processus terminalis being in *S. luteus* four and in *S. viridis* barely three. In the addenda (van der Goot, 1917: 297) it is noted that the specimens of *S. lutea* on two other hosts were pale green or greenish white, and so the colour in life appeared to be sometimes an unreliable characteristic with which to distinguish the two species from each other, but apparently the ratio of antennal segments remained a characteristic by which the two species could be distinguished one from the other. Five species of *Schoutedenia* are described, *S. ralumensis* Rübsaamen, 1905, *S. bougainvilleae* (Theobald, 1920), *S. emblica* (Patel & Kulkarni, 1953), *S. lutea* and *S. viridis*, but there is some doubt wether one or more of these species are synonyms, see Eastop (1966), Eastop and Hille Ris Lambers (1976), Ghosh, Ghosh & Raychaudhuri, 1972: 338. Raychaudhuri & Chatterjee (1980), Tao (1962), Hales and Carver (1976), Remaudière (1988, 1990). In the key to the species of *Shoutedenia*, based both on apterae and alatae, characteristics are given by which the specimens of

S. bougainvilleae, S. emblica, S. lutea and *S. viridis* studied could be distinguished; the characteristics overlap, but seem to be sufficiently distinct to be able to distinguish these four *Schoutedenia* species, one from the other. Remaudière (1990) showed that specimens of *S. ralumensis* can be distinguished from those of *S. emblica*. It needs to be shown whether *S. ralumensis* can also be distinguished and the same holds for the species *S. bougainvilleae, S. lutea* and *S. viridis*.

Schoutedenia viridis (van der Goot, 1917) (figs. 500-521)

Setaphis viridis van der Goot, 1917: 158.
Schoutedenia viridis; Ghosh, Ghosh & Raychaudhuri, 1972: 338; Eastop & Hille Ris Lambers, 1976; 394, 393 (synonymy).
Setaphis formosanus Takahashi, 1929; Takahashi, 1936: 597.

Types.— Neotype here designated, apterous viviparous ♀, from *Sauropus androgynus* (Linnaeus) Merr., Bogor, 8.ix.1977, D. Noordam, no. 1035-1-7, RMNH, Leiden.

The material described by van der Goot has been lost. A neotype is designated which is consistent with the description by van der Goot (1917): Body in life dull greenish, and the length of antennal segment III barely three times as long as the processus terminalis.

Life specimens.— Apterous viviparous ♀ (pl. 23). Head pale brown or yellow; abdomen green, sometimes marbled, the green may be rather yellow or distinctly green. Antennal segments I, II and the basal half of III whitish, the rest grey to black. Eyes red. Legs dirty yellow or pale brown. Siphunculi grey brown. Processi on tergite VII pale brown. Cauda yellowish. Larvae dirty yellow when small, but gradually the larger specimens with more green.

Macerated specimens (figs. 500-510; described from eight specimens, but e.g. measurements of 100 antennae of collections 1007, 1027, 1035, 1040, 1159, 1162, 1216, 1256 of D. Noordam).— Body length 1.08-1.72 mm, 1.4-1.7 times as long as it is wide.

Head.— Head almost colourless, with a colourless reticulum, observable at magnifications above 100, the skin within the reticulum smooth; the frons straight in outline, antennal tubercles lacking; head across the eyes 315-440 µ, dorsally anteriorly 4-5 hairs; between the eyes two hairs, colourless, with blunt ends, 7-12 µ long (fig. 504), posterior hairs lacking. Antennae (fig. 502) with five segments, 670-1150 µ long, 0.51-0.77 times as long as the body, and 1.8-2.7 times as long as the width of the head across the eyes; segments I and II with some spinulose imbrications and a reticulum about as on the head; segment III colourless, but distally pale brown, dorsally and ventrally with imbrications, smooth or with a few tiny spinulae, 225-455 µ long, 1.6-2.4 times as long as segment IV, 1.0-1.5 times as long as segment V, 0.63-0.89 times as long as segment IV plus V, and 2.2-3.7 times as long as the processus terminalis in 106 antennae (2.2-3.2 times as long in 96 out of these 106 antennae), with 3-6 hairs, 8-12 µ long; segment IV pale brown, darker to the end, with almost smooth imbrications, 133-240 µ long, 0.49-0.77 times as long as segment V, with two hairs; segment V brown, with one primary rhinarium and six accessory rhinaria, 218-344 µ long, 2.2-2.7 times as long as the processus terminalis, with one hair, processus terminalis 87-140 µ long, with four apical hairs, and zero over its length. The eyes colourless, with three ommatidia, ocular tubercles lacking. Ultimate rostral segment (fig. 505) 81-98 µ long, 0.78-0.88 times as long as the second tarsal segment of the hind leg, with only two basal hairs, and six distal hairs; stylets 300-370 µ long.

Thorax.— Prothorax the same colour as the head, fused with the head, areas along the lateral and posterior margin reticulated, the space enclosed by the netting with ridges (fig. 501), with two hairs at each lateral side and two on the pronotum; Mesonotum reticulated and the space enclosed by the netting, not smooth but with

ridges, the lateral sides each with two hairs, the tergum with 4-5. The legs pale brown, the knees and the tibiae sometimes brown, all segments with imbrications with tiny spinulae. Tibia of the fore leg 295-367 μ long, 0.75-0.99 times as long as the width of the head across the eyes. Tibia of the hind leg, hairs 16-22 μ long, the four distal hairs not sturdy. First tarsal segments with three hairs (fig. 506), the lateral 29-39 μ long. Second tarsal segment of the hind leg (fig. 507), length of the dorsoapical hairs 10-12 μ, of the lateroapical hairs 35-39 μ, and of the empodial hairs 20-25 μ. Length of segments of the hind leg: femur plus trochanter 306-453 μ, tibia 338-511 μ, 1.10-1.17 times as long as the femur, and 1.03-1.28 times as long as the width of the head across the eyes, first tarsal segment 38-48 μ, second tarsal segment 101-125 μ.

Abdomen.— Abdomen colourless, segments I-VII reticulated (fig. 503) everywhere the coarse reticulum again with a finer one. A groove between metanotum and abdominal tergite I, and indistinctly between tergites VII and VIII. Spinulae are lacking. Segments I-VI at each side with one marginal hair, the tergite of each segment I-V with 4-5 hairs, tergite VI between the siphunculi two hairs, length of hair on tergite IV (fig. 504), 8-11 μ, length of hair ventrally in the middle of the abdomen 12-20 μ. Tergite VII with two pale brown processi, pointing backwards, 140-170 μ from each other, 180-280 μ long, about 70-140 μ wide at the base, tapering gradually to the top which is 6-8 μ wide and provided with one hair, 14-23 μ long; the surface of the processi with spinulose imbrications and longitudinal ridges, without hairs; laterally to the processi one hair, 14-23 μ long. Tergite VIII (fig. 510) colourless, with transverse rows of spinulose imbrications, with two hairs, sometimes hidden under the processi of tergite VII, 20-45 μ long. Siphunculi colourless or pale brown, e.g. 115 μ wide at the base, 40 μ wide at the top and 60 μ high, with concentric imbrications with some interconnections and the imbrications at the top with some perpendicular ridges (fig. 509), with 3-6 hairs on the cone, 14-17 μ long. Cauda (fig. 510) colourless or very pale brown, usually in the mounts observed with tergite VIII, the cauda, the anus and the subanal plate on the same level, the cauda e.g. 184 μ wide and 45 μ long, with four hairs, 58-76 μ long. Subanal plate colourless or pale brown, with 10-12 hairs, 69-80 μ long. Subgenital plate colourless, elliptical, e.g. 225 μ wide, 150 μ long, but the anterior border not distinct, with 2-3 anterior hairs, 14-25 μ long, and 6-11 posterior hairs, 15-18 μ long, an area along the posterior margin in the middle of 25-70 μ without hairs. Gonapophyses three, the lateral with 2-4 hairs, the middle with 4-6, 20-27 μ long.

Life specimens.— Alate viviparous ♀ (pl. 24). Head brown or grey. Mesonotum brown or black. Abdomen yellow with greenish. Antennae black, the last segment sometimes paler. Legs grey or black, the base of the femora sometimes paler. Eyes dark red. Siphunculi and processi on tergite VII black. Veins of the fore wing and the pterostigma black, the veins bordered with black. Last stage larvae sometimes more green than the apterae, on the thorax strikingly green at the base of the wing pads.

Macerated specimens (figs. 511-520; described from eight specimens of collections 254, 1007, 1027, 1035, 1159, 1162, 1216, 1256, D. Noordam; measurements of 81-95 antennae and 170 fore wings).— Body length 1.13-1.60 mm, 2.1-2.4 times as long as it is wide.

Head.— Head (fig. 511) brown, around the ocelli darker, usually with a reticulum anteriorly at the lateral sides, the skin otherwise smooth; the frons straight in outline,

antennal tubercles lacking; width of the head across the eyes 330-435 μ, dorsally anteriorly 2-5 hairs; between the eyes two, in one specimen three hairs, colourless, with blunt ends, 10-14 μ long (fig. 519), other posterior hairs are lacking. Antennae (fig. 512) brown, the last two segments slightly paler; antennae with five segments 820-1170 μ long, 0.62-0.79 times as long as the body, and 2.2-2.9 times as long as the width of the head across the eyes; segments I and II dorsally and ventrally with spinulose imbrications which are joined to a reticulum; segment II with a hair, 9-14 μ long; segment III dorsally and ventrally with smooth imbrications, 310-470 μ long, 1.7-2.2 times as long as segments IV, 1.00-1.61 times as long as segment V, 0.70-0.93 times as long as segments IV plus V, and 2.7-3.9 times as long as the processus terminalis (2.7-3.5 times as long in 88 out of 97 specimens), and segments III plus IV, 1.27-1.74 times as long as the width of the head across the eyes, with 18-47 elliptical or roundish rhinaria over the whole length, with 5-7 hairs, 8-12 μ long; segment IV with smooth imbrications, 155-255 μ long, 0.60-0.77 times as long as segment V, with 2-12 roundish rhinaria, with two or, exceptionally, one hair; segment V with smooth imbrications, 222-342 μ long, 2.2-2.8 times as long as the processus terminalis, the base with one hair; processus terminalis 88-145 μ long, with four apical hairs, and zero over its length. The eyes brown, the ocular tubercle brown, diameter of the ommatidia of the ocular tubercle 16-20 μ. Ultimate rostral segment (fig. 518) 81-98 μ long, 0.71-0.86 times as long as the second tarsal segment of the hind leg, with only two basal hairs, and six distal hairs; stylets 305-375 μ long.

Thorax.— Prothorax pale brown, with a distinct reticulum, two hairs at each side and two dorsally. Mesothorax brown, with a distinct reticulum, length of hairs 8-12 μ (fig. 519). Veins of the fore wing (fig. 513) brown and bordered at both sides with a brown band 10-30 μ wide, the medial vein once branched; distance at the apex of the fore wing, between radius and media 1.3-2.3 times the shortest distance between radius and media in 170 wings (fig. 515b, distance 1 divided by 2), but in 163 wings of these 170 the value is 1.6-2.3; radius and media are not distinctly observable at the margin of the apex, and a point for the end of these veins was chosen on ground of the perceptible part. Hind wing (fig. 513) without oblique veins, the area of the apex and around the subcosta brown, about 0.23 times as long as the fore wing. Legs brown, the distal part of the tibiae and the tarsi frequently paler, all segments with smooth or spinulose imbrications. The tibia of the fore leg 373-492 μ long, 0.81-1.17 times as long as the width of the head across the eyes. Distal part of the tibiae ventrally sometimes with some separate spines, 12 μ long, the four distal hairs normal, not sturdy; length of hairs of the hind tibia 18-22 μ. First tarsal segment with three hairs, the lateral of the hind leg 31-39 μ long (fig. 517). Length of dorsoapical hair of the second tarsal segment of the hind leg (fig. 520) 10-15 μ, the lateroapical hair 35-41 μ, and the empodial hair 20-23 μ. Length of the segments of the hind leg: femur plus trochanter 348-460 μ, tibia 421-574 μ, 1.10-1.31 times as long as the femur, and 1.05-1.43 times as long as the width of the head across the eyes, first tarsal segment 36-41 μ, second tarsal segment 106-118 μ.

Abdomen (fig. 516).— Abdomen colourless, segments I-VII dorsally reticulated everywhere, observable at a magnification of 300-500, the coarse reticulum sometimes again with a finer reticulum. An indistinct groove between tergites VII and VIII. Spinulae are lacking. Segments I-VI at each side with one marginal hair, the ter-

gite of each segment I-V with four hairs, tergite VI between the siphunculi with two hairs, length of hair of tergite IV (fig. 519) 10-16 μ, length of hair ventrally in the middle of the abdomen 14-20 μ. Tergite VII with two brown processi, pointing backwards, 140-160 μ from each other, 159-212 μ long, about 60 μ wide at the base, tapering gradually to the top which is 7-8 μ wide, and provided with one hair, 20-25 μ long; the surface of the processi with transverse spinulose imbrications and longitudinal ridges, without hairs; laterally to the processi one hair (fig. 519), 16-18 μ long. Tergite VIII colourless, with transverse concentric rows of spinulose imbrications, with two hairs (fig. 519), sometimes hidden under the processi of tergite VII, 15-28 μ long. Siphunculi pale brown, darker to the top, truncated cones, with the distal 10 μ cylindrical, e.g. 118 μ wide at the base, 37 μ at the top, and 53 μ high, with concentric imbrications, in between with perpendicular ridges, with 2-6 hairs, 13-18 μ long, without a flange. Cauda colourless, oval, e.g. 167 μ wide, 30 μ long, the anus in the mounts frequently pointing upwards between the cauda and the subanal plate, with four hairs, 57-68 μ long. Subanal plate colourless, with 11-12 hairs, 67-86 μ long. Subgenital plate colourless, elliptical, e.g. 150 μ wide, 120 μ long, but especially the anterior border not distinct, anterior hairs two, 14-20 μ long, posterior hairs 8-13, 15-22 μ long, an area along the posterior margin in the middle of 30-60 μ without hairs. Gonapophyses three, the lateral with 3-4 hairs, the middle with 5-7, 16-25 μ long.

First stage larva of apterous viviparous ♀ (fig. 521; description of one specimen).— Body length 630 μ (551-716 μ in nine specimens), 1.8 times as long as it is wide. Head across the eyes 251 μ, with two anterior hairs, and two hairs between the eyes, five μ long. Antennae with four segments, 330 μ long; segment III, 113 μ long, 0.75 times as long as segment IV; segment IV, 151 μ long, 2.13 times as long as the processus terminalis, the processus terminalis 71 μ long. The ultimate rostral segment 72 μ long. Tibia of the fore leg 133 μ long, 0.53 times as long as the width of the head across the eyes. First tarsal segments with two hairs. Abdominal segments I-VI with one marginal hair at each side and two dorsal hairs; the hairs with blunt tips, on tergite IV six μ long. Siphunculi colourless, flat, without hairs or with one hair. Segment VII with two processi, pale brown, pointing backwards, with spinulose imbrications, 108 μ long, 61 μ wide at the base, with one hair on top, 10 μ long; with one lateral hair at each side, 10 μ long. Tergite VIII with two hairs, 20 μ long. The cauda without a process, with two hairs, 47 μ long.

Host plant records.— Specimens were collected in Java in the places and dates indicated, while the collectors are indicated by numbers between parentheses: van der Goot (1917) or van der Goot, (1), the material has been lost or LUW, Wageningen; F.W. Rappard (2), BMNH, London; J. Sijpkens (3), BMNH, London; D. Noordam (4), RMNH, Leiden. Y is added for colour in life yellow, G for green; *Sauropus androgynus* (Linnaeus) Merr. (syn. *S. albicans* Bl.) Desa Liampoh (650 m) near Gemawang, iv-1915, G, (1); shrub Koepah, 15.ii.1917 (1); *Breynia cernua* (Poir.) M.A., Bondowoso, 20.iii.1949, apterae Y, alatae G (2); Euphorbiaceae, Bondowoso (250 m), I.vi.1950, apterae and alatae pale G, (2); *Breynia cernua* (Poir.) M.A., Malang (450 m), 20.xi.1950, alatae G, (2); *Breynia cernua* (Poir.) M.A., Malang (450 m), 30.xii.1951, apterae Y, YG, alatae G, (2); *Breynia cernua* (Poir.) M.A., Malang (450 m), 30.xii.1951, alata YG, (2); *Breynia cernua* (Poir.) M.A., Malang (450 m), 30.xii.1951, apterae Y, YG, alatae G, (2); *Breynia microphylla* (Kurz. ex T. & B.) M.A., Tjikope, 2.xii.1949 (3); *Glochidon rubrum*

(Bl.), Bogor, 13.iv.1975, Y, (4); *Breynia cernua* (Poir.) M.A., Bogor, 13.iv.1975, (4); *Breynia cernua* (Poir.) M.A., Bogor, 20.iv.1975, Y, (4); *Securinega virosa* (Willd.) Pax & Hoffm., Bogor, Kebun Raya 26.v.1975, Y, (4); *Breynia cernua* (Poir.) M.A., Bogor, 29.vi.1976, Y, (4); *Breynia cernua* (Poir.) M.A., Bogor, Kebun Raya, 22.xii.1976, G, (4); *Breynia racemosa* (Bl.) M.A., Dasinga, 15.viii.1977, G, (4); *Breynia microphylla* (Kurz.) M.A., Sindanglaya (1100 m), 6.ix.1977, G, (4); *Sauropus androgynus* (Linnaeus) Merr., Bogor, 8.ix.1977, 10.ix.1977, G. (4); *Breynia microphylla* (Kurz.) M.A., Sindanglaya (1100 m), I.xi.1977, G, (4), larvae only; *Breynia cernua* (Poir.) M.A., Bogor, 2.xii.1977, 4.xii.1977, G, (4); *Breynia cernua* (Poir.) M.A., Purwodadi, Kebun Raya, 29.xii.1977, G, (4); *Breynia cernua* (Poir.) M.A., Leles, 6.ii.1978, G, (4).

Of the collections mentioned hereafter some specimens show characteristics of *S. viridis*, others of *S. lutea*: *Breynia cernua* (Poir.) M.A., Bondowoso, 7.xii.1948, Y, (2); *Breynia cernua* (Poir.) M.A., Bondowoso (300 m), 25.ii.1949, apterae Y, alatae pale G, (2); host not known, Gajam (50 m), S. Djember, 7.xi.1950, no. 261, G, alatae antennae as *S. lutea* or *S. viridis*, the wings as *S. viridis*; no. 262, selected from the former no. 261, but apterae Y, (2), *S. lutea* and *S. viridis* antennae characteristics.

The aphids live on the lower side of developing shoots and branches with a diameter up to four mm, between developing leaves, and sometimes on the lower side of leaves. Note by Dr Rappard: the aphids sometimes live exposed to heavy rains.

Alatae or larvae of alatae were present in almost all collections.

Etymology.— "Viridis", green.

Discussion.— See the discussion on *S. lutea.*

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The figures are drawn to different scales, and a scale line is added to the figures. If the scale line is close to the figure concerned no mention is made of this in the text. Only when there could be confusion about which scale line belongs to the figure, are scale line and figure mentioned. The numbers to the scale lines mean:

1	= 1 mm
0.1	= 0.1 mm
0.01	= 0.01 mm

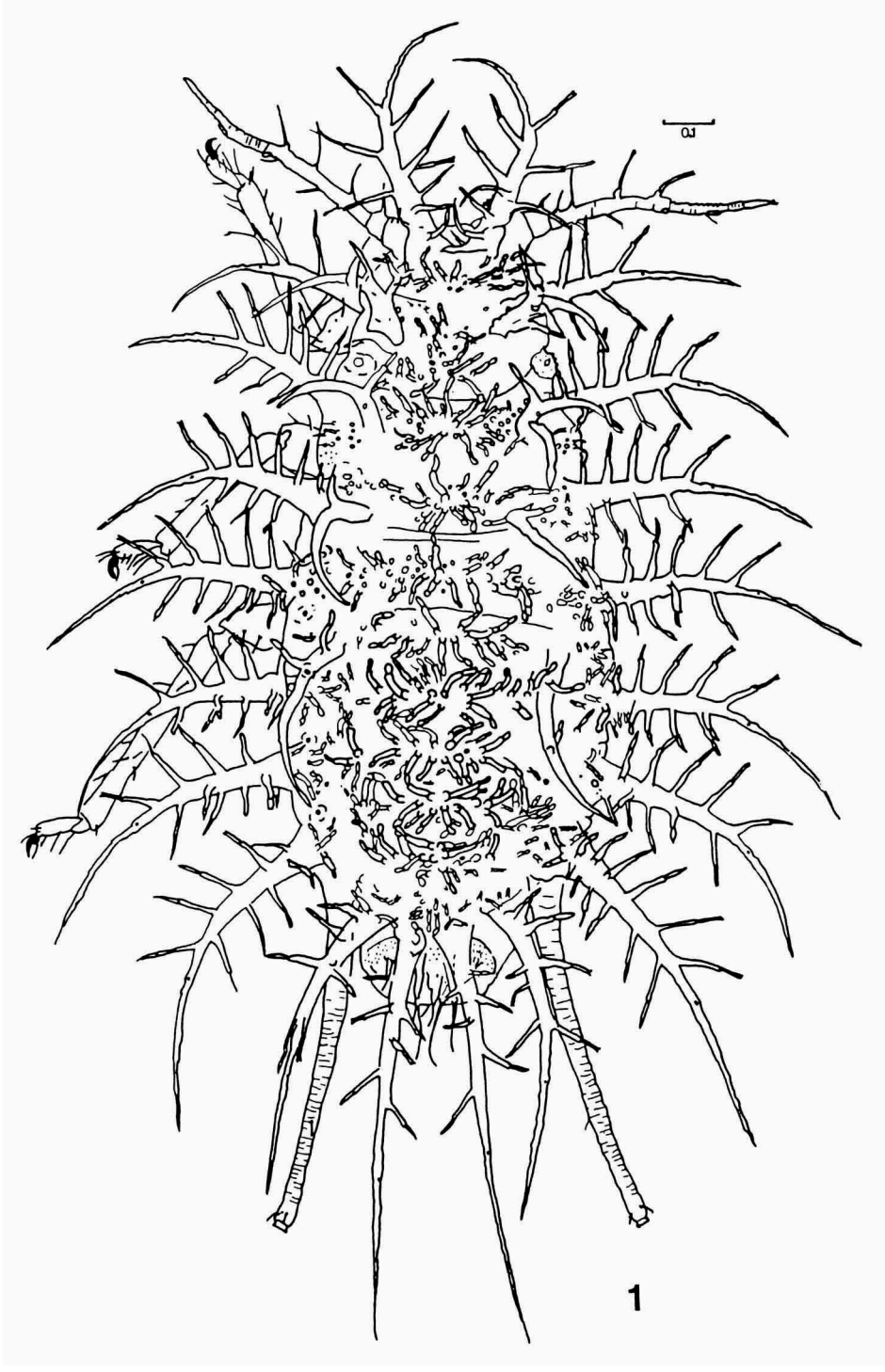
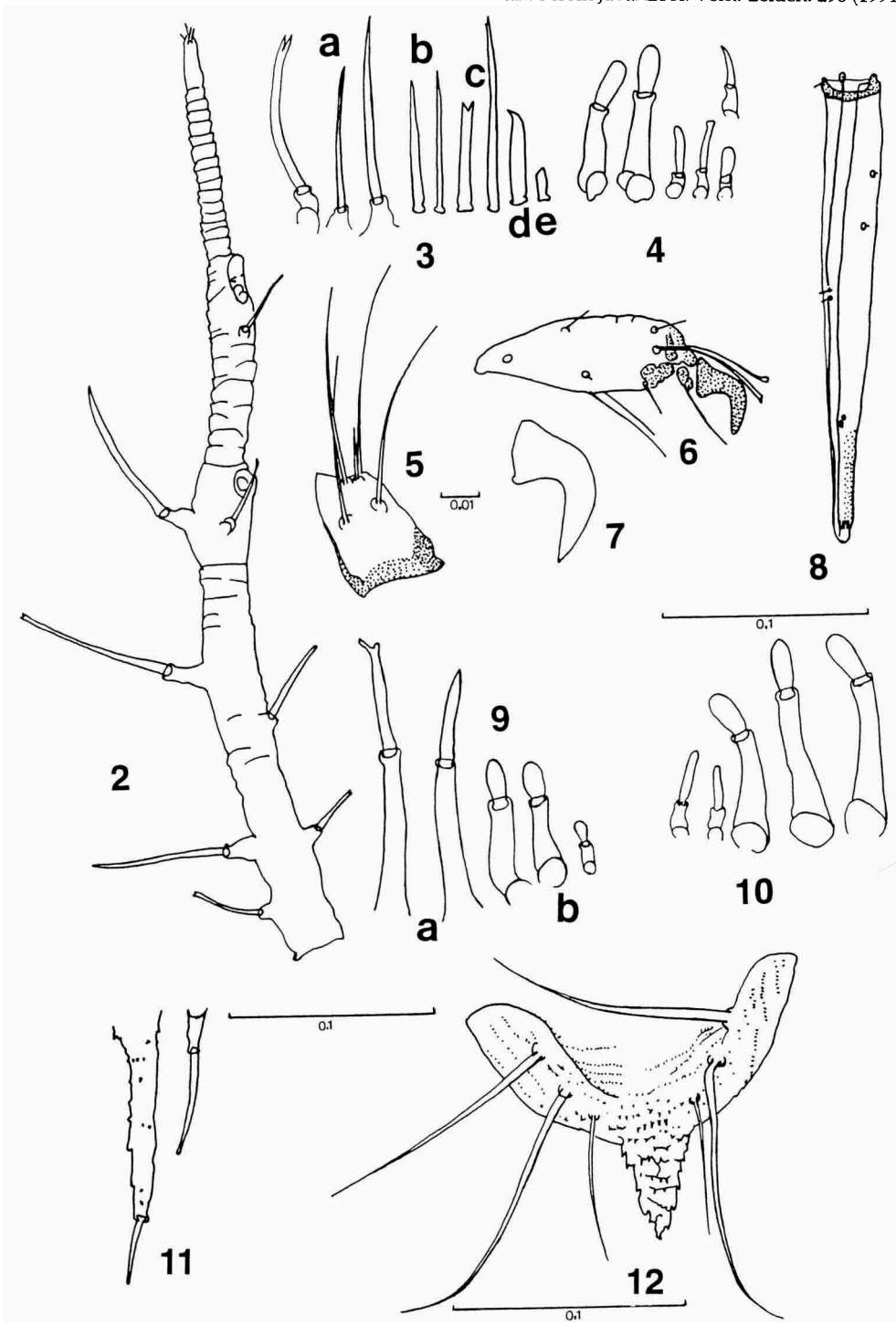


Fig. 1. *Cervaphis echinata* Hille Ris Lambers, apterous viviparous ♀, dorsal side.



Figs. 2-12. *Cervaphis echinata* Hille Ris Lambers, apterous viviparous ♀. Fig. 2, antennal segments III-V. Fig.3, head, **a** anterior frontal hairs, **b-e** hairs of the frontal processus, **b** hairs of the main branch, **c** of upper side branches, **d** and **e** of basal side branches. Fig. 4, unbranched processi on the middle of the head. Fig. 5, first tarsal segment of the hind leg. Fig. 6, second tarsal segment of the hind leg with fig. 7, claw. Fig. 8, ultimate rostral segment. Fig. 9 lateral abdominal processes, **a** distal branches, **b** basal branches. Fig. 10, abdominal tergites, unbranched processi. Fig. 11, middle and small lateral processus of abdominal tergite VIII. Fig. 12, cauda.

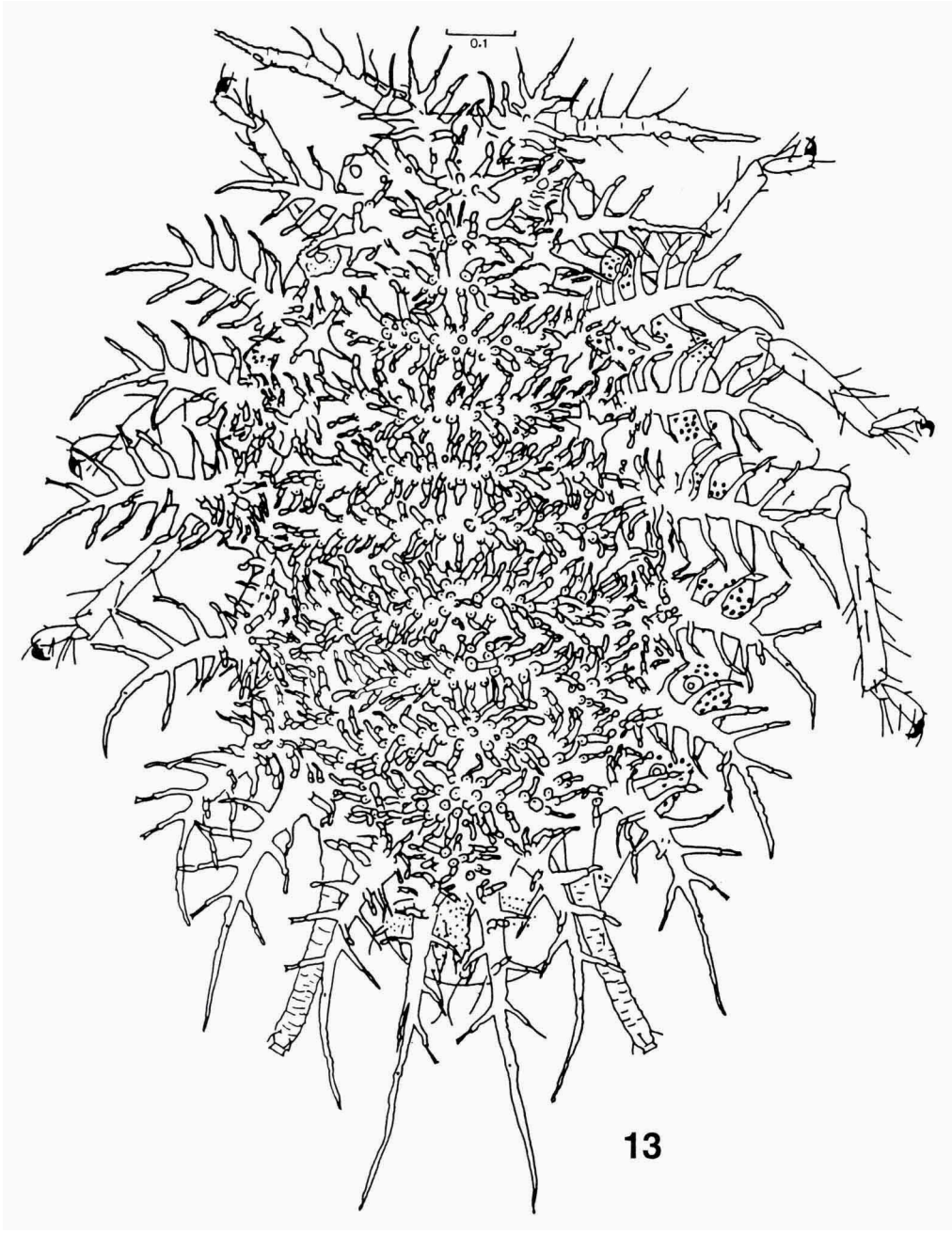
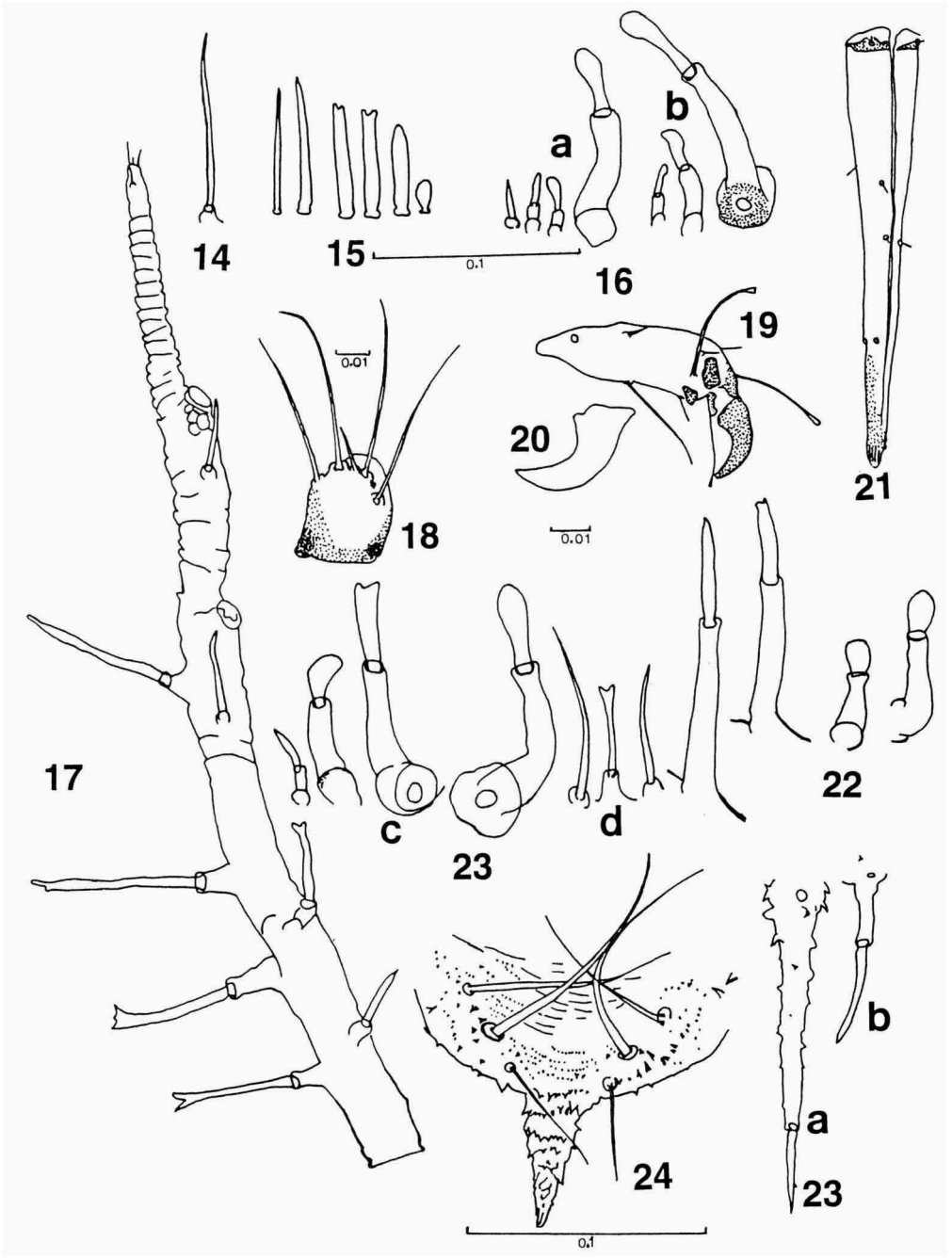
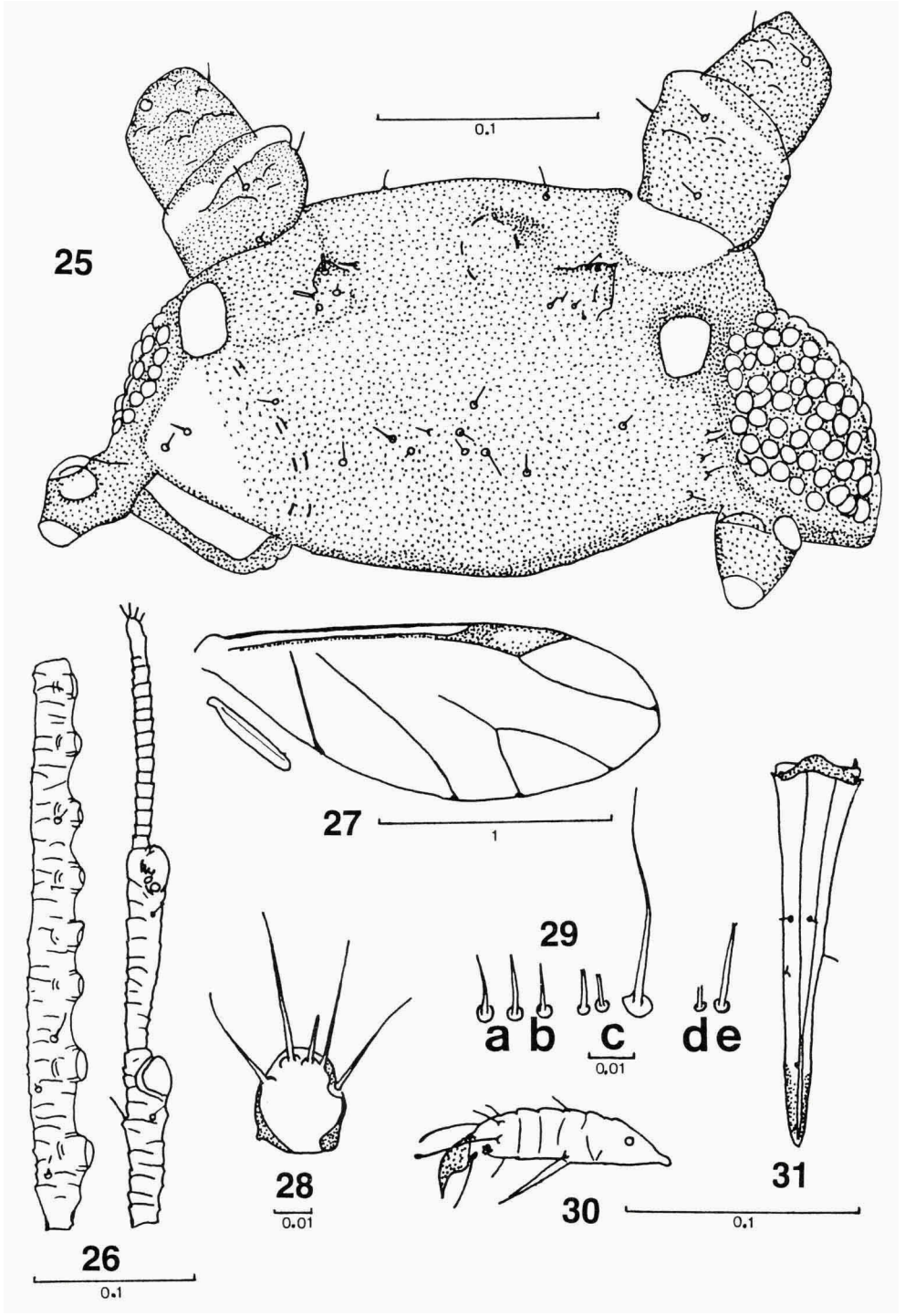


Fig. 13. *Cervaphis rappardi* Hille Ris Lambers, apterous viviparous ♀, dorsal side.



Figs. 14-24. *Cervaphis rappardi* Hille Ris Lambers, apterous viviparous ♀. Fig. 14, head, frontal hair. Fig. 15, hairs of frontal branched processi of the head. Fig. 16 **a** unbranched processi on the middle of the head, and **b** of the thorax. Fig. 17, antennal segments III and IV, scale line fig. 24. Fig. 18, first tarsal segment of the hind leg. Fig. 19, second tarsal segment of the hind leg with fig. 20, claw. Fig. 21, ultimate rostral segment. Fig. 22, two lateral abdominal branches and two basal dorsal branches. Fig. 23, **a** middle processus of abdominal tergite VIII, and **b** small lateral process; **c** unbranched abdominal processes, and **d** one ventral and two lataral abdominal hairs. Fig. 24, cauda. Figs. 14-16, 19, 21, 22-23 scale line fig. 15.



Figs. 25-31. *Cervaphis rappardi* Hille Ris Lambers, alate viviparous ♀. Fig. 25, dorsal side of the head. Fig. 26, antennal segments III, and IV plus V. Fig. 27, fore wing and hind wing. Fig. 28, first tarsal sgment of the hind leg. Fig. 29, hairs of a the head posteriorly; b the mesonotum; c tergite IV and of the ventral side, d tergite VII, e tergite VIII. Fig. 30, second tarsal segment of the hind leg. Fig. 31, ultimate rostral segment.

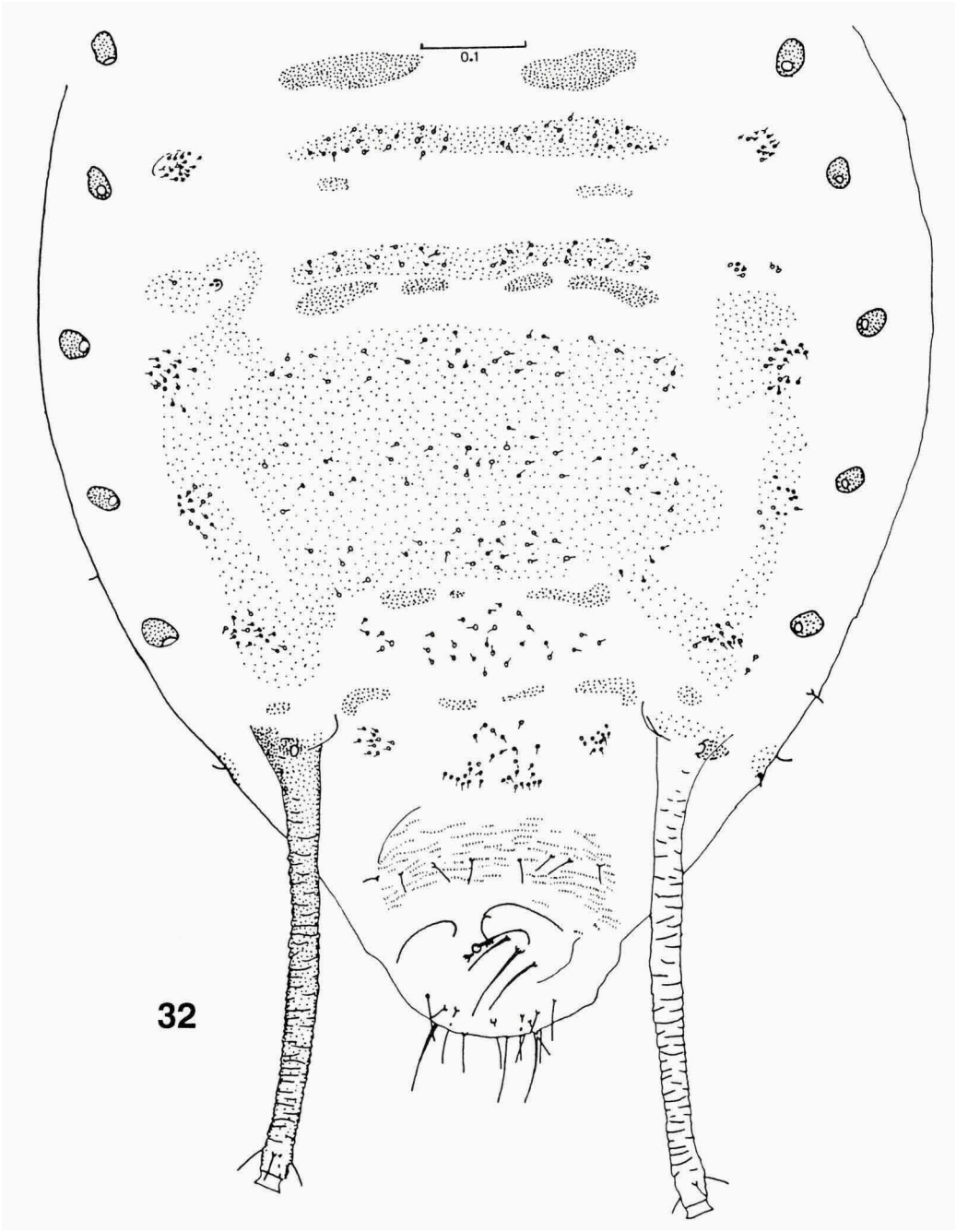


Fig. 32. *Cervaphis rappardi* Hille Ris Lambers, alate viviparous ♀, dorsal side of the abdomen.

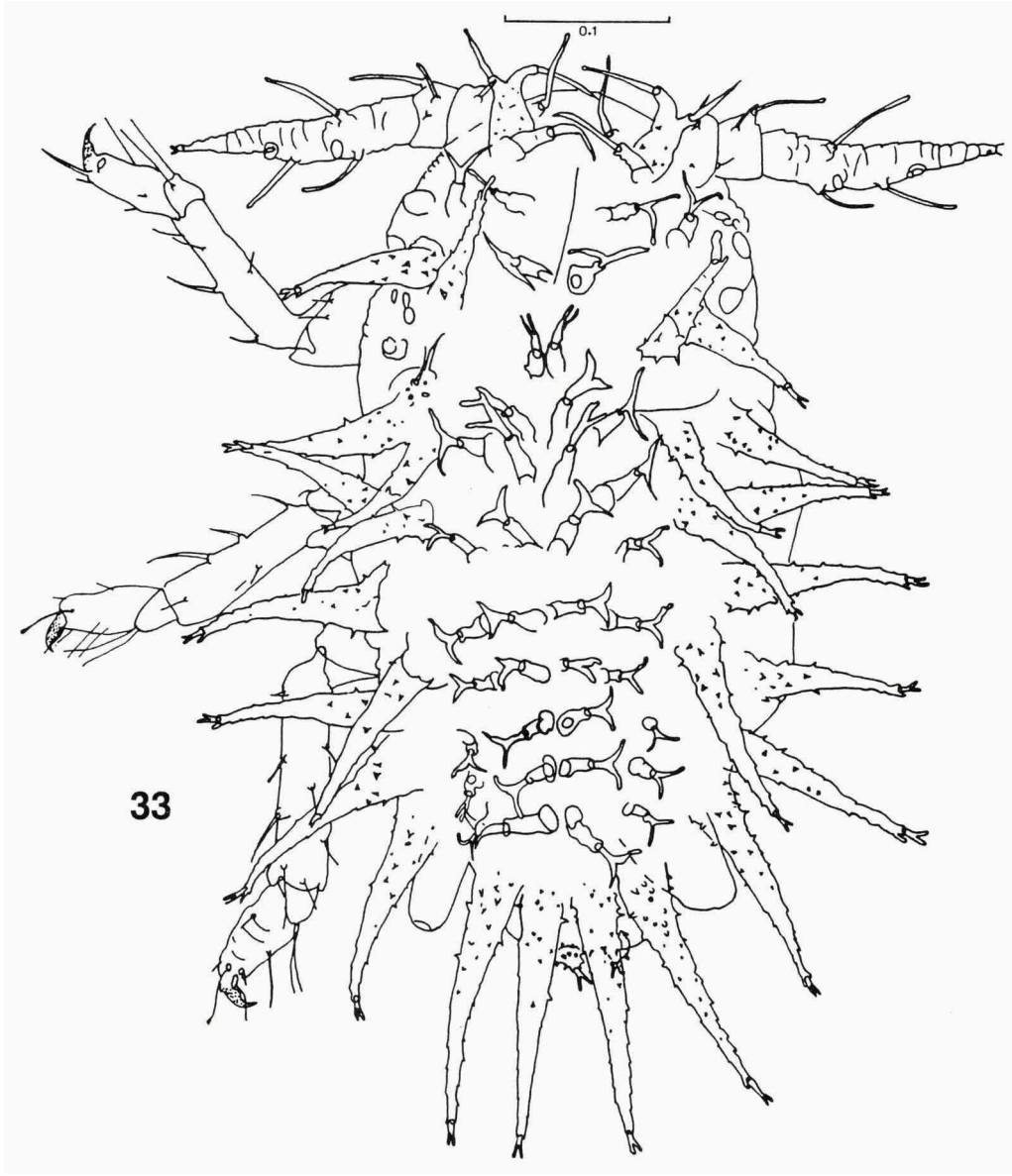


Fig. 33. *Cervaphis rappardi* Hille Ris Lambers, first stage larva, of apterous viviparous ♀, dorsal side of the body.

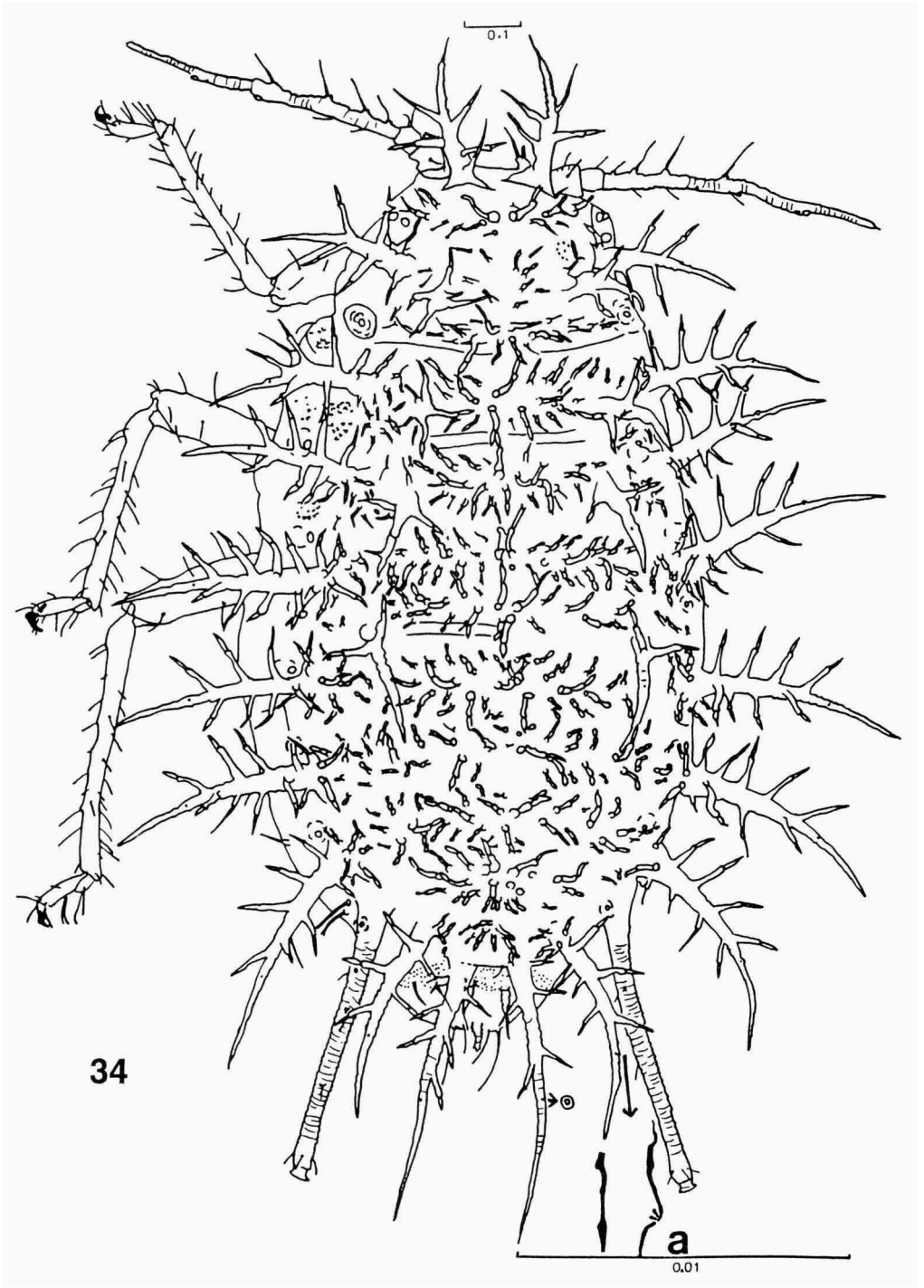
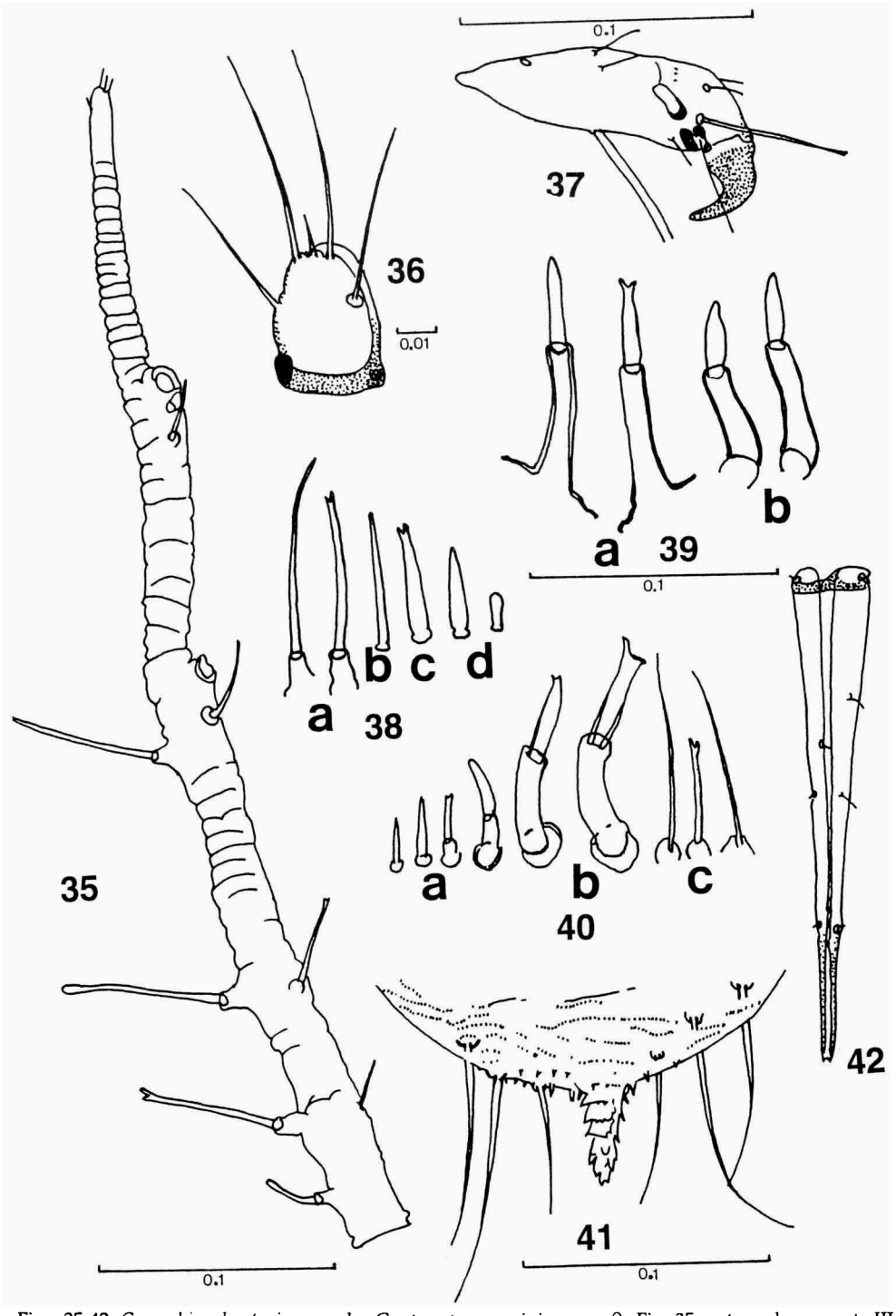
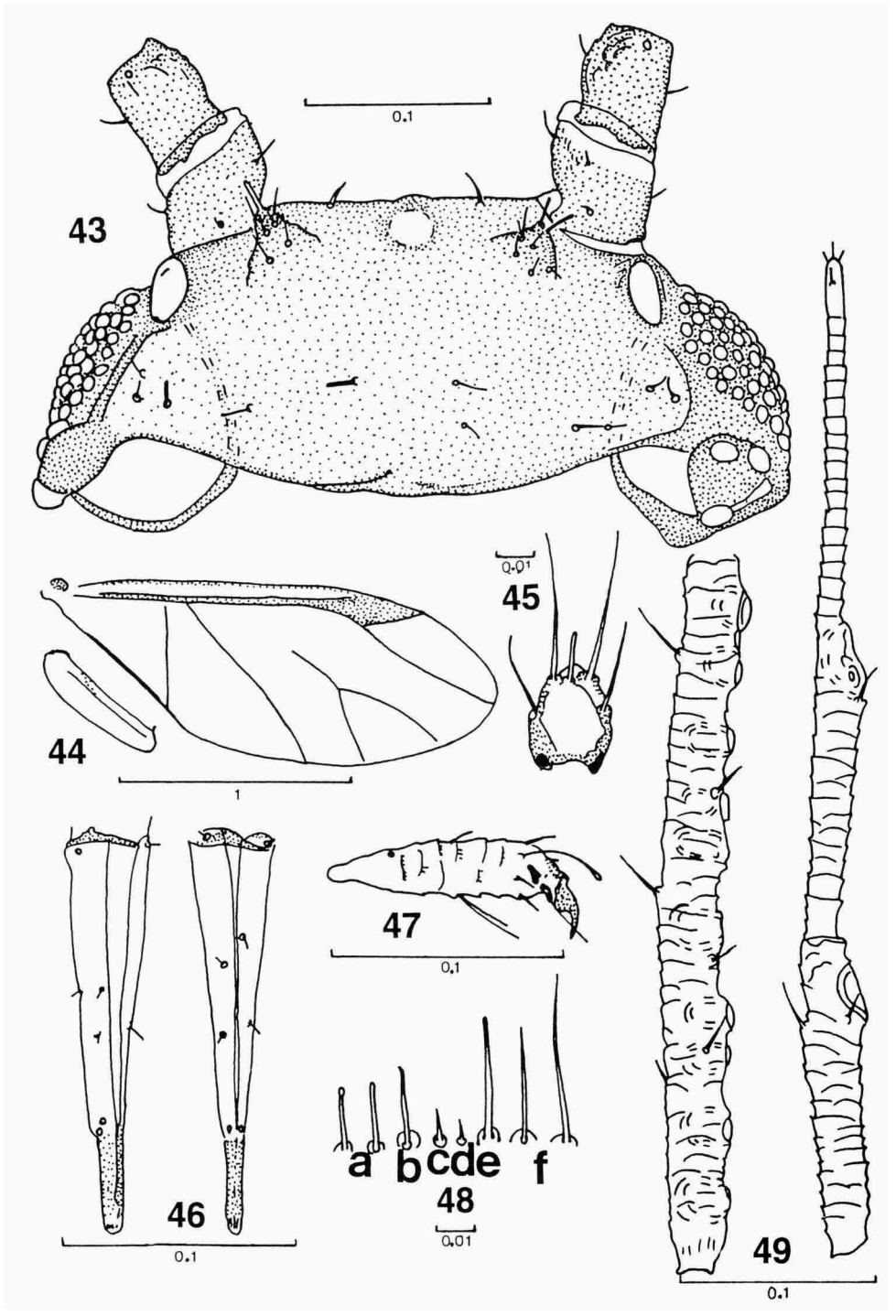


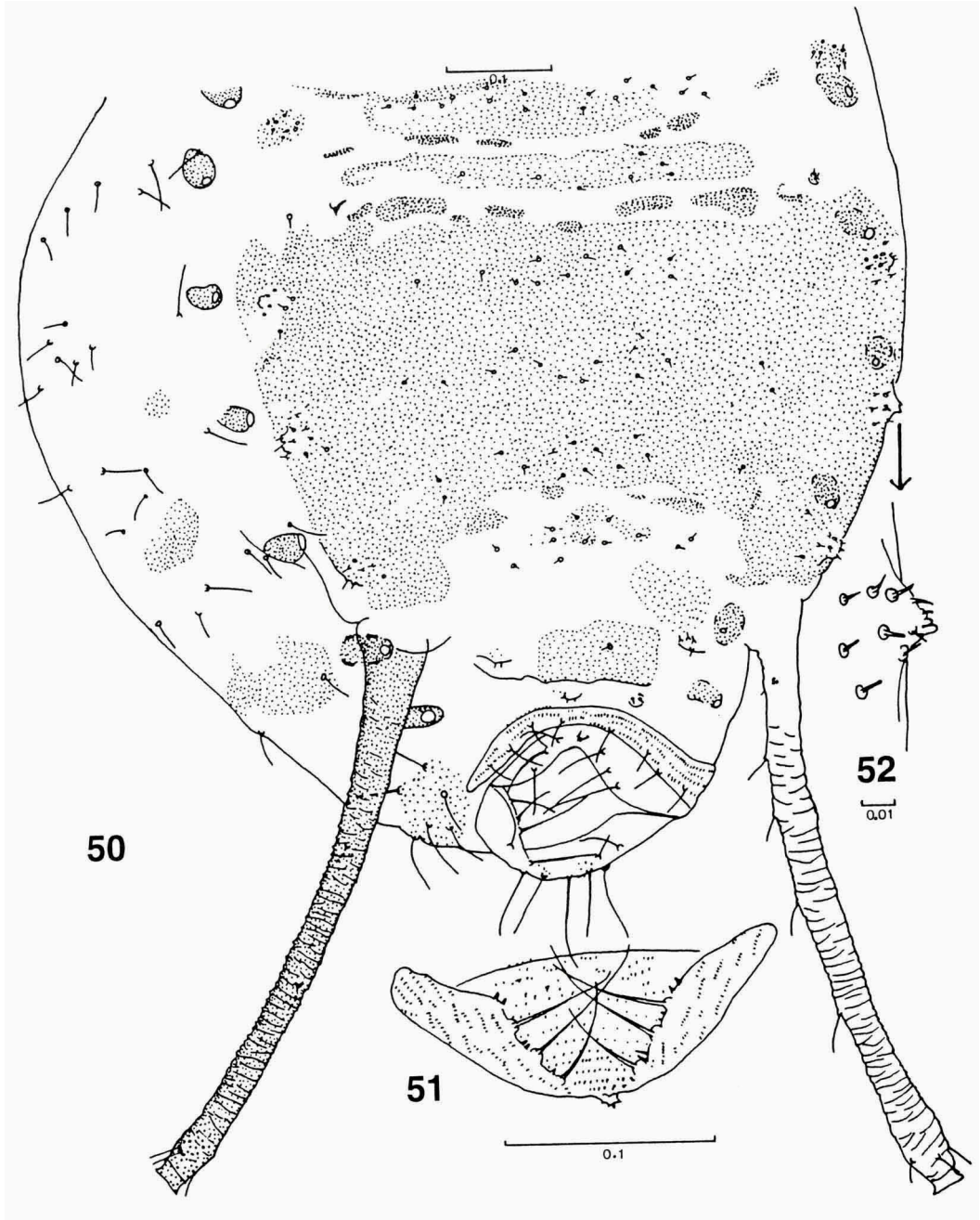
Fig. 34. *Cervaphis schouteniae* van der Goot, apterous viviparous ♀, a part of the process of abdominal segment VII, with a base of the hair, but without a hair.



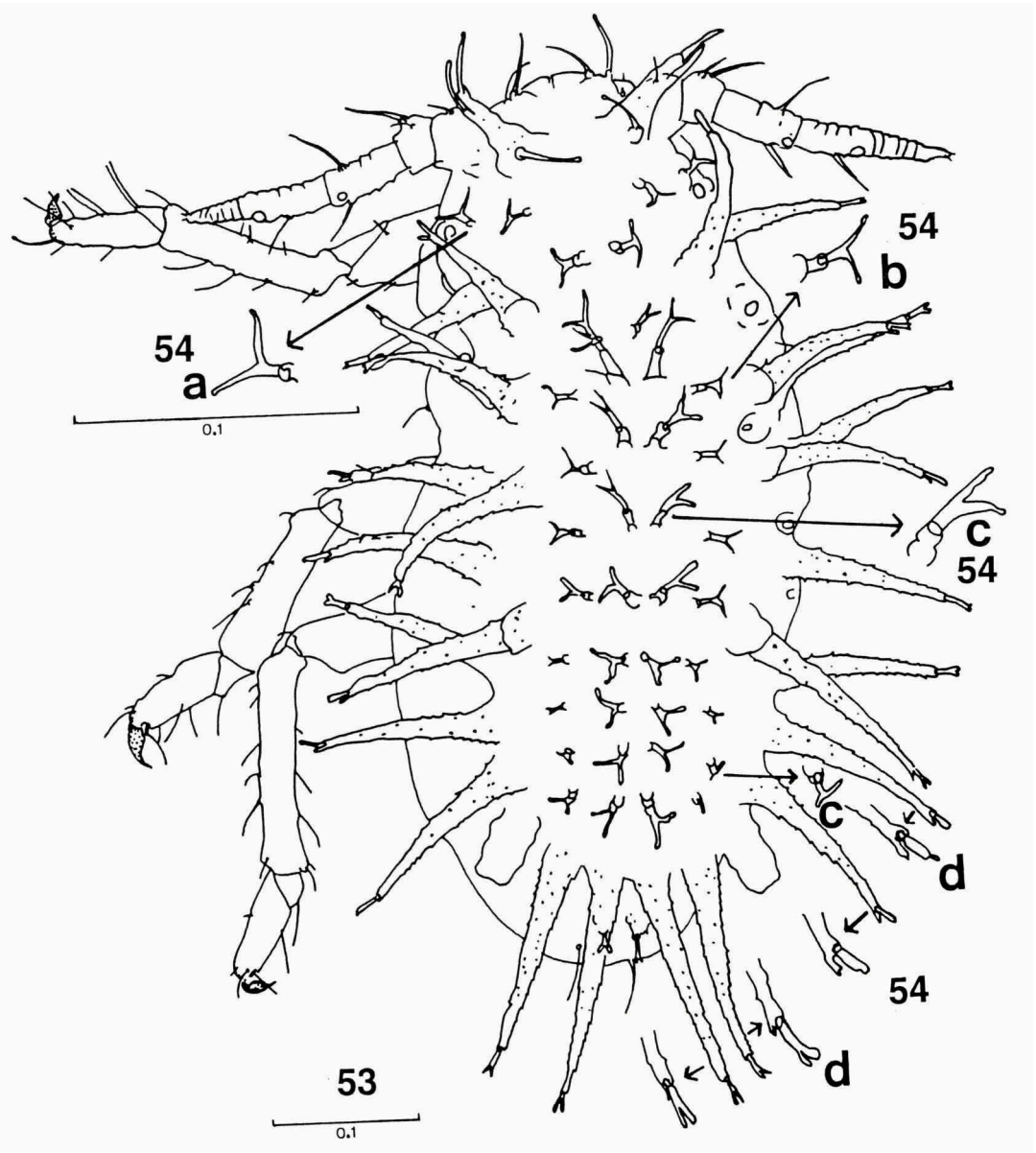
Figs. 35-42. *Cervaphis schouteniae* van der Goot, apterous viviparous ♀. Fig. 35, antennal segments III and IV. Fig. 36, first tarsal segment of the hind leg. Fig. 37, second tarsal segment of the hind leg. Fig. 38, hairs of the head, **a** of the frons; **b-d** of the branched processus, **b** distally of the main branch, **c** of a side branch, and **d** of a basal branch. Fig. 39, lateral branched processi, **a** two lateral branches with hairs; **b** two basal branches with hairs. Fig. 40, unbranched processi of head, thorax and abdomen, **a** four lateral and pleural processi, **b** two middle processi, and **c** three ventral and marginal hairs. Fig. 41, cauda. Fig. 42, ultimate rostral segment.



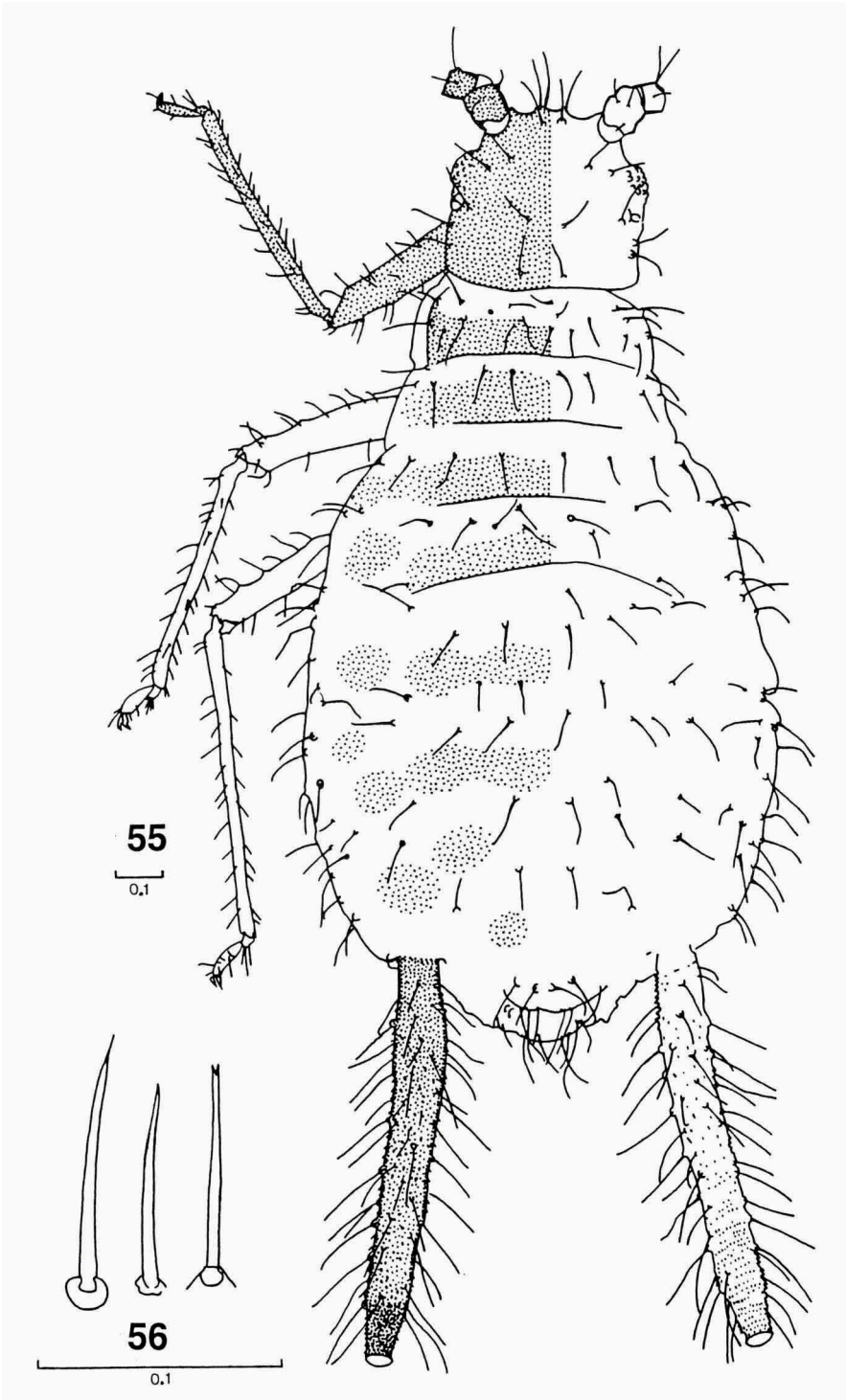
Figs. 43-49. *Cervaphis schouteniae* van der Goot, alate viviparous ♀. Fig. 43, dorsal side of the head. Fig. 44, fore wing and hind wing. Fig. 45, first tarsal segment of the hind leg. Fig. 46, two ultimate rostral segments. Fig. 47, second tarsal segment of the hind leg. Fig. 48, hairs of **a** the head, of the tubercle (left) and of the posterior part (right); **b** the mesonotum; **c** tergite IV; **d** tergite VII; **e** tergite VIII; **f** the middle of the abdomen ventrally. Fig. 49, antennal segments III, and IV plus V.



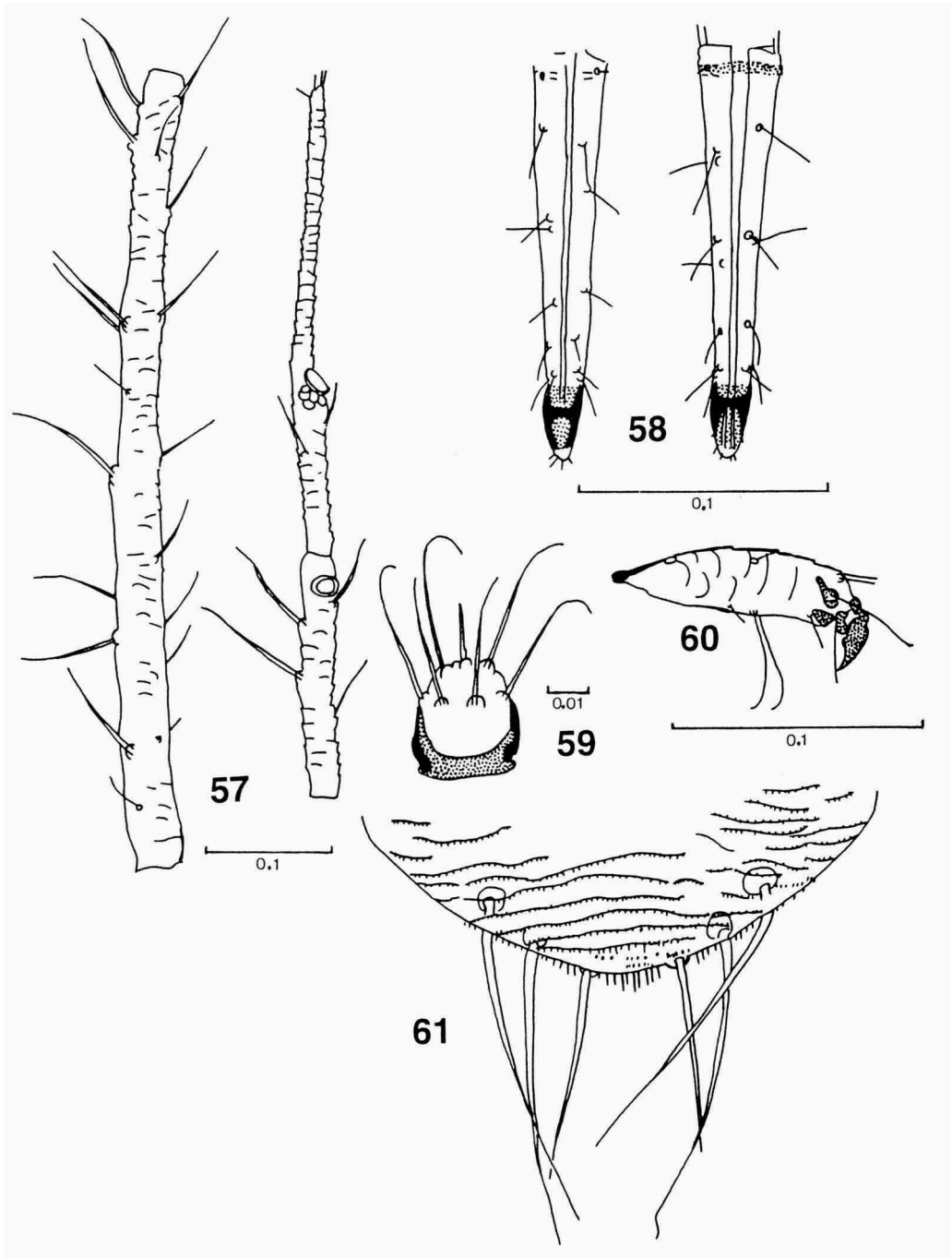
Figs. 50-52. *Cervaphis schouteniae* van der Goot, alate viviparous ♀. Fig. 50, dorsal side of the abdomen. Fig. 51, cauda. Fig. 52, tubercle of the lateral side of the abdomen.



Figs. 53-54. *Cervaphis schouteniae* van der Goot, first stage larva. Fig. 54, **a** bifurcate hair of the head; **b** pleural process of the mesonotum; **c** medial process of abdominal tergite I, and pleural process of tergite V; **d** distal end of lateral processes.



Figs. 55-56. *Eutrichosiphum glabrum* spec. nov., apterous viviparous ♀. Fig. 55, dorsal side of the body. Fig. 56, abdominal dorsal hairs.



Figs. 57-61. *Eutrichosiphum glabrum* spec. nov., apterous viviparous ♀. Fig. 57, antennal segments III, and IV plus V. Fig. 58, two ultimate rostral segments. Fig. 59, first tarsal segment of the hind leg. Fig. 60, second tarsal segment of the hind leg. Fig. 61, cauda.

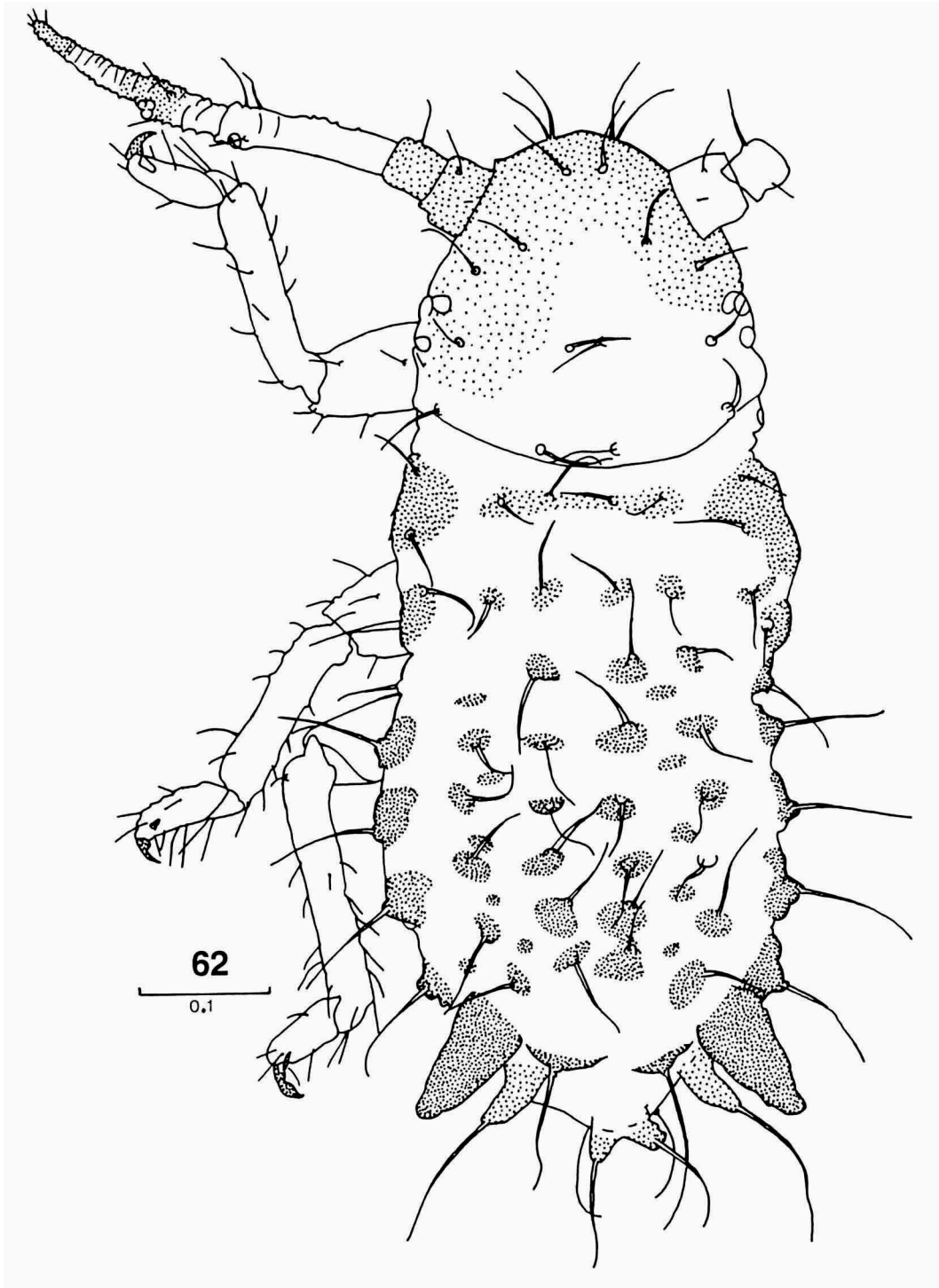
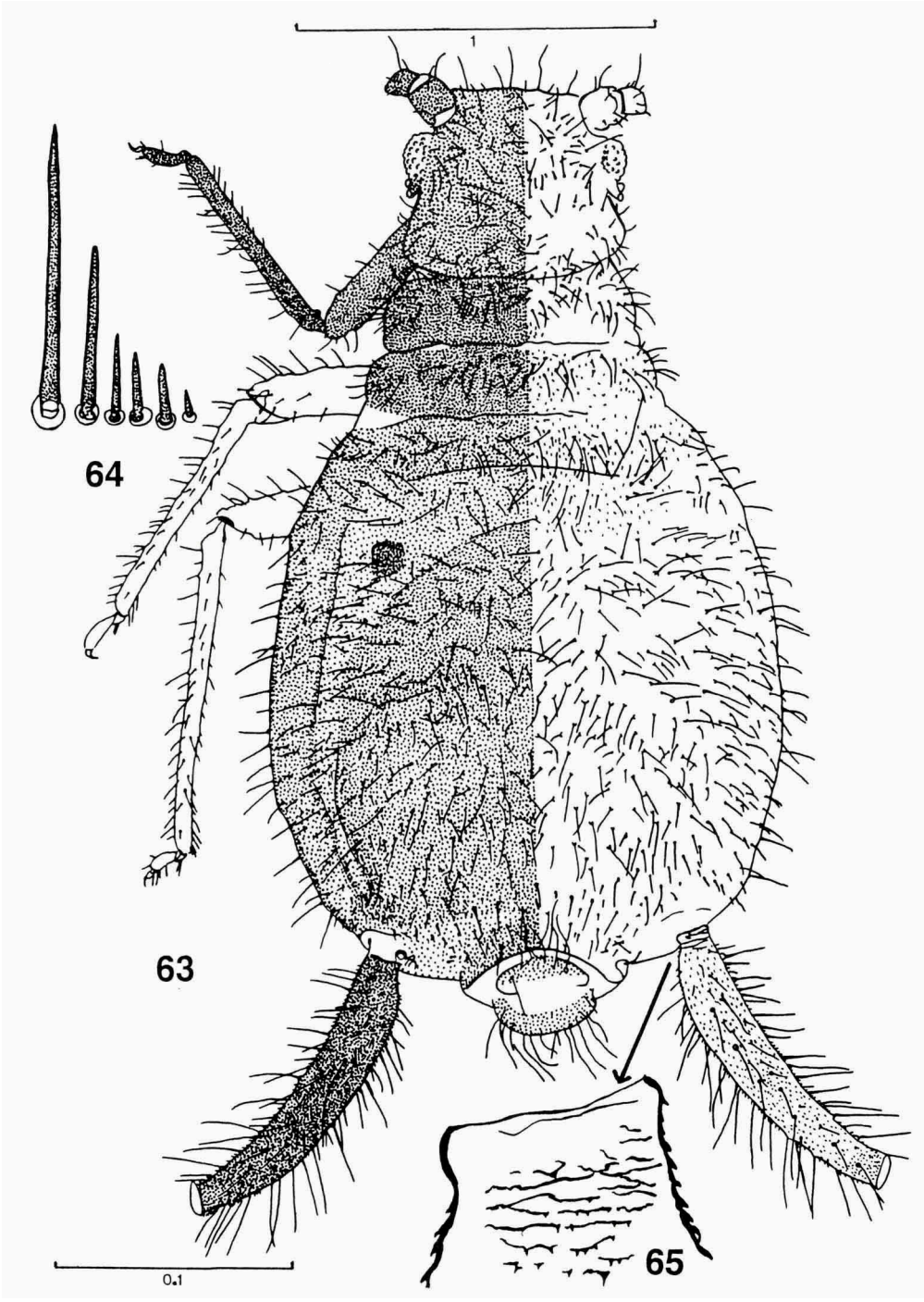
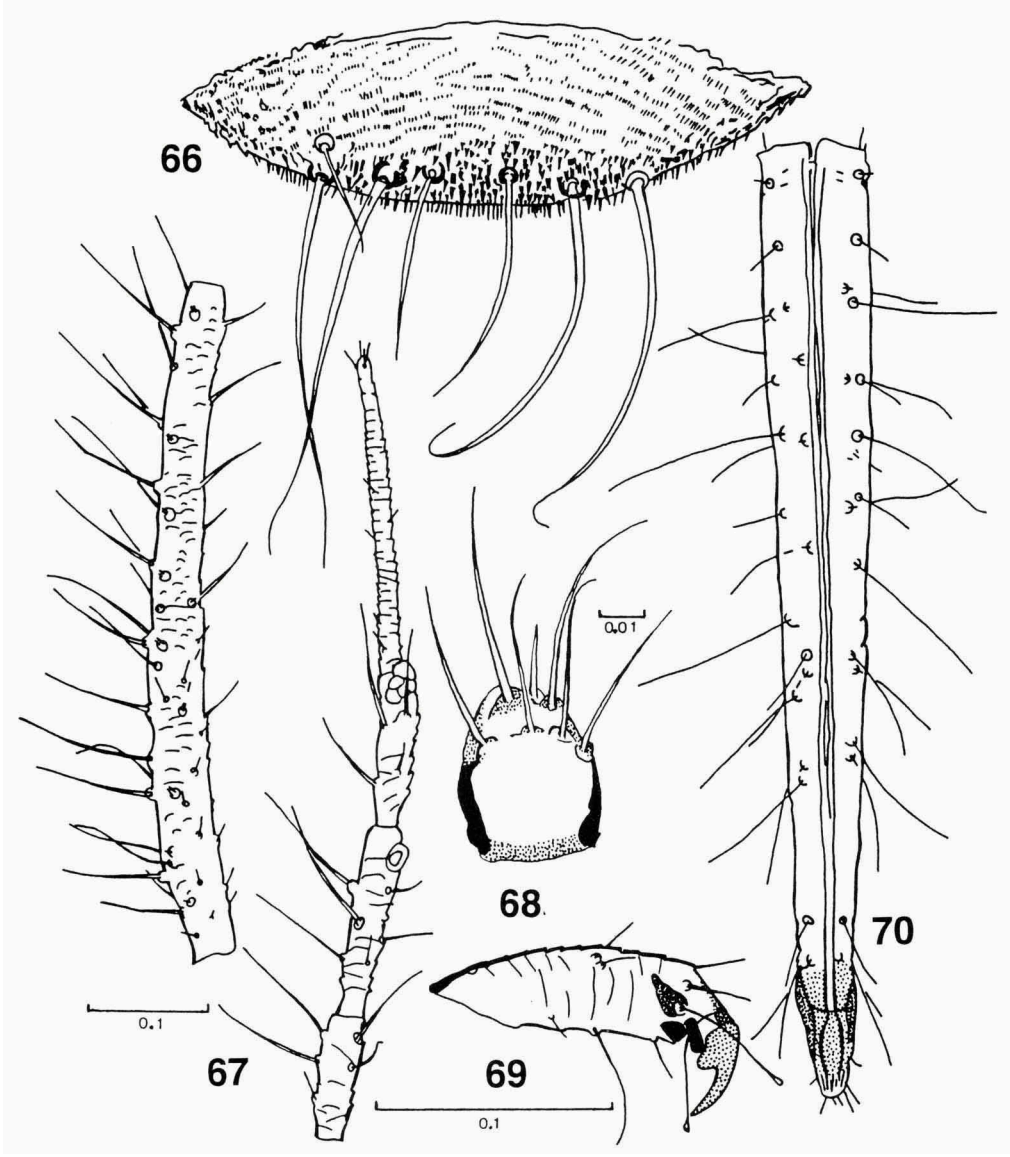


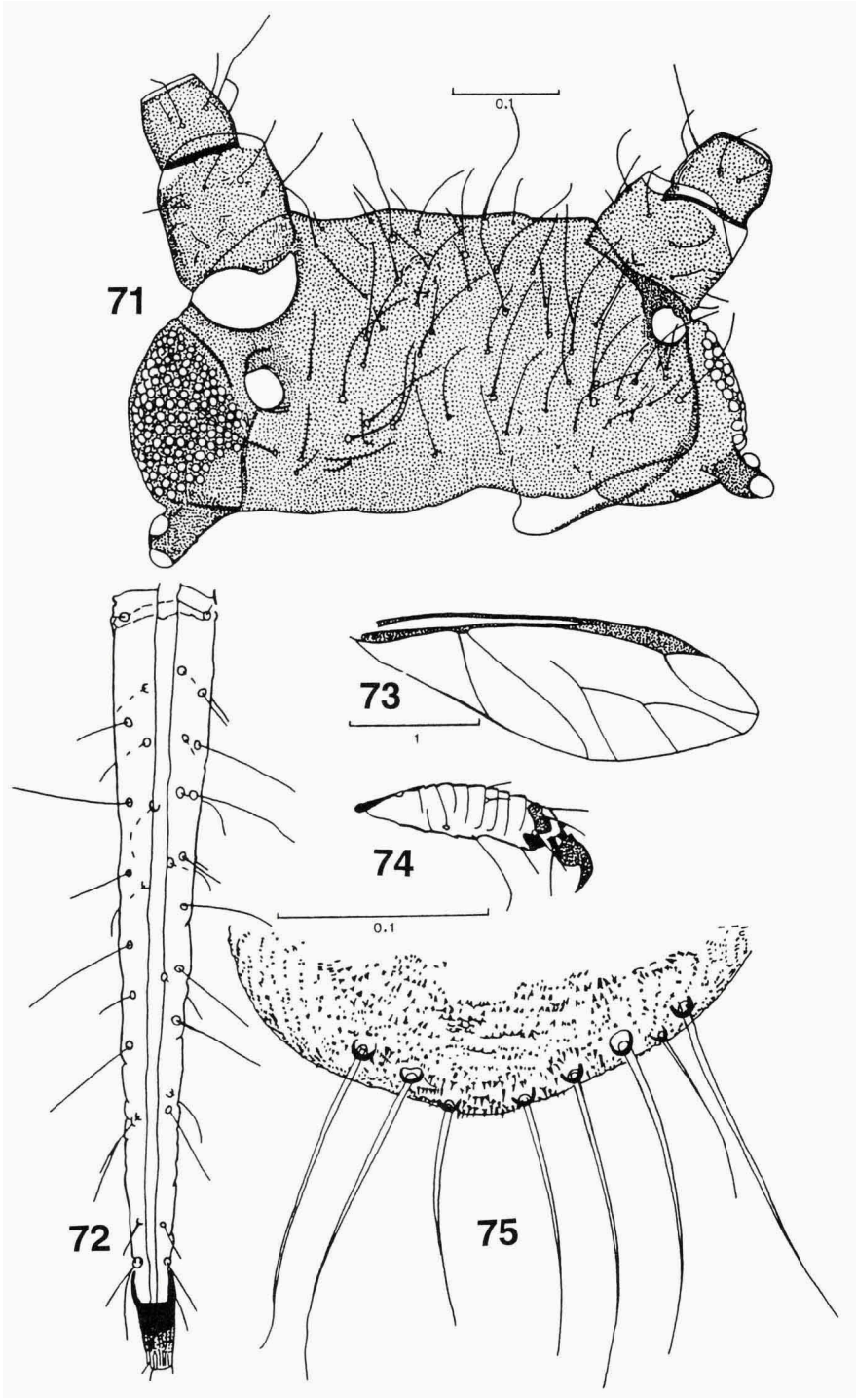
Fig. 62. *Eutrichosiphum glabrum* spec. nov., first stage larva of apterous viviparous ♀, dorsal side of the body.



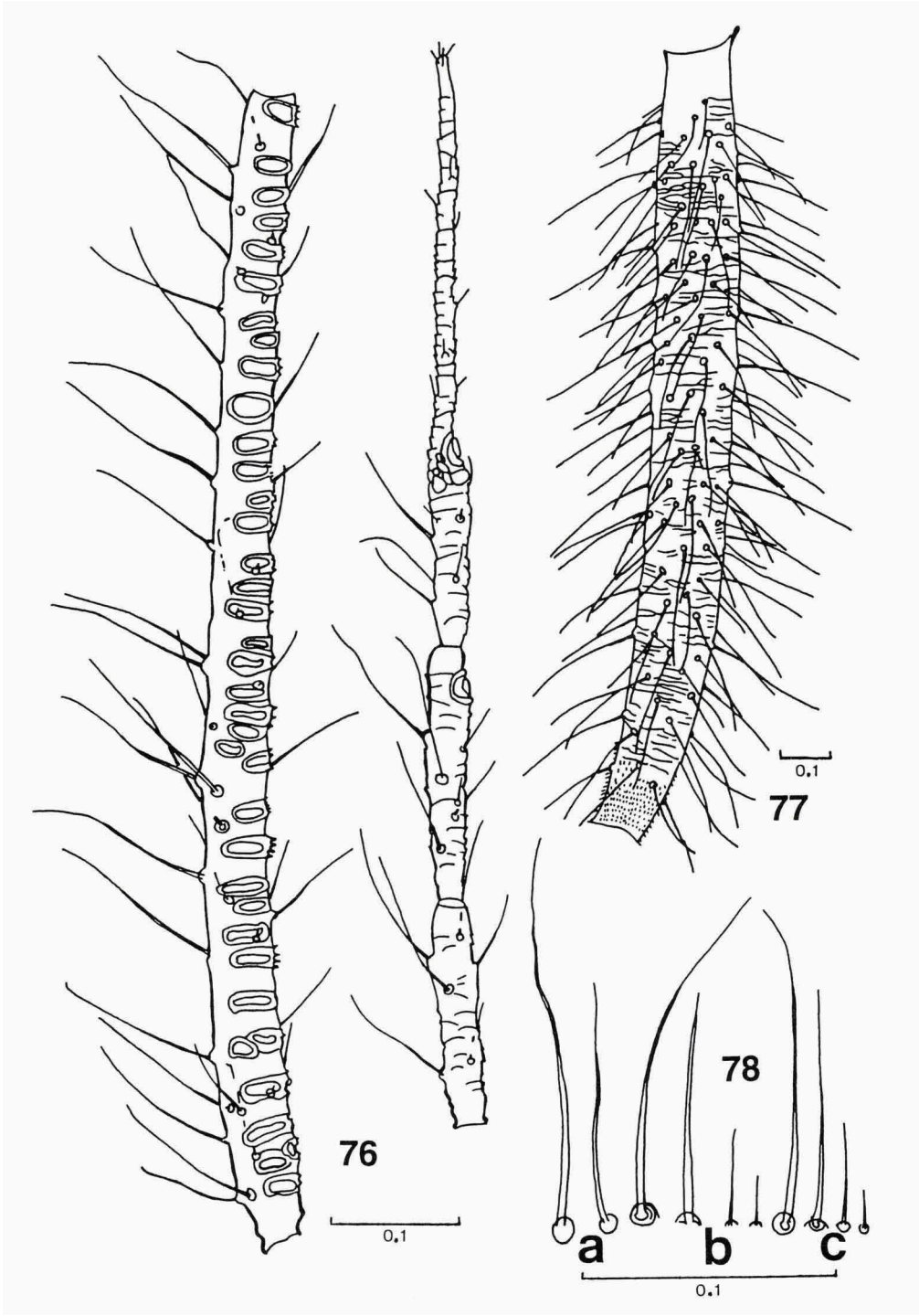
Figs. 63-65. *Eutrichosiphum heterotrichum* (Raychaudhuri), appterous viviparous ♀. Fig. 63, dorsal side of the body. Fig. 64, abdominal dorsal side. Fig. 65, base of the siphunculus.



Figs. 66-70. *Eutrichosiphum heterotrichum* (Raychaudhuri), apterous viviparous ♀. Fig. 66, cauda. Fig. 67, ventral side of antennal segments III, and IV-VI. Fig. 68, first tarsal segment of the hind leg. Fig. 69, second tarsal segment of the hind leg. Fig. 70, ultimate rostral segment.



Figs. 71-75. *Eutrichosiphum heterotrichum* (Raychaudhuri), alate viviparous ♀. Fig. 71, dorsal side of the head. Fig. 72, ultimate rostral segment. Fig. 73, fore wing. Fig. 74, second tarsal segment of the hind leg. Fig. 75, cauda.



Figs. 76-78. *Eutrichosiphum heterotrichum* (Raychaudhuri), alate viviparous ♀. Fig. 76, antennal segments III, and IV-VI. Fig. 77, siphunculus. Fig. 78, **a** dorsal hairs of the mesonotum; **b** dorsal abdominal hairs; **c** ventral hairs of the middle of the abdomen.

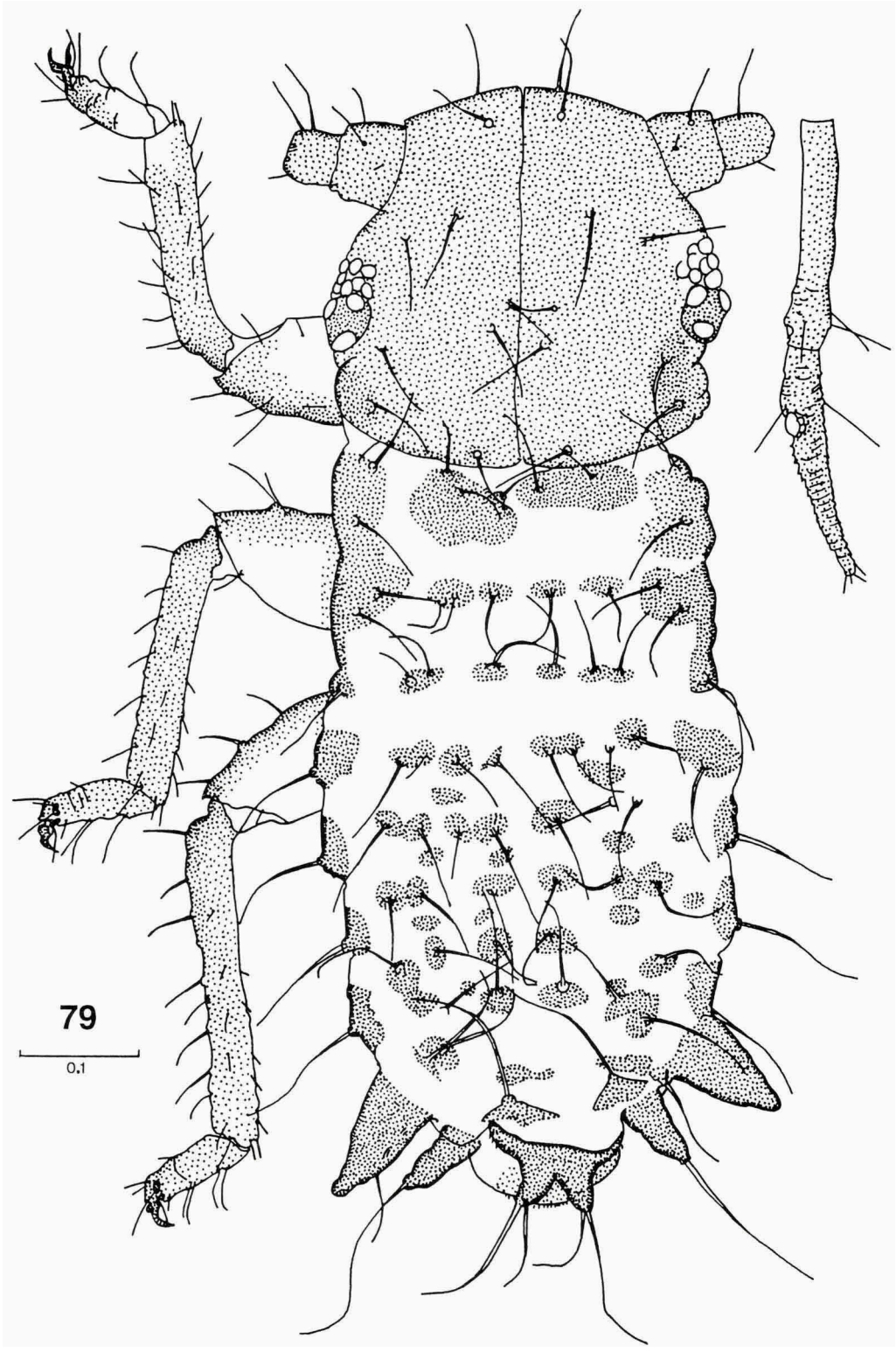
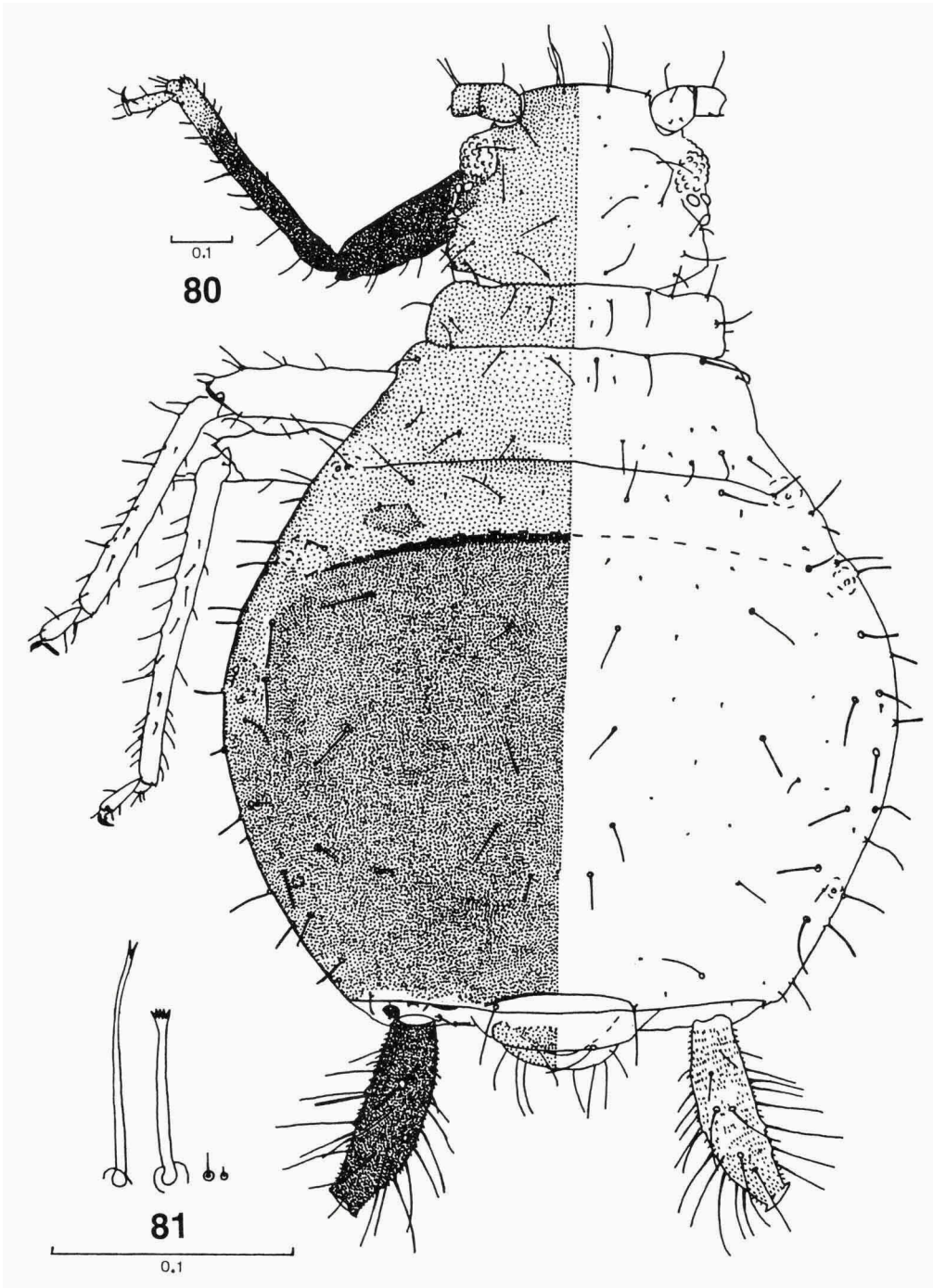
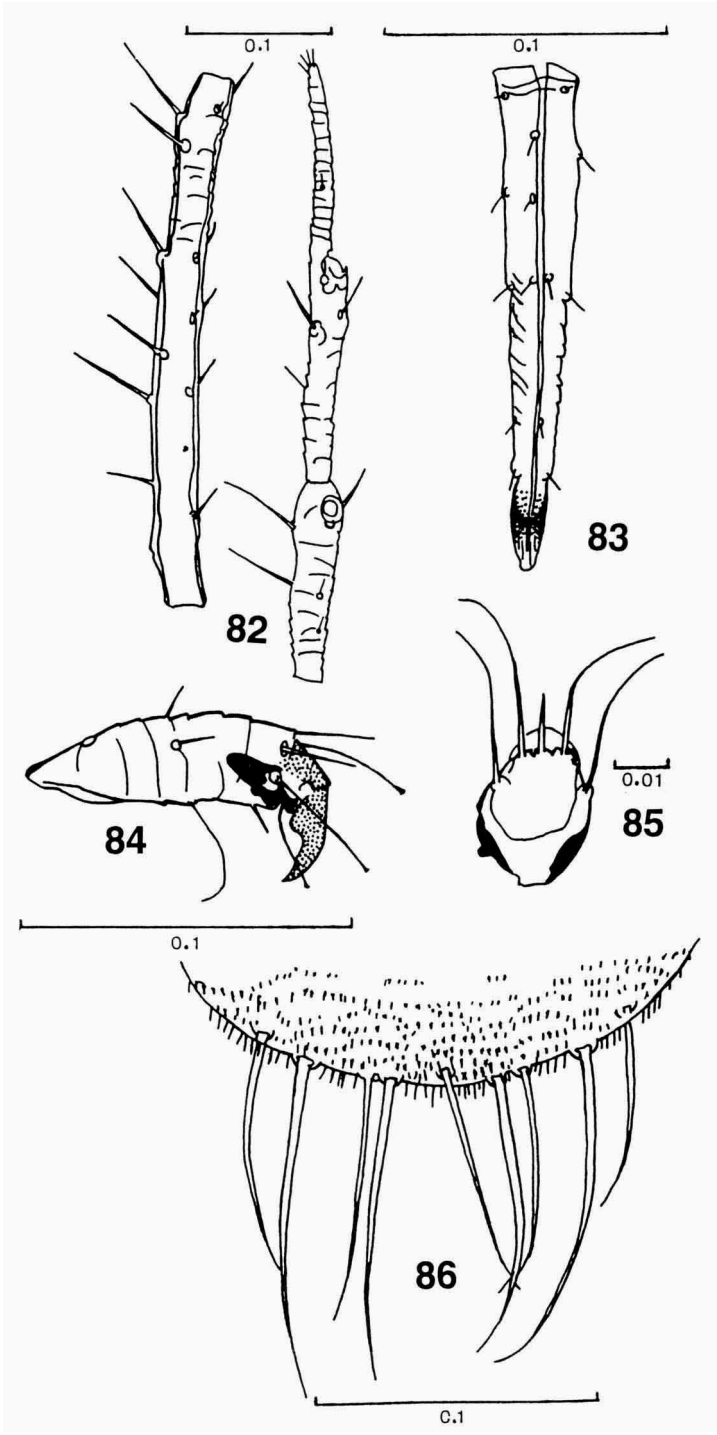


Fig. 79. *Eutrichosiphum heterotrichum* (Raychaudhuri), first stage larva of apterous viviparous ♀, dorsal side of the body.



Figs. 80-81. *Eutrichosiphum nigrum* spec. nov., apterous viviparous ♀. Fig. 80, dorsal side of the body. Fig. 81, dorsal abdominal hairs.



Figs. 82-86. *Eutrichosiphum nigrum* spec. nov., apterous viviparous ♀. Fig. 82, antennal segments III, and IV plus V. Fig. 83, ultimate rostral segment. Fig.84, second tarsal segment of the hind leg. Fig. 85, first tarsal segment of the hind leg. Fig. 86, cauda.

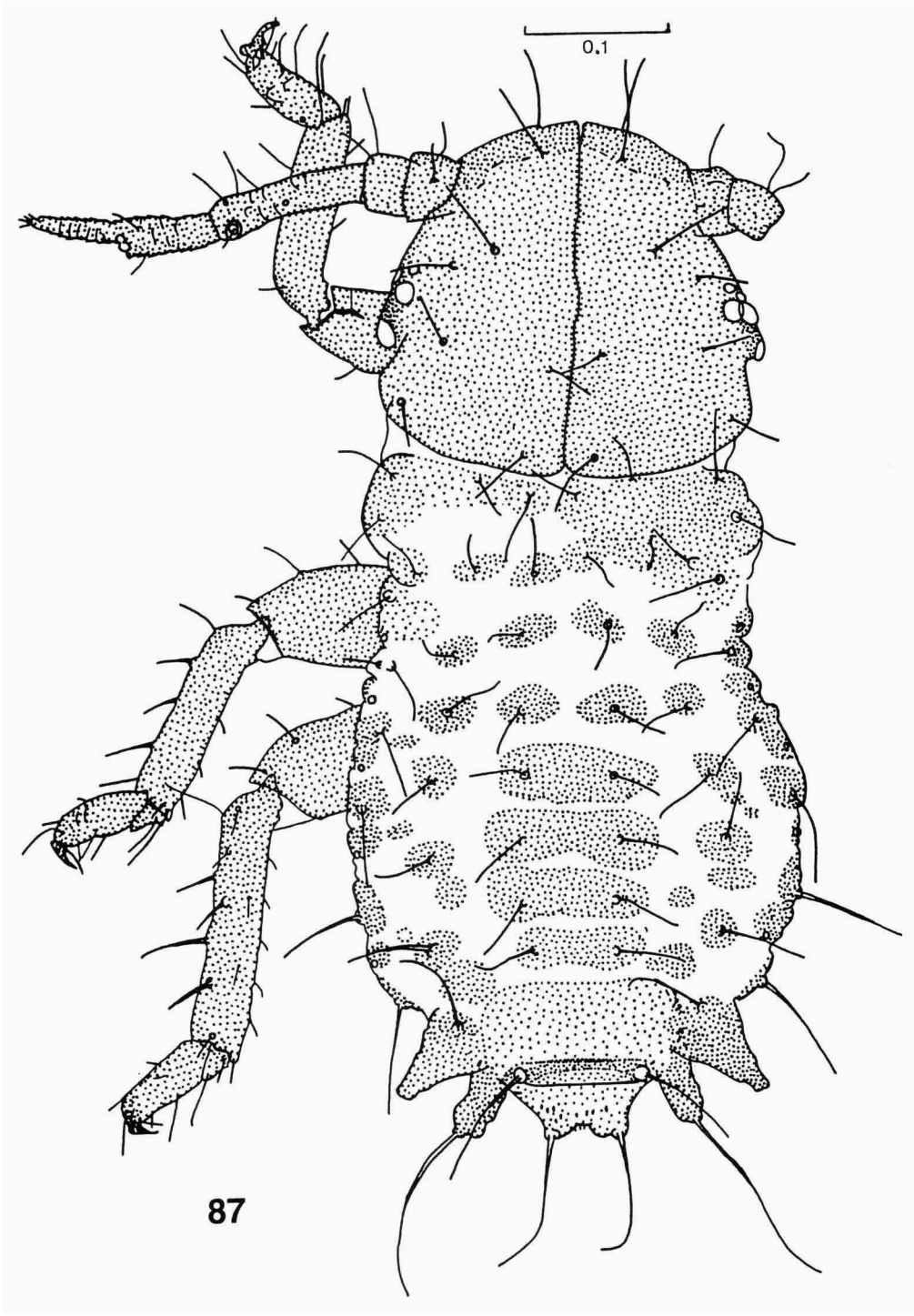
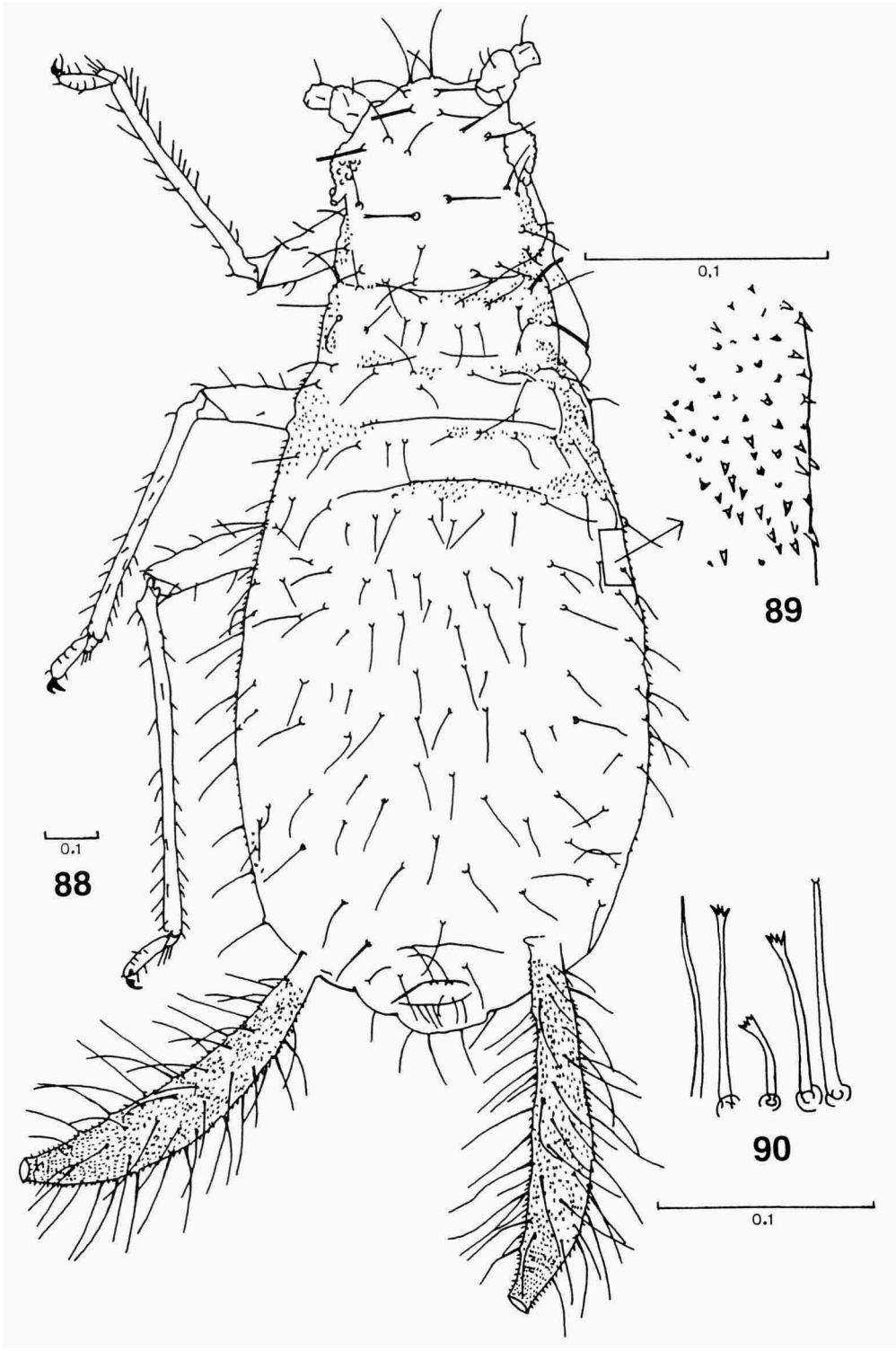
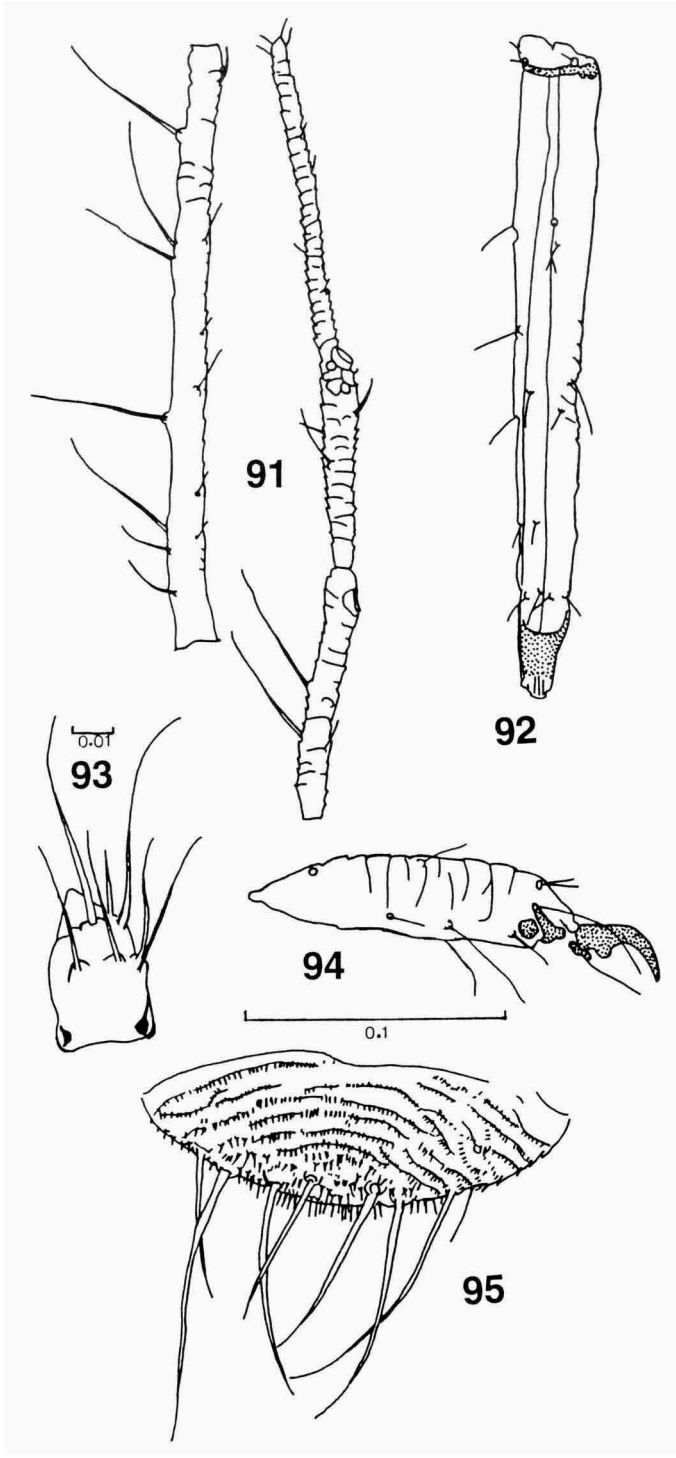


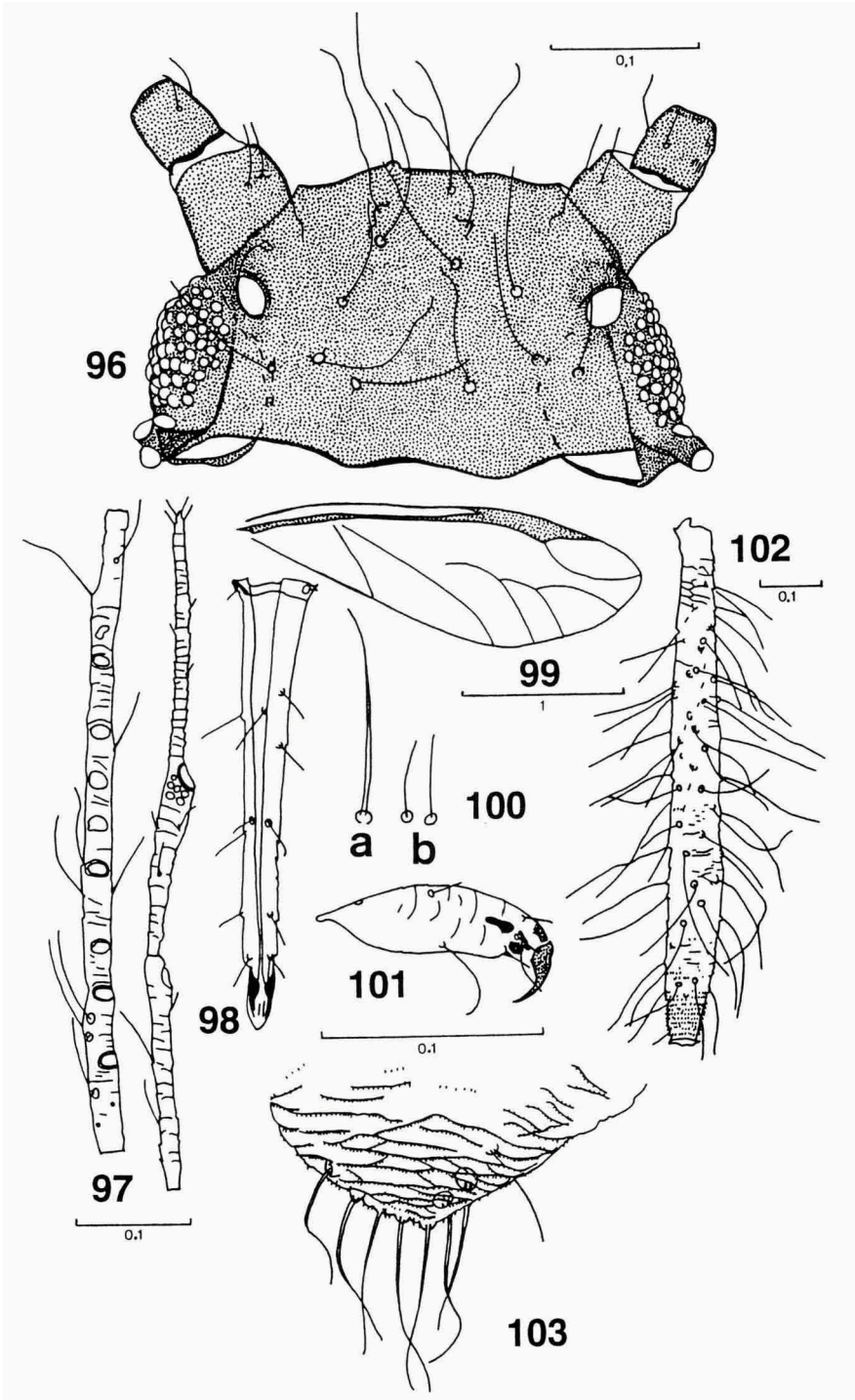
Fig. 87. *Eutrichosiphum nigrum* spec. nov., first stage larva of apterous viviparous ♀, dorsal side of the body.



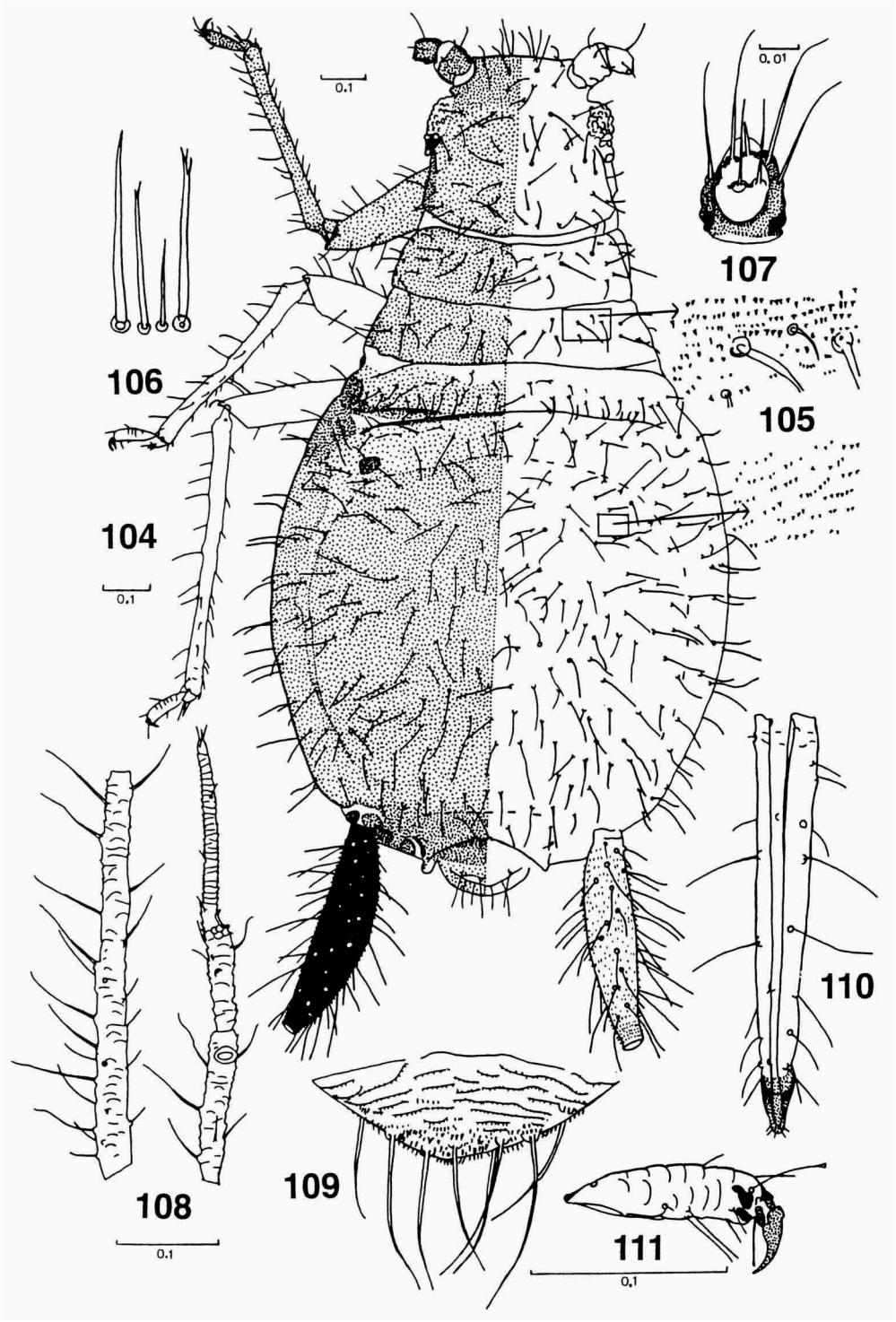
Figs. 88-90. *Eutrichosiphum pallidum* spec. nov., apterous viviparous ♀. Fig. 88, dorsal side of the body. Fig. 89, ventral side of the abdomen with spinulae. Fig. 90, abdominal dorsal hairs.



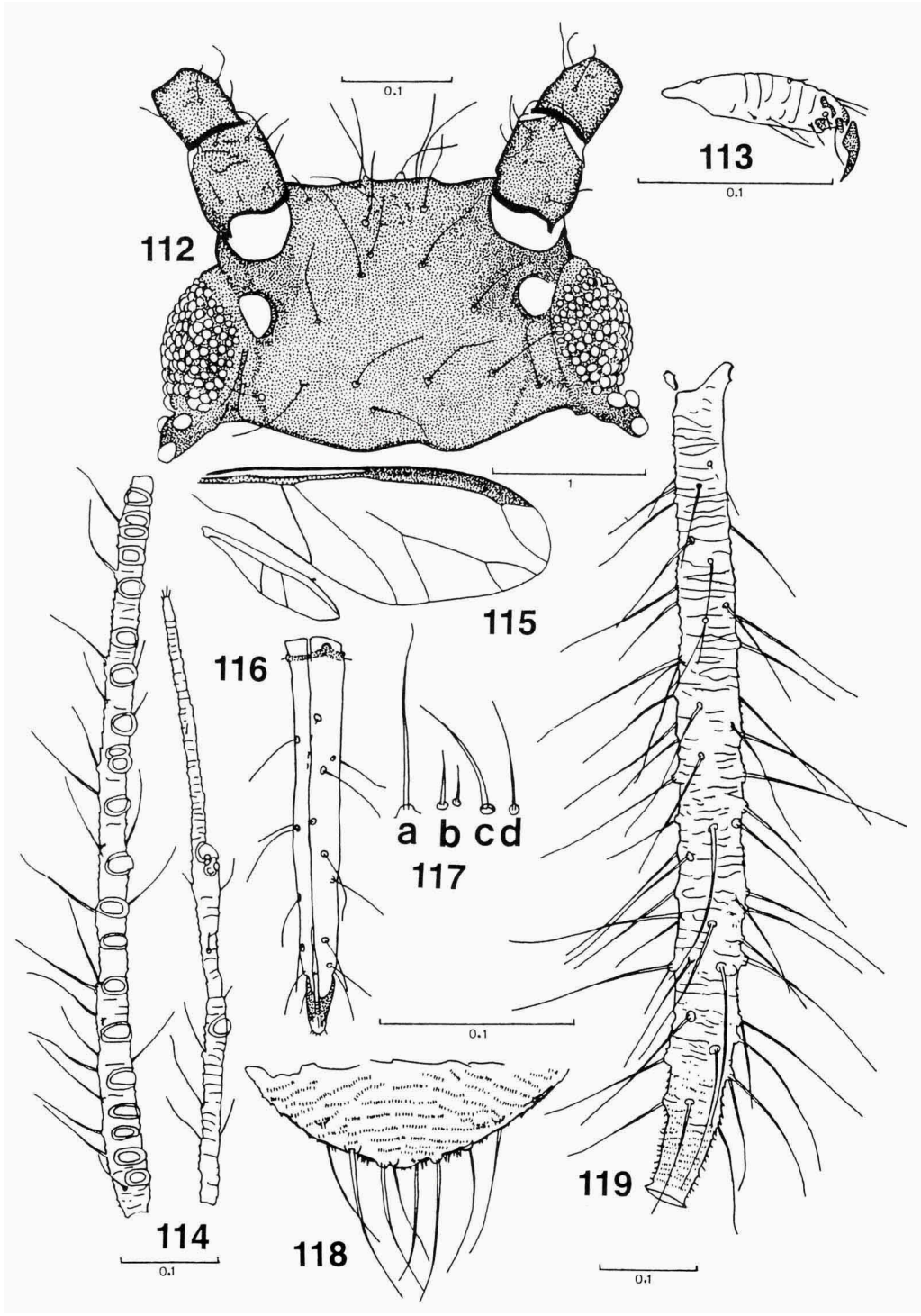
Figs. 91-95. *Eutrichosiphum pallidum* spec. nov., apterous viviparous ♀. Fig. 91, antennal segments III, and IV plus V. Fig. 92, ultimate rostral segment. Fig. 93, first tarsal segment of the hind leg. Fig. 94, second tarsal segment of the hind leg. Fig. 95, cauda.



Figs. 96-103. *Eutrichosiphum pallidum*, spec. nov., alate viviparous ♀. Fig. 96, dorsal side of the head. Fig. 97, antennal segments III, and IV plus V. Fig. 98, ultimate rostral segment. Fig. 99, fore wing. Fig. 100, **a** hair of the mesonotum, **b** hairs of abdominal tergites. Fig. 101, second tarsal segment of the hind leg. Fig. 102, siphunculus. Fig. 103, cauda.



Figs. 104-111. *Eutrichosiphum pasaniae* (Okajima), apterous viviparous ♀. Fig. 104, dorsal side of the body. Fig. 105, spinulae on metanotum and abdominal tergite III. Fig. 106, abdominal dorsal hairs. Fig. 107, first tarsal segment of the hind leg. Fig. 108, antennal segments III, and IV plus V. Fig. 109, cauda. Fig. 110, ultimate rostral segment. Fig. 111, second tarsal segment of the hind leg.



Figs 112-119. *Eutrichosiphum pasaniae* (Okajima), alate viviparous ♀. Fig. 112, dorsal side of the head. Fig. 113, second tarsal segment of the hind leg. Fig. 114, antennal segments III, and IV plus V. Fig. 115, fore wing and hind wing. Fig. 116, ultimate rostral segment. Fig. 117, hairs of **a** the mesonotum; **b** tergite IV; **c** tergite VII; **d** the middle of the abdomen ventrally. Fig. 118, cauda. Fig. 119, siphunculus.

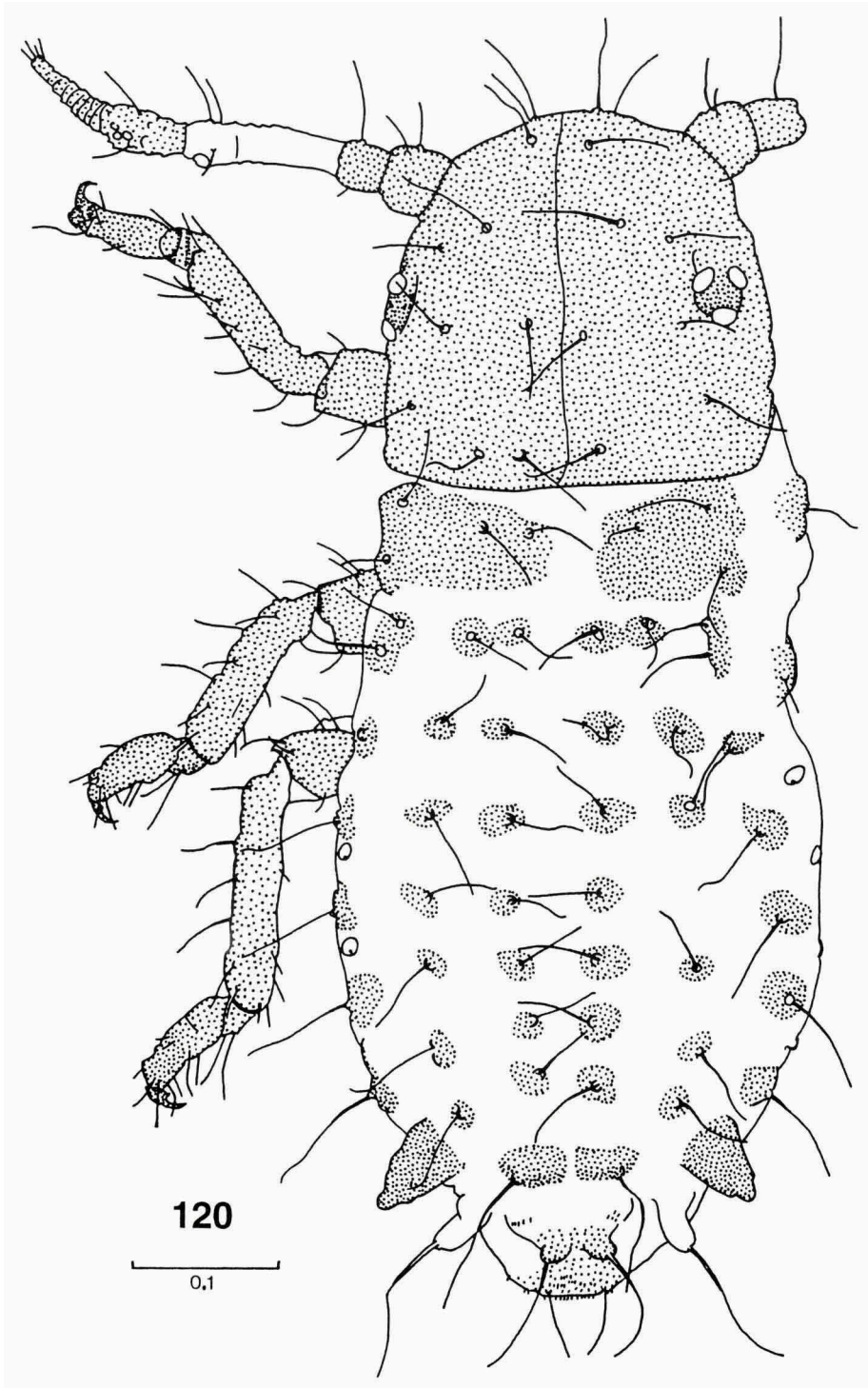
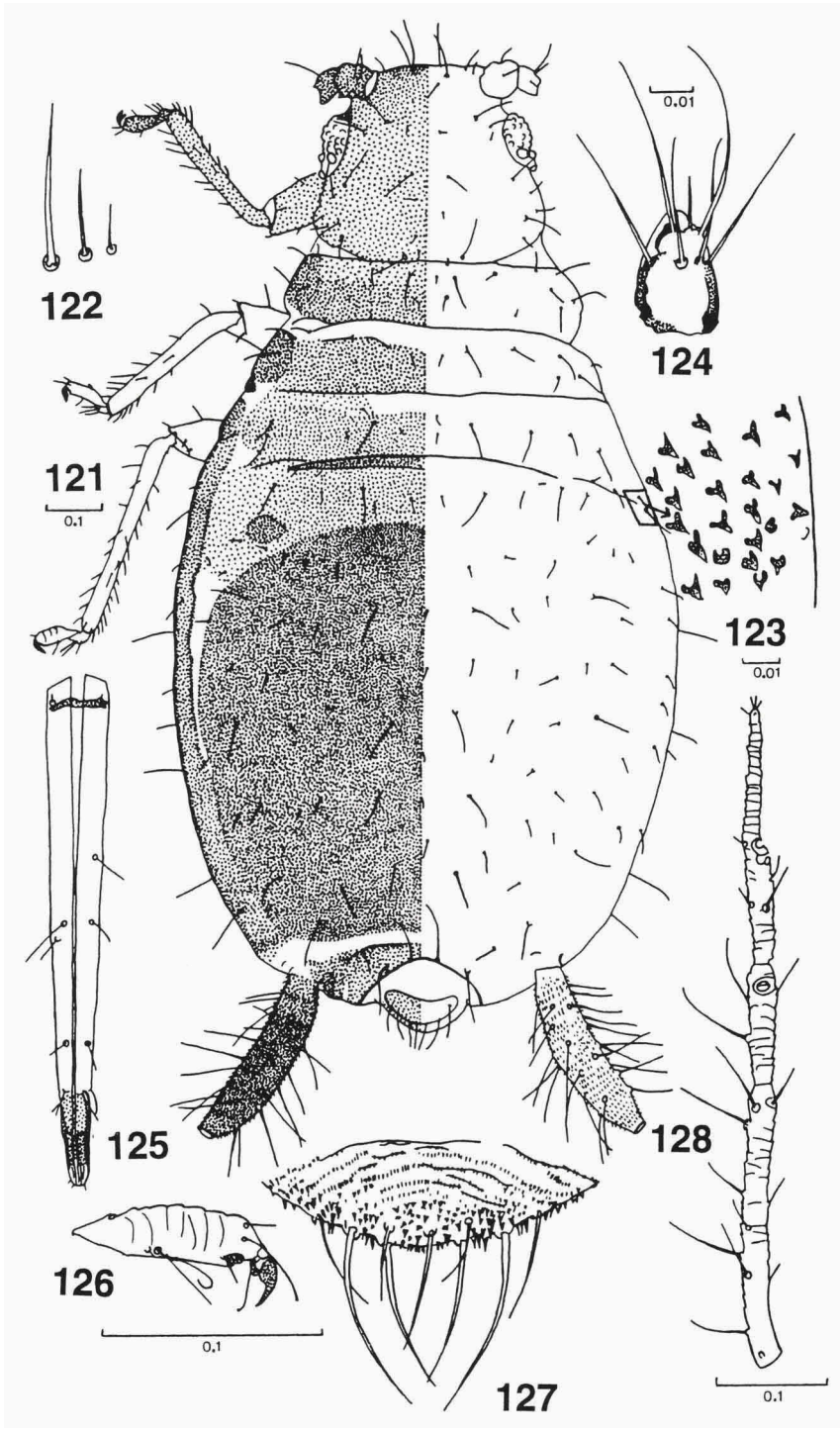


Fig. 120. *Eutrichosiphum pasaniae* (Okajima), first stage larva of apterous viviparous ♀, dorsal side of the body.



Figs. 121-128. *Eutrichosiphum pullum* spec. nov., apterous viviparous ♀. Fig. 121, dorsal side of the body. Fig. 122, dorsal abdominal hairs. Fig. 123, margin of the abdomen ventrally with spinulae. Fig. 124, first tarsal segment of the hind leg. Fig. 125, ultimate rostral segment. Fig. 126, second tarsal segment of the hind leg. Fig. 127, cauda. Fig 128, antennal segments III-V.

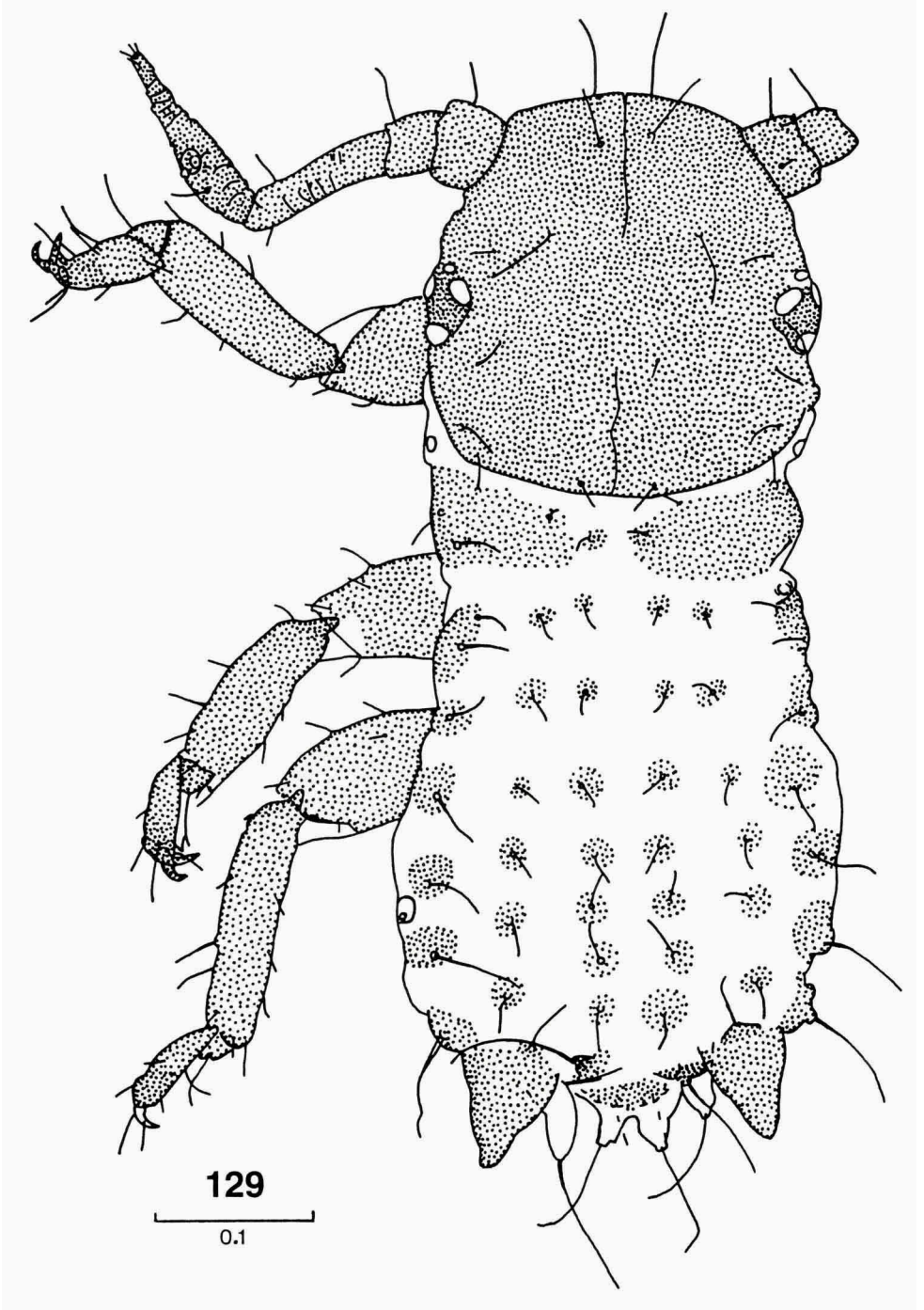
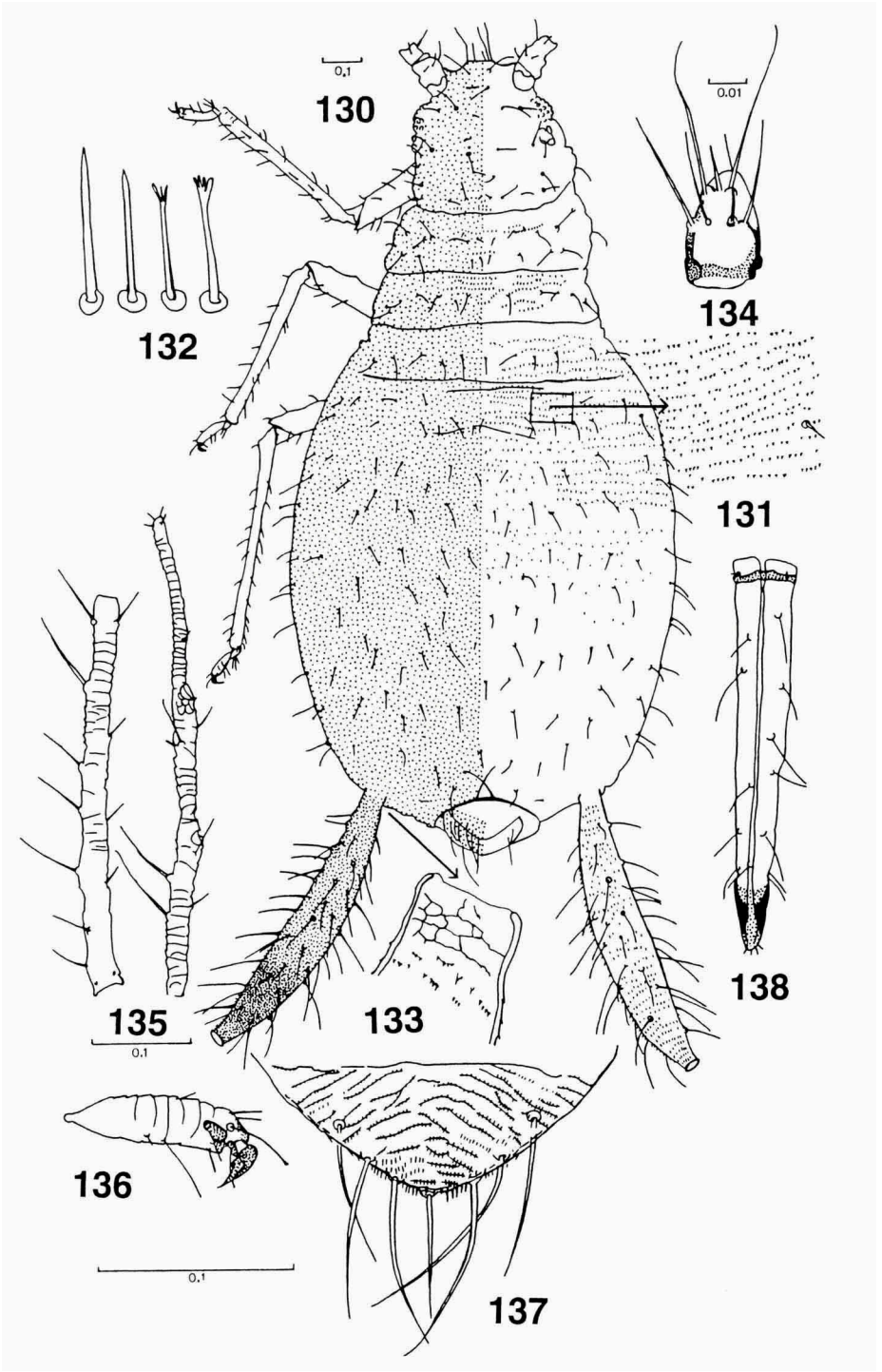


Fig. 129. *Eutrichosiphum pullum* spec. nov., first stage larva of apterous viviparous ♀, dorsal side of the body.



Figs. 130-138. *Eutrichosiphum sinense* Raychaudhuri, apterous viviparous ♀. Fig. 130, dorsal side of the body. Fig. 131, spinulae of tergite II. Fig. 132, dorsal abdominal hairs. Fig.133, base of the siphunculus. Fig. 134, first tarsal segment of the hind leg. Fig. 135, antennal segments III, and IV plus V. Fig. 136, second tarsal segment of the hind leg. Fig. 137, cauda. Fig. 138, ultimate rostral segment.

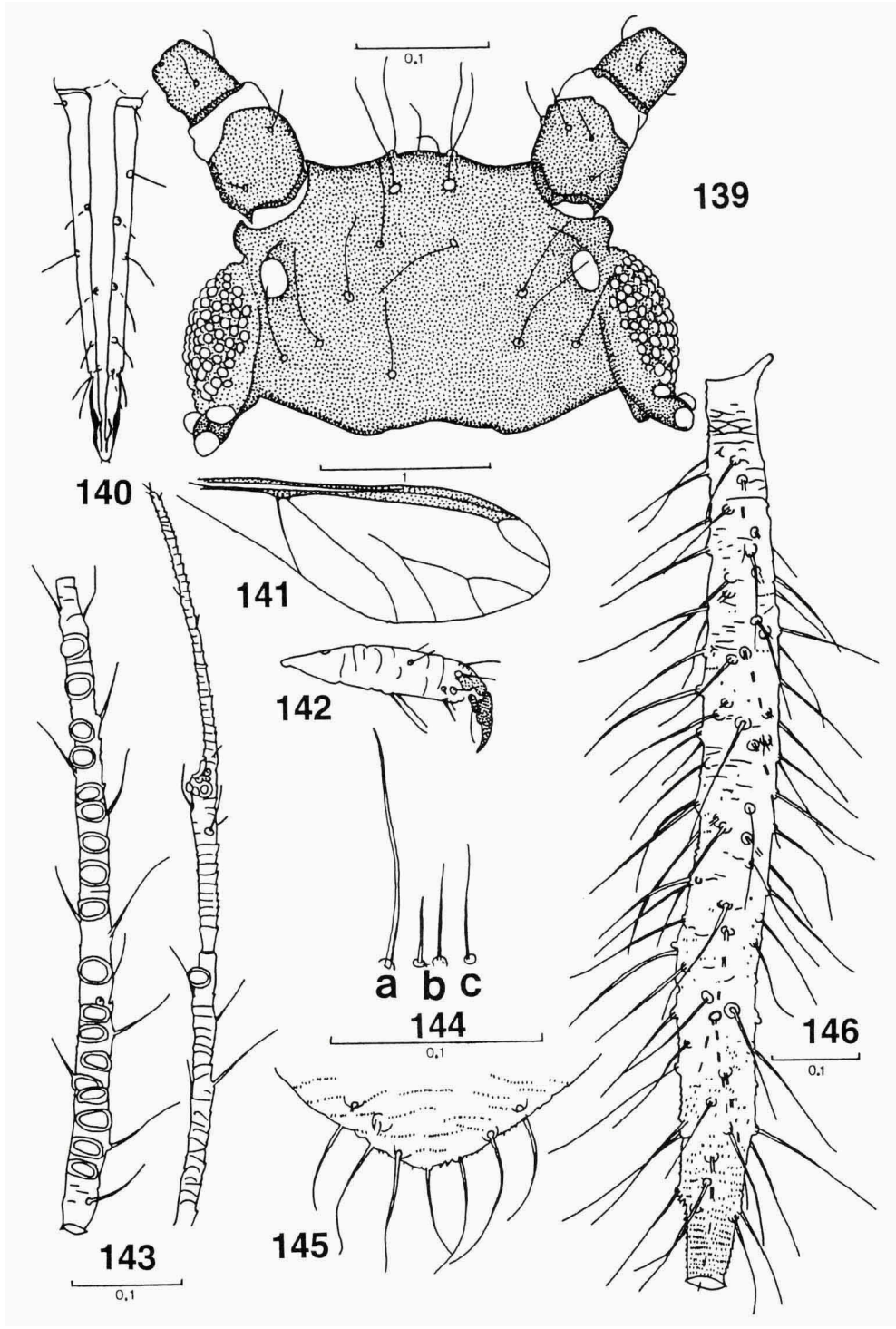


Fig. 139-146. *Eutrichosiphum sinense* Raychaudhuri, alate viviparous ♀. Fig. 139, dorsal side of the head.. Fig. 140, ultimate rostral segment. Fig. 141, fore wing. Fig. 142, second tarsal segment of the hind leg. Fig. 143, antennal segments III, and IV plus V. Fig. 144, hairs of **a** the mesonotum; **b** abdominal tergite IV; **c** the middle of the abdomen ventrally. Fig. 145, cauda. Fig. 146, siphunculus.

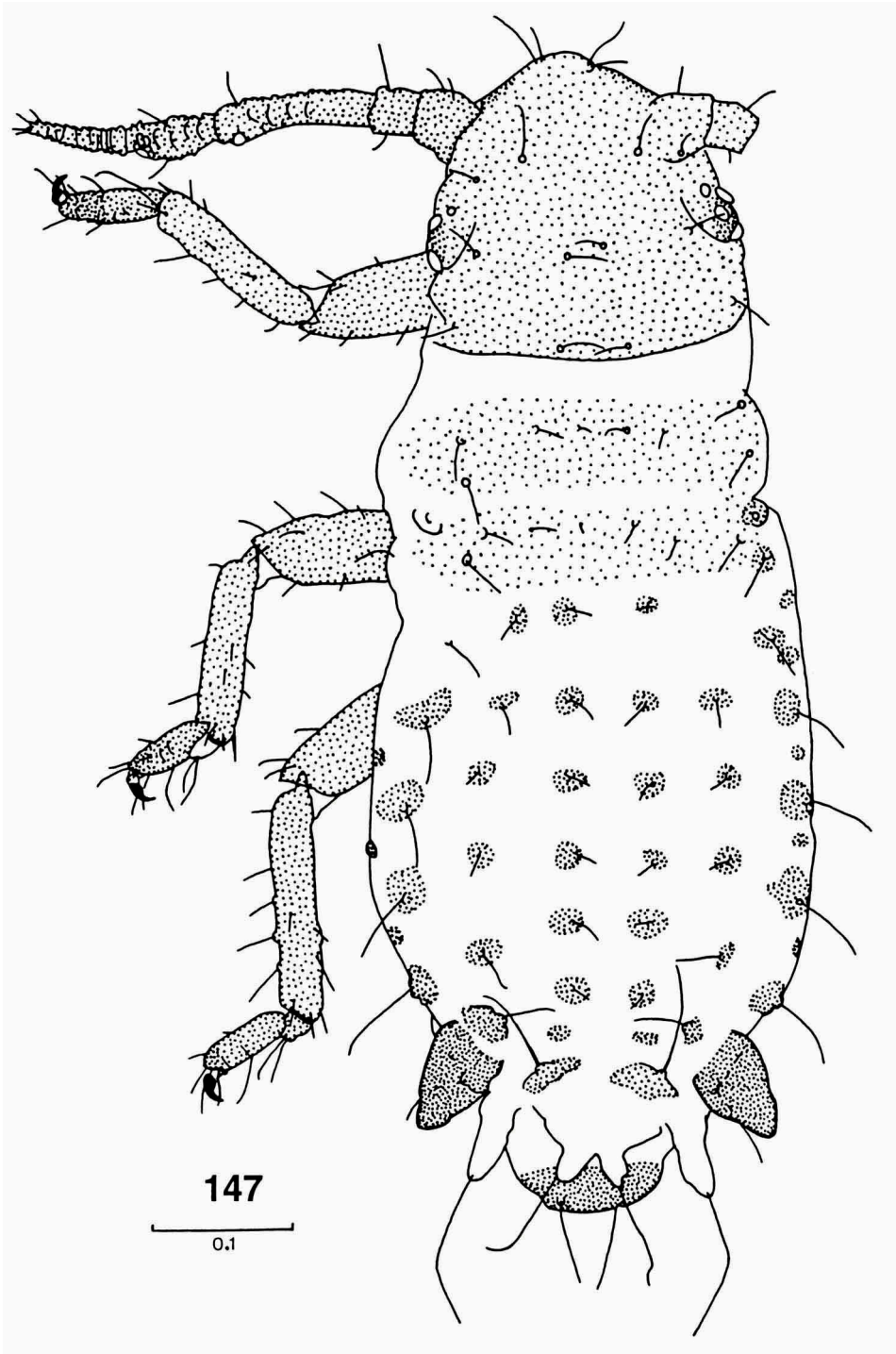
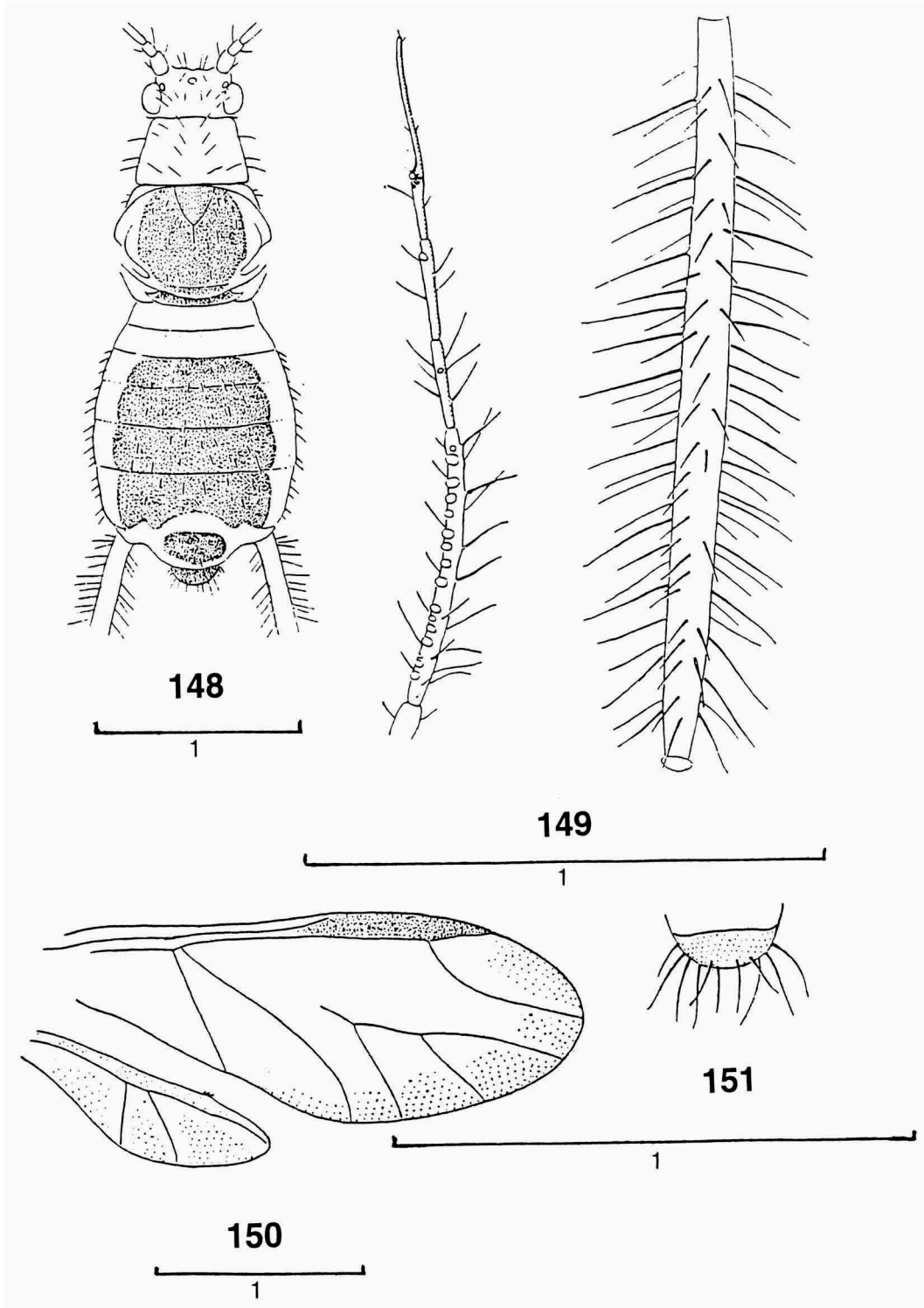
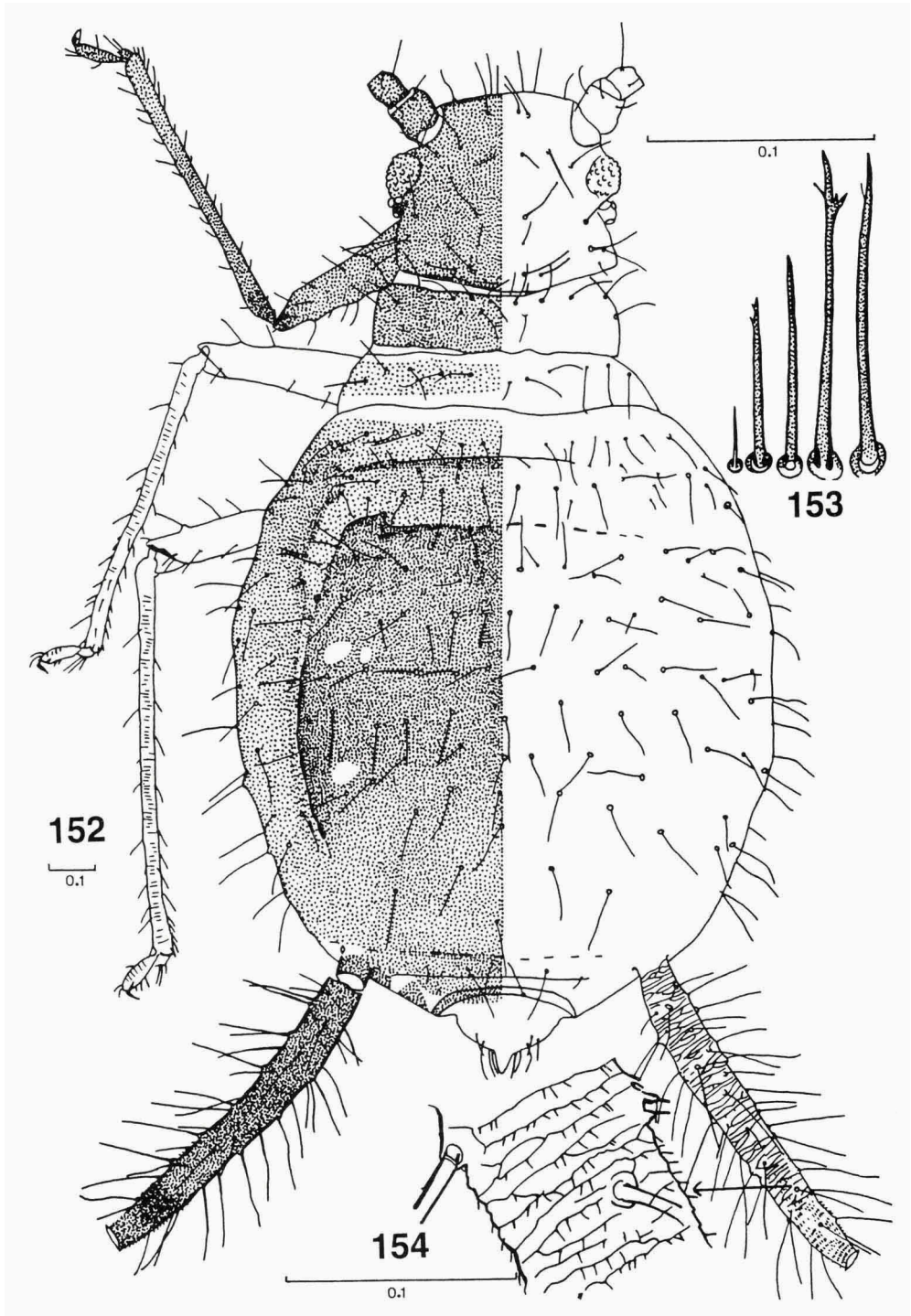


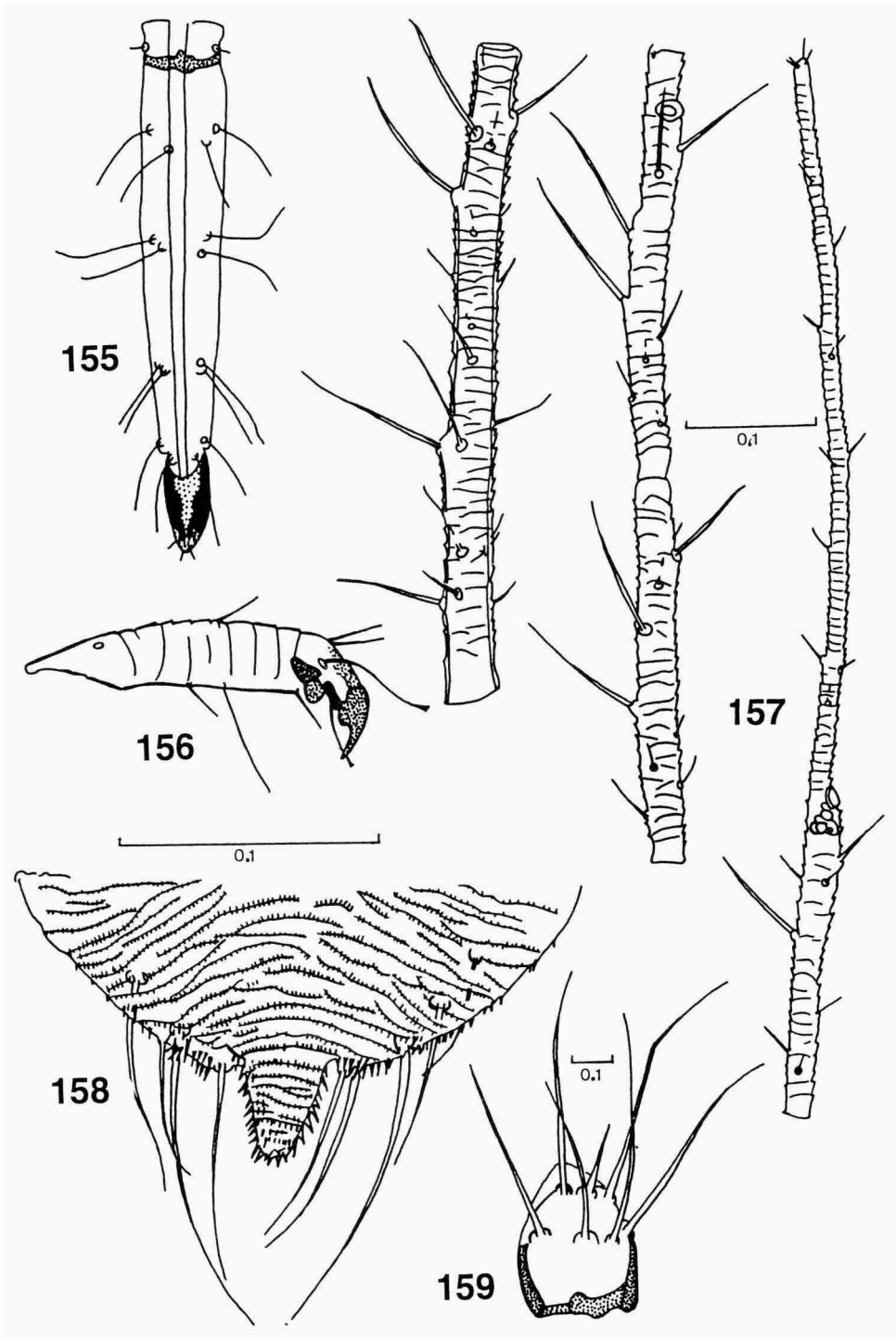
Fig. 147. *Eutrichosiphum sinense* Raychaudhuri, first stage larva of apterous viviparous ♀, dorsal side of the body.



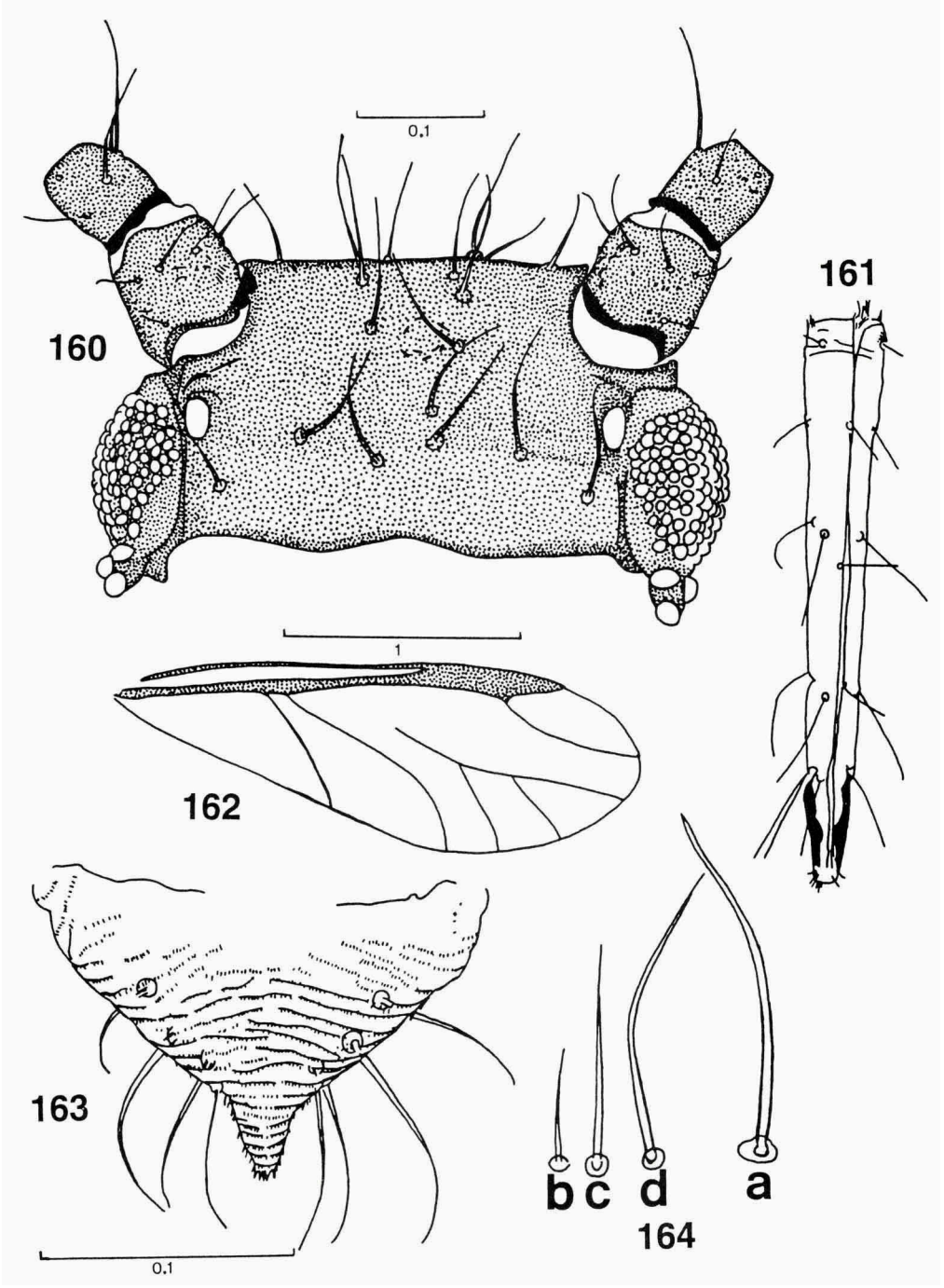
Figs. 148-151. *Eutrichosiphum vandergooti* (Franssen), alate viviparous ♀. Fig. 148, dorsal side of the body. Fig. 149 antenna (left) and siphunculus (right). Fig. 150, fore wing and hind wing. Fig. 151, cauda. (From C.F.H. Franssen, 1930- Natuurhist. Maandbl. 19: 92-93).



Figs. 152-154. *Greenidea ficicola* Takahashi, apterous viviparous ♀. Fig. 152, dorsal side of the body. Fig. 153, dorsal abdominal hairs. Fig. 154, part of the siphunculus.



Figs. 155-159. *Greenidea ficicola* Takahashi, apterous viviparous ♀. Fig. 155, ultimate rostral segment. Fig. 156, second tarsal segment of the hind leg. Fig. 157, antennal segments III, IV plus V, and VI. Fig. 158, cauda. Fig. 159, first tarsal segment of the hind leg.



Figs. 160-164. *Greenidea ficicola* Takahashi, alate viviparous ♀. Fig. 160, dorsal side of the head. Fig. 161, ultimate rostral segment. Fig. 162, fore wing. Fig. 163, cauda. Fig. 164, hairs of a the mesonotum; b tergite IV; c tergite VII; d tergite VIII.

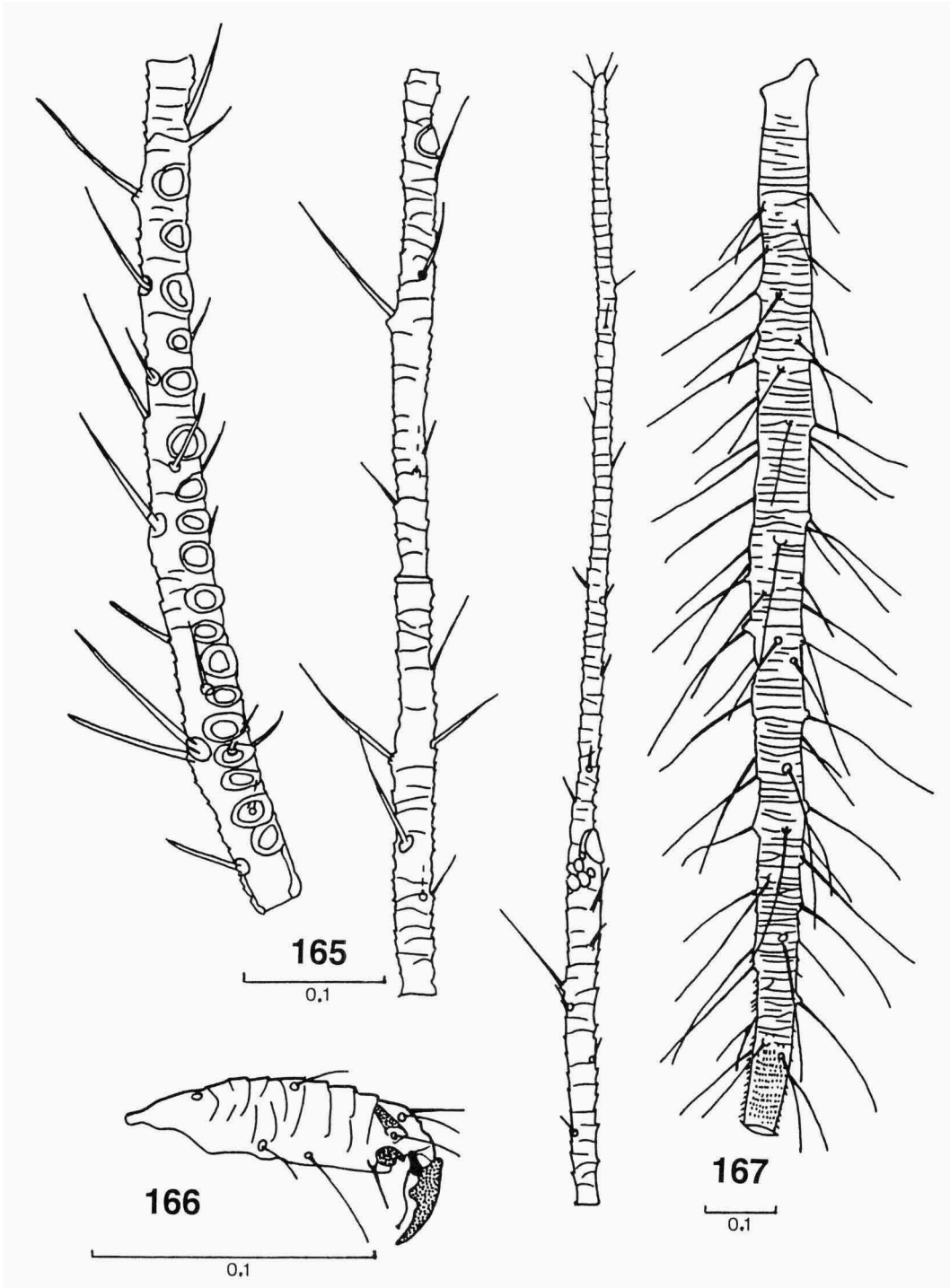


Fig. 165-167. *Greenidea ficicola* Takahashi, alate viviparous ♀. Fig. 165, antennal segments III, IV plus V, and VI. Fig. 166, second tarsal segment of the hind leg. Fig. 167, siphunculus.

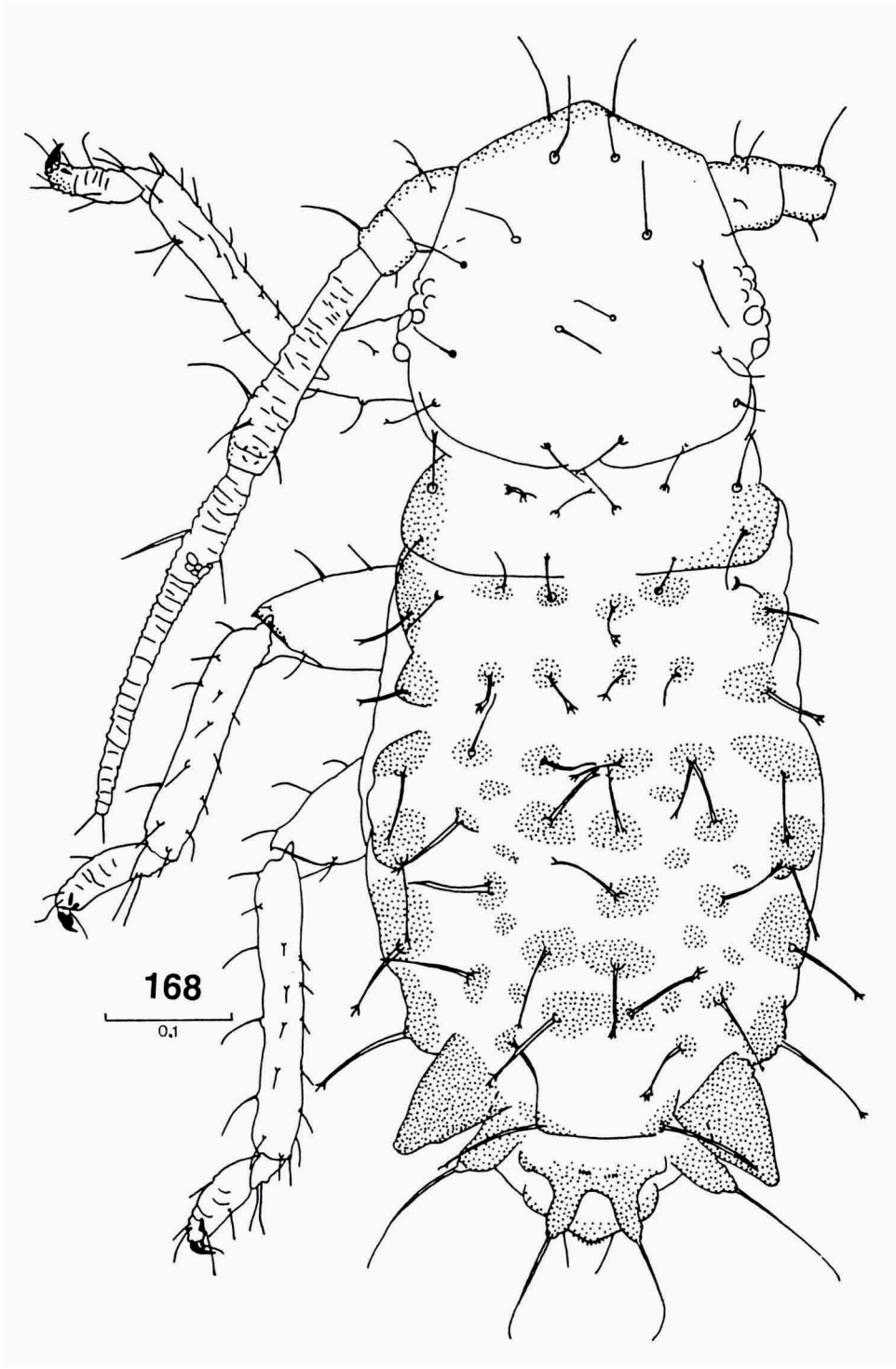
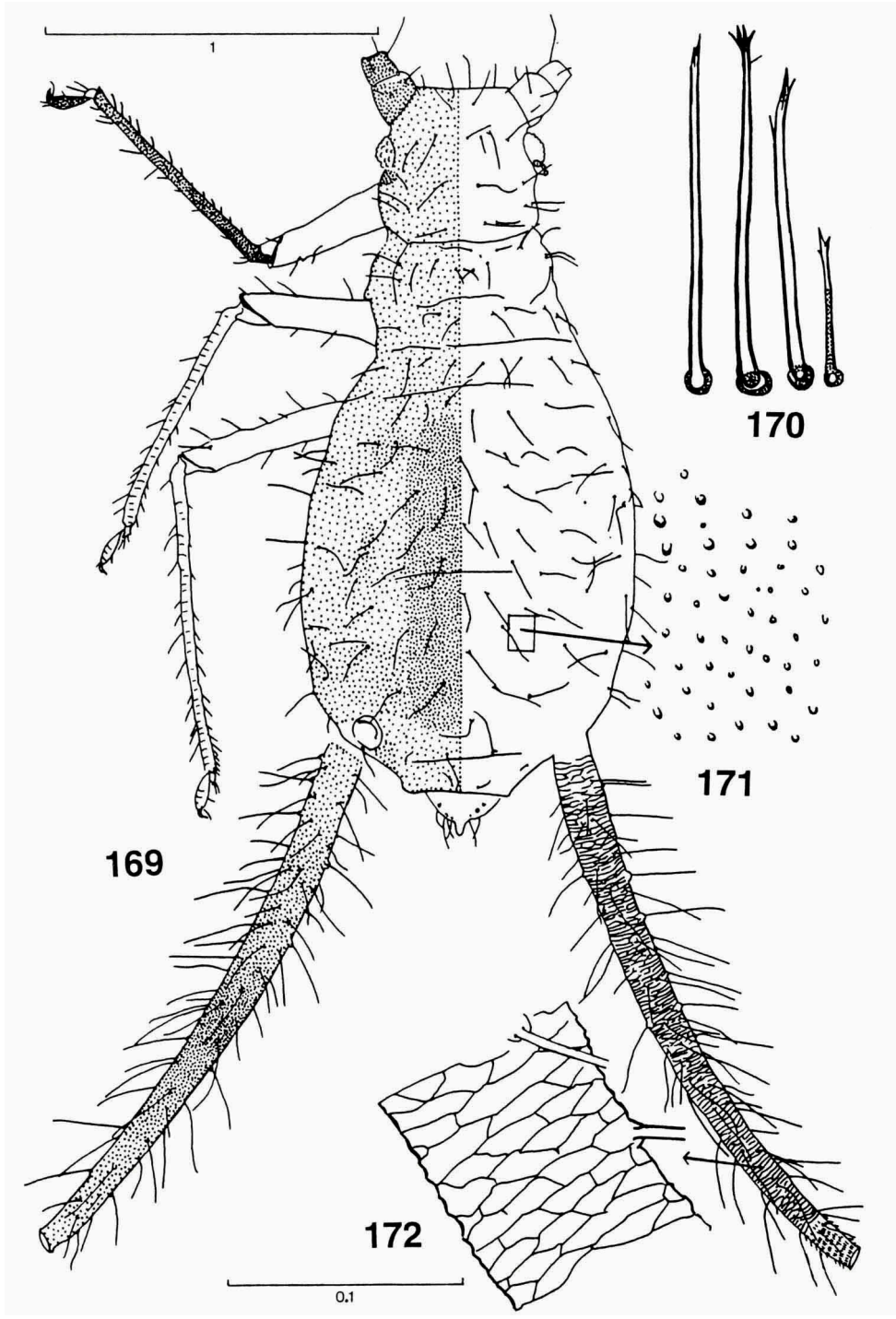
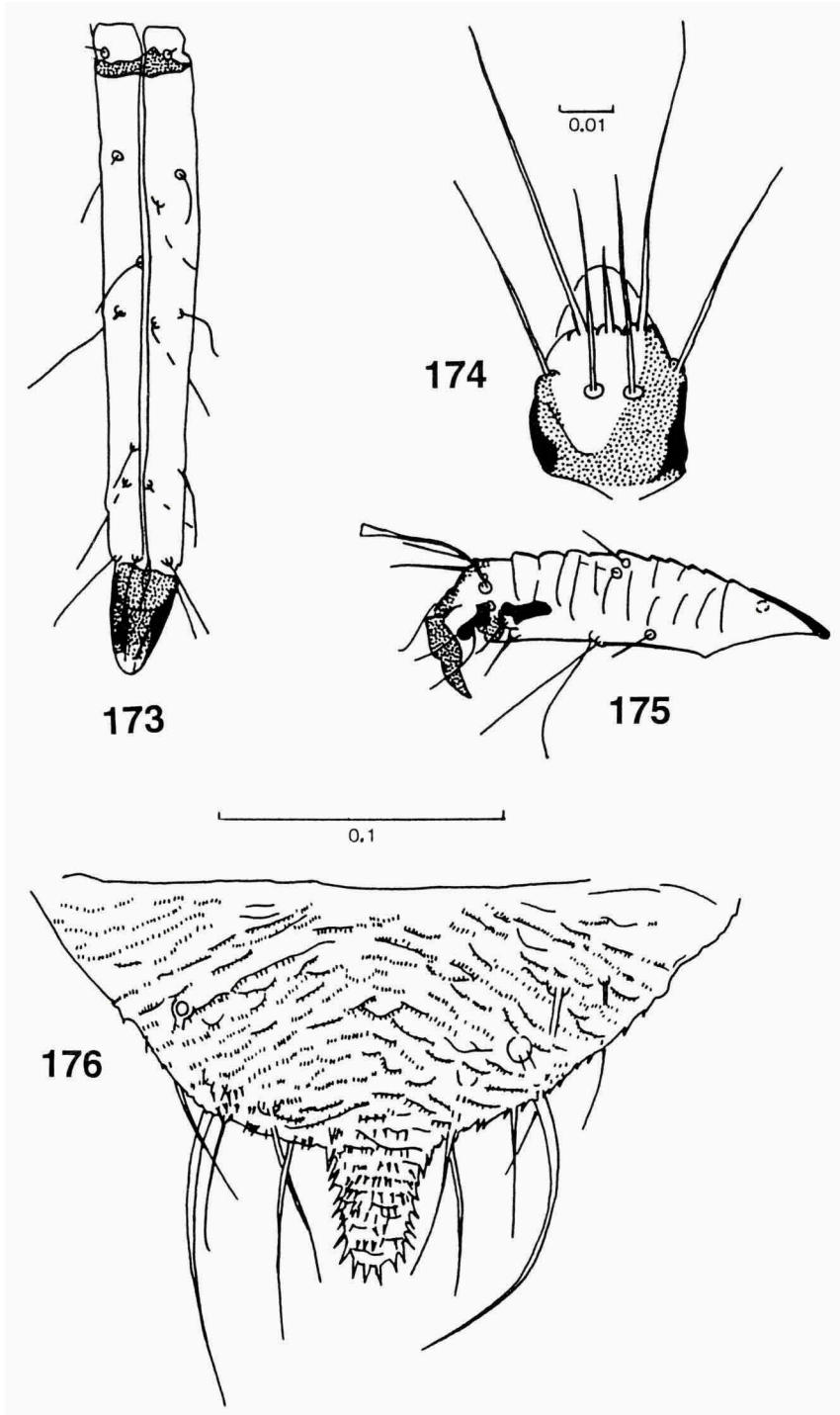


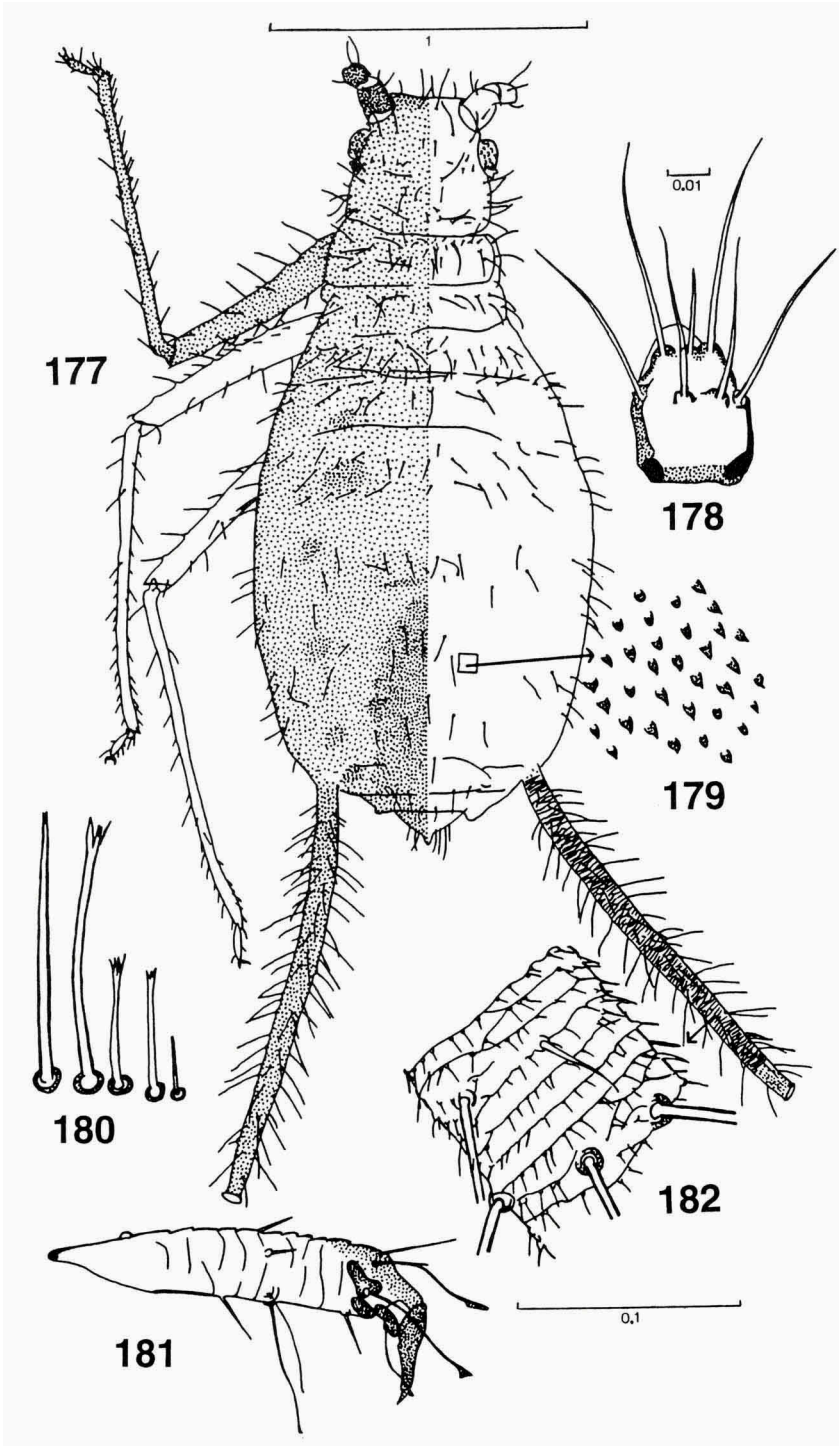
Fig. 168. *Greenidea ficicola* Takahashi, first stage larva of apterous viviparous ♀, dorsal side of the body.



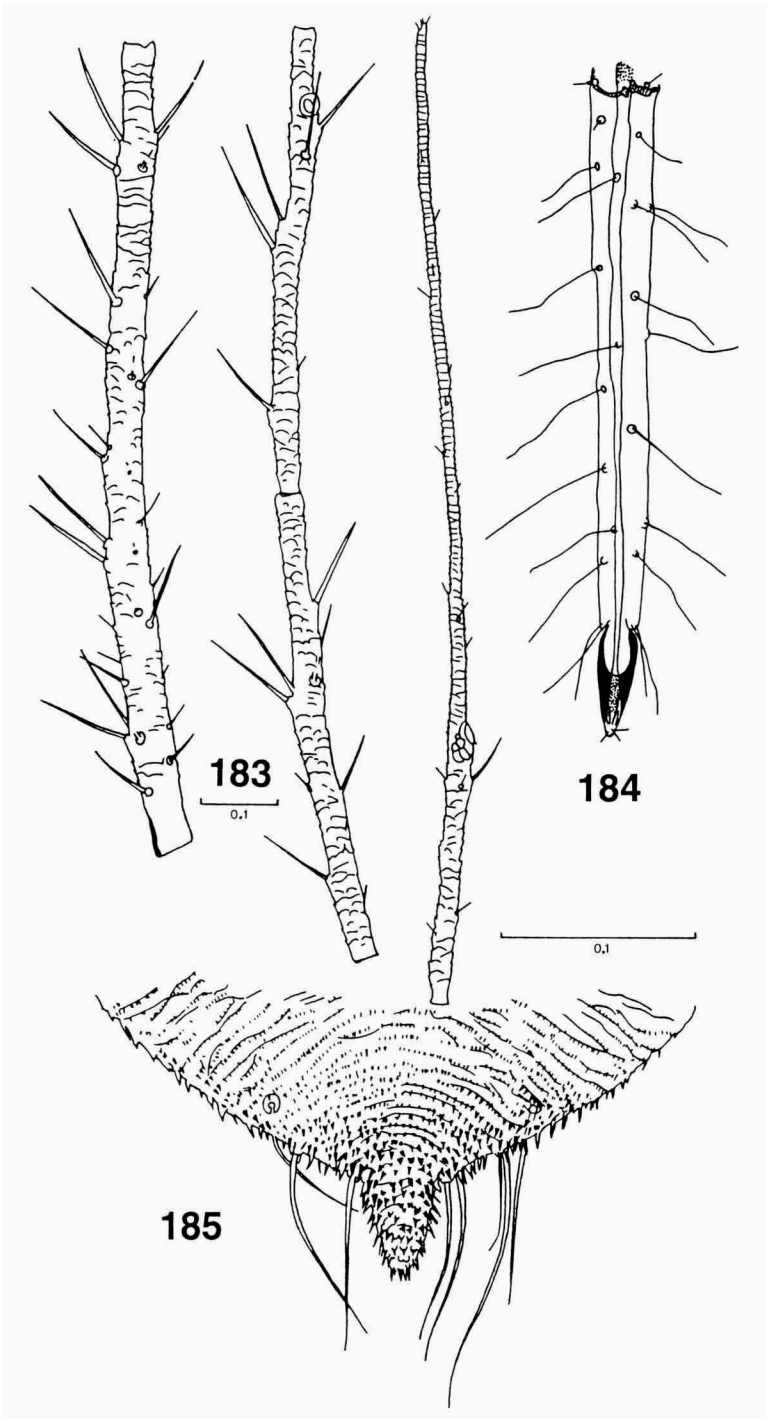
Figs. 169-172. *Greenidea maculata* spec. nov., apterous viviparous ♀. Fig. 169, dorsal side of the body. Fig. 170, dorsal hairs of the abdomen. Fig. 171, ventral spinulae of the abdomen. Fig. 172, part of the siphunculus.



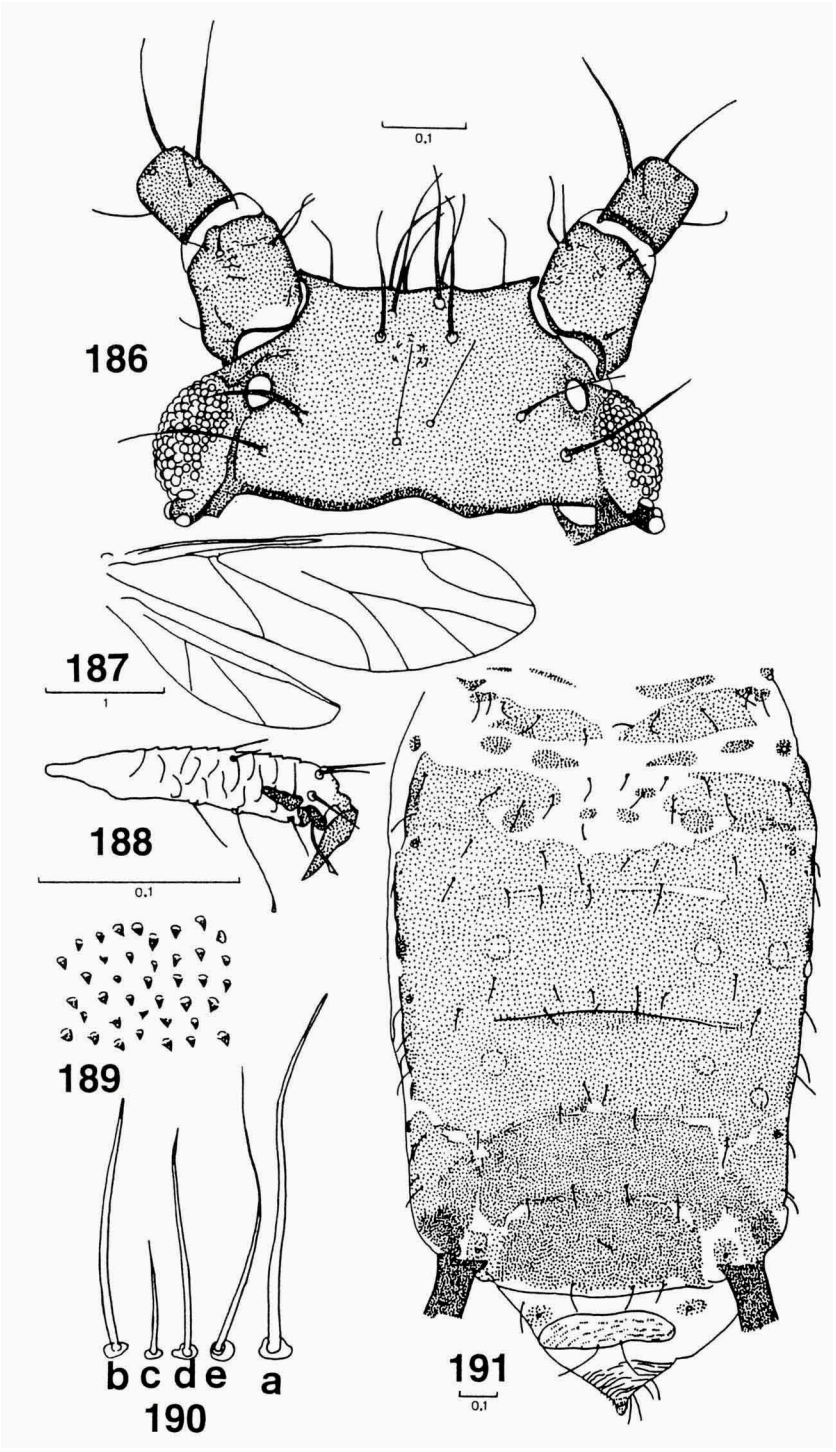
Figs. 173-176. *Greenidea maculata* spec. nov., apterous viviparous ♀. Fig. 173, ultimate rostral segment. Fig. 174, first tarsal segment of the hind leg. Fig. 175, second tarsal segment of the hind leg. Fig. 176, cauda.



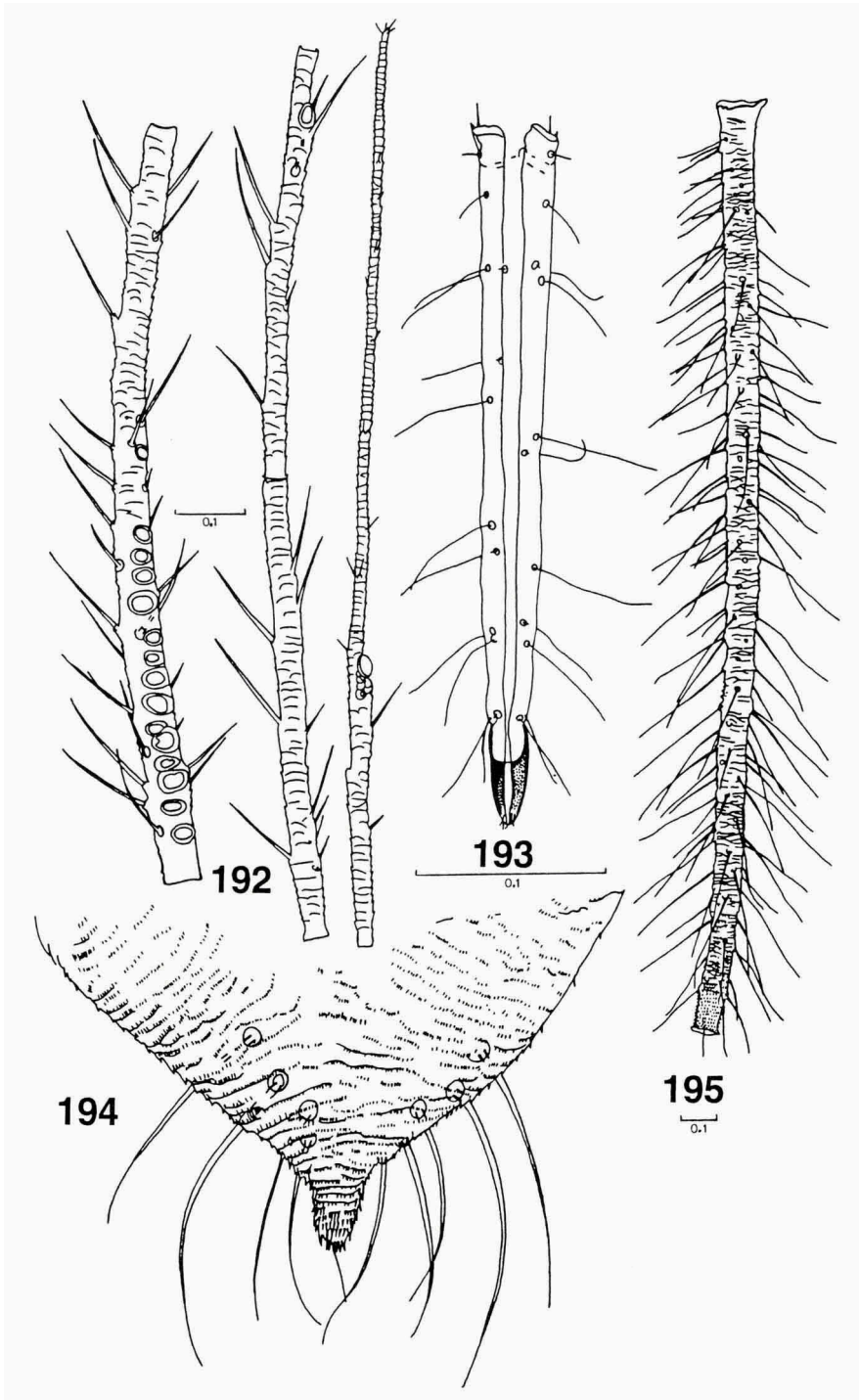
Figs 177-182. *Greenidea magna* spec. nov., apterous viviparous ♀. Fig. 177, dorsal side of the body. Fig. 178, first tarsal segment of the hind leg. Fig. 179, ventral abdominal spinulae. Fig. 180, dorsal abdominal hairs. Fig. 181, second tarsal segment of the hind leg. Fig. 182, part of the siphunculus.



Figs. 183-185. *Greenidea magna* spec. nov., apterous viviparous ♀. Fig. 183, antennal segments III, IV plus V, and VI. Fig. 184, ultimate rostral segment. Fig. 185, cauda.



Figs. 186-191. *Greenidea magna* spec. nov., alate viviparous ♀. Fig. 186, dorsal side of the head. Fig. 187, fore wing and hind wing. Fig. 188, second tarsal segment of the hind leg. Fig. 189, denticles on the ventral side of the abdomen. Fig. 190, hairs of **a** the mesonotum; **b** tergite II, **c** tergite IV; **d** tergite VII, **e** tergite VIII. Fig. 191, dorsal side of the abdomen.



Figs. 192-195. *Greenidea magna* spec. nov., alate viviparous ♀. Fig. 192, antennal segments III, IV plus V, and VI. Fig. 183, ultimate rostral segment. Fig. 194, cauda. Fig. 195, siphunculus.

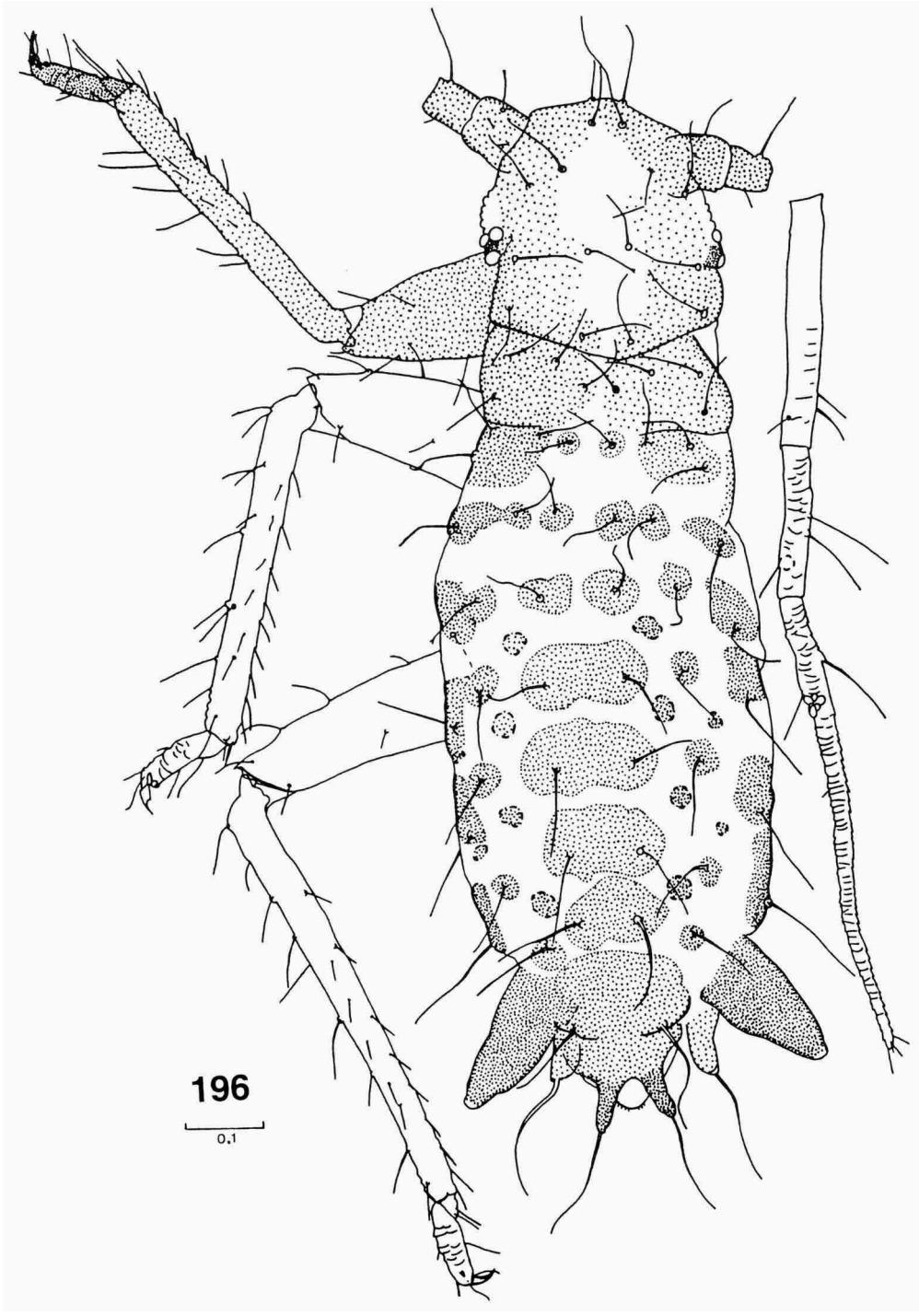
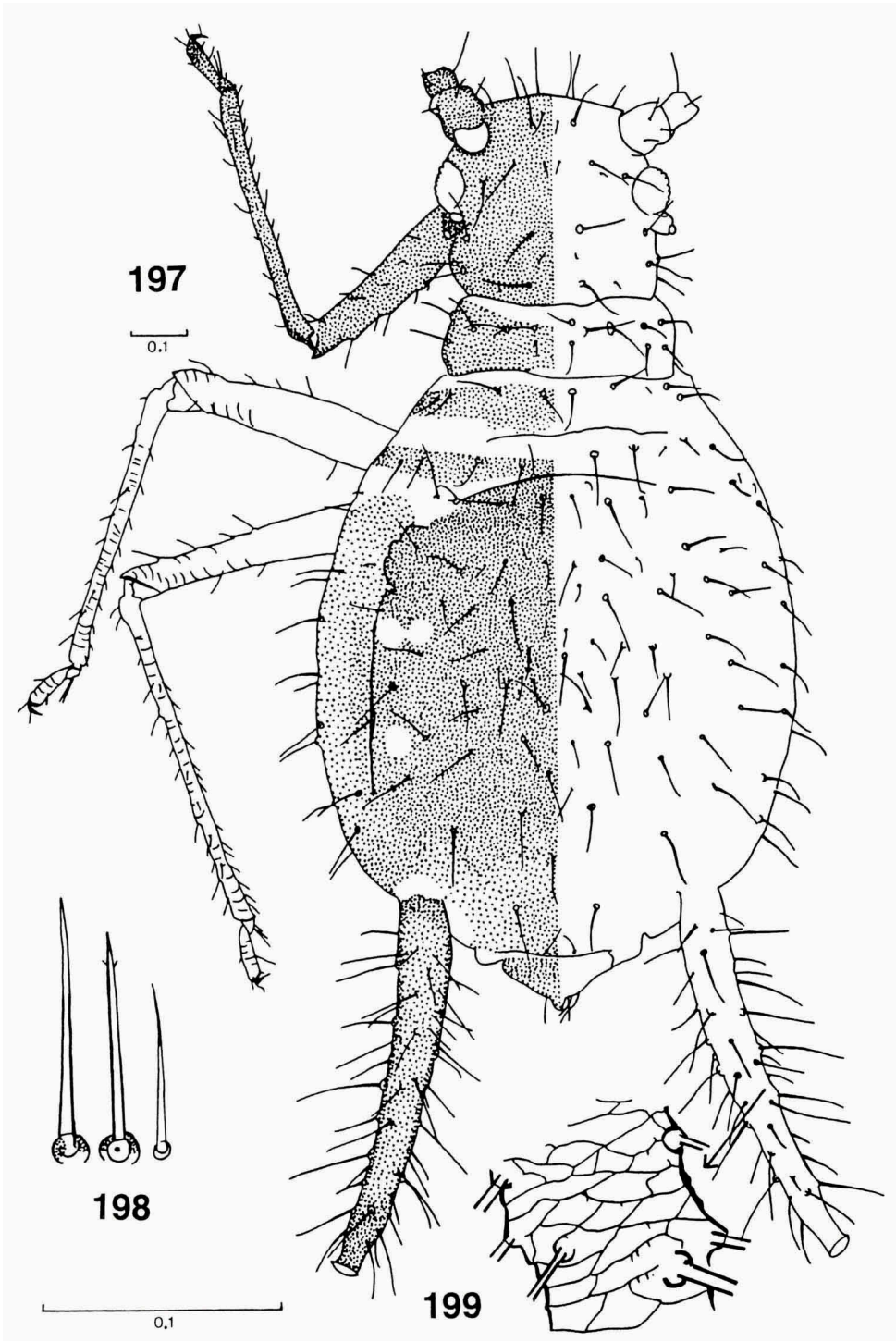
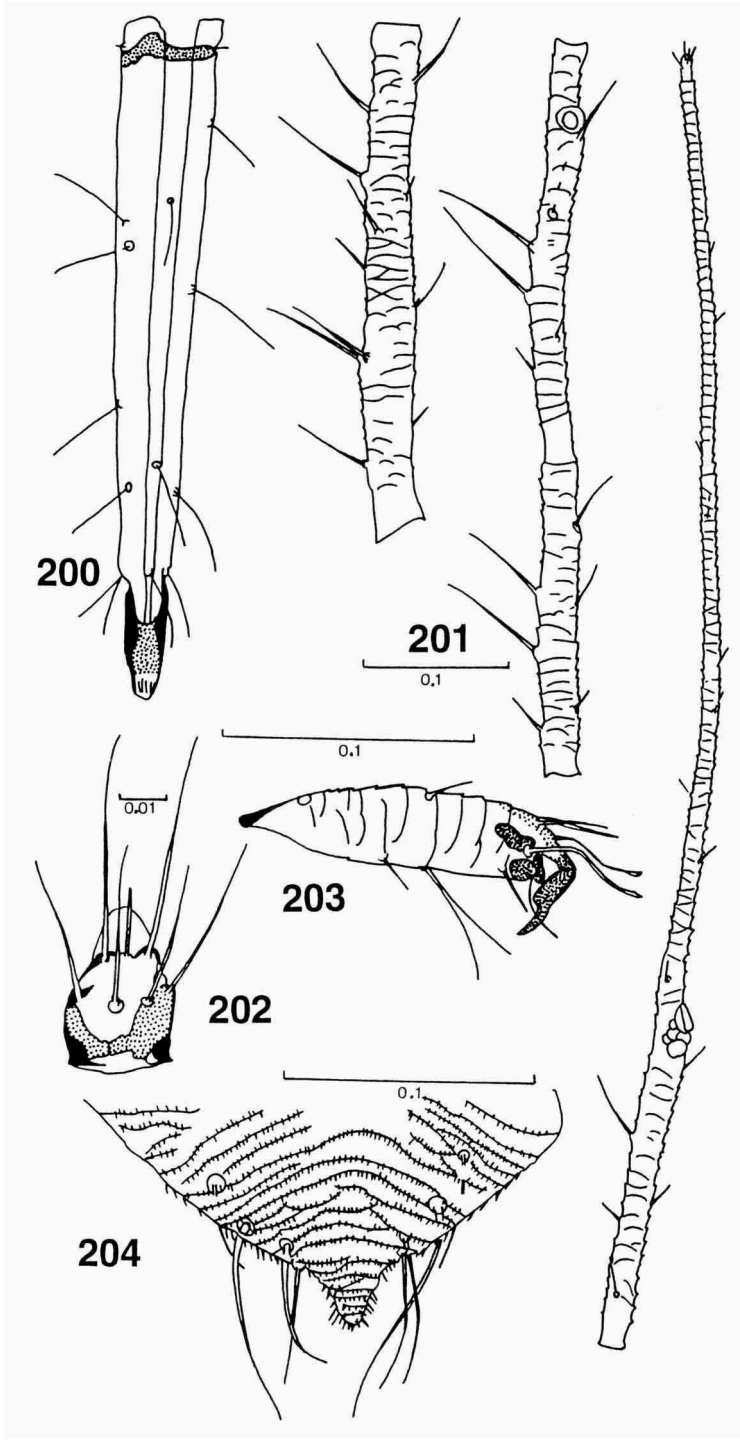


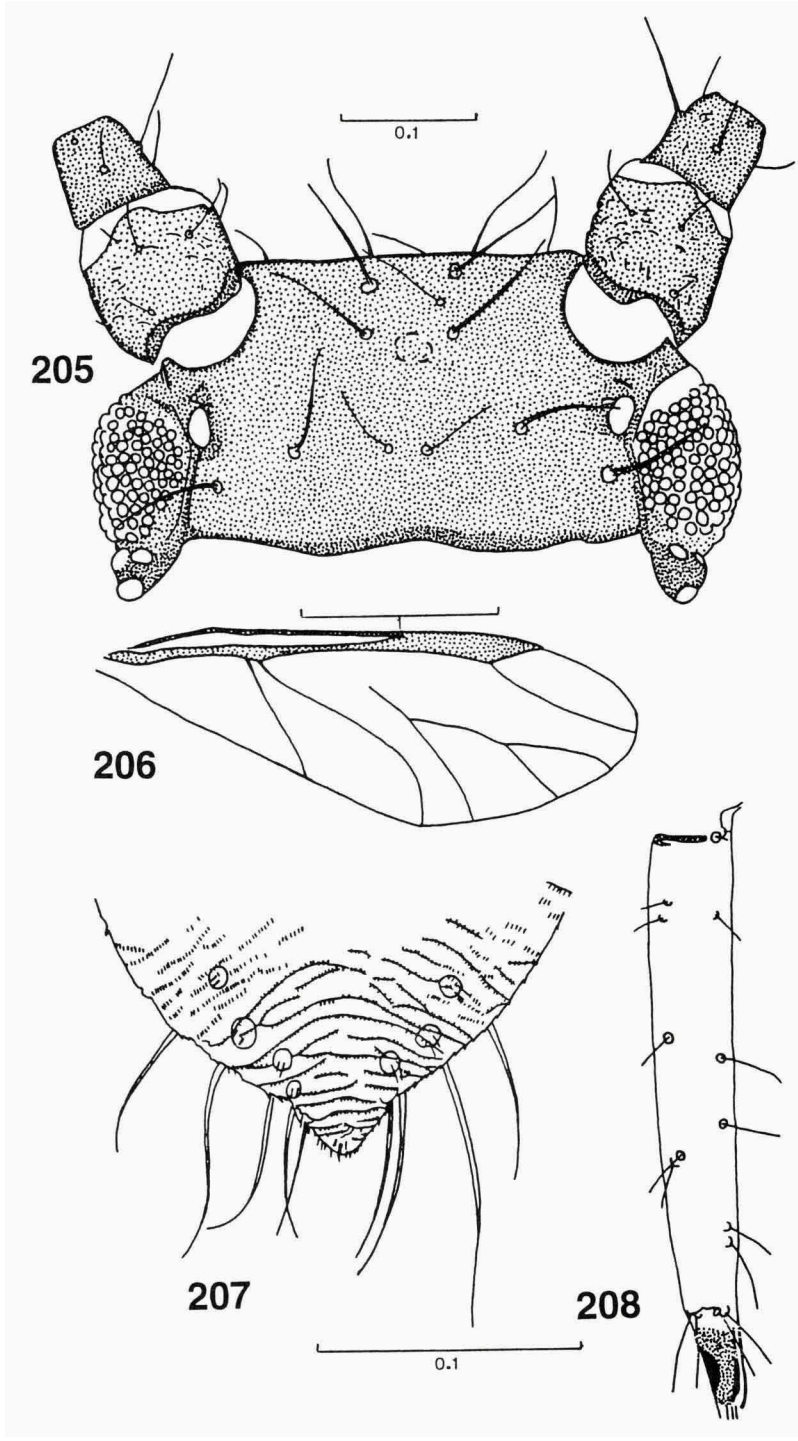
Fig 196. *Greenidea magna* spec. nov., first stage larva of apterous viviparous ♀, dorsal side of the body.



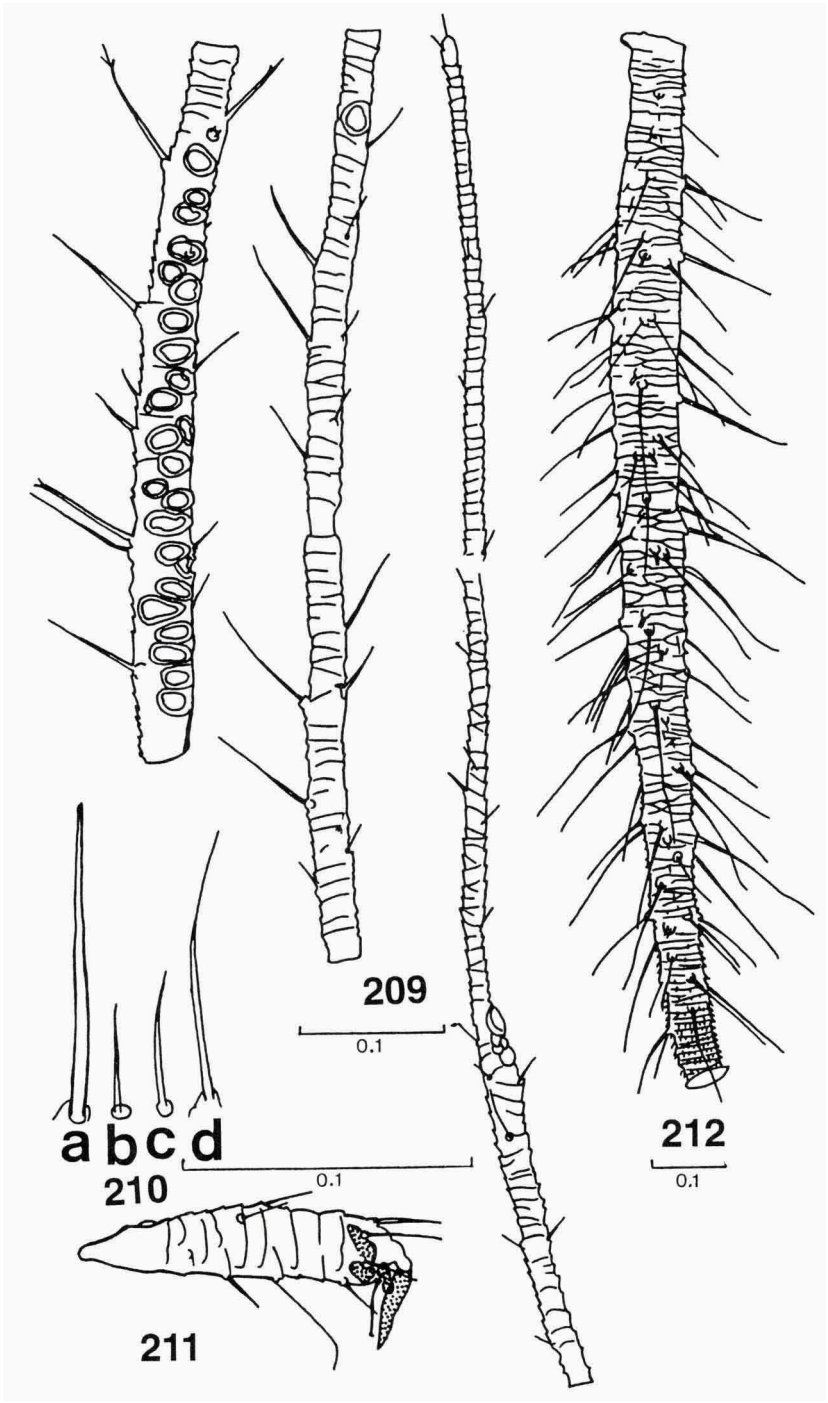
Figs. 197-199. *Greenidea rappardi* Raychaudhuri, apterous viviparous ♀. Fig. 197, dorsal side of the body. Fig. 198, dorsal abdominal hairs. Fig. 199, part of the siphunculus.



Figs. 200-204. *Greenidea rappardi* Raychaudhuri, apterous viviparous ♀. Fig. 200, ultimate rostral segment. Fig. 201, antennal segments III, IV plus V, and VI. Fig. 202, first tarsal segment of the hind leg. Fig. 203, second tarsal segment of the hind leg. Fig. 204, cauda.



Figs 205-208. *Greenidea rappardi* Raychaudhuri, alate viviparous ♀. Fig. 205, dorsal side of the head. Fig. 206, fore wing. Fig. 207, cauda. Fig. 208, ultimate rostral segment.



Figs. 209-212. *Greenidea rappardi* Raychaudhuri, alate viviparous ♀. Fig. 209, antennal segments III, IV plus V, and VI. Fig. 210, hairs of **a** the mesonotum; **b** tergite IV, **c** tergite VII, **d** tergite VIII. Fig. 211, second tarsal segment of the hind leg. Fig. 212, siphunculus.

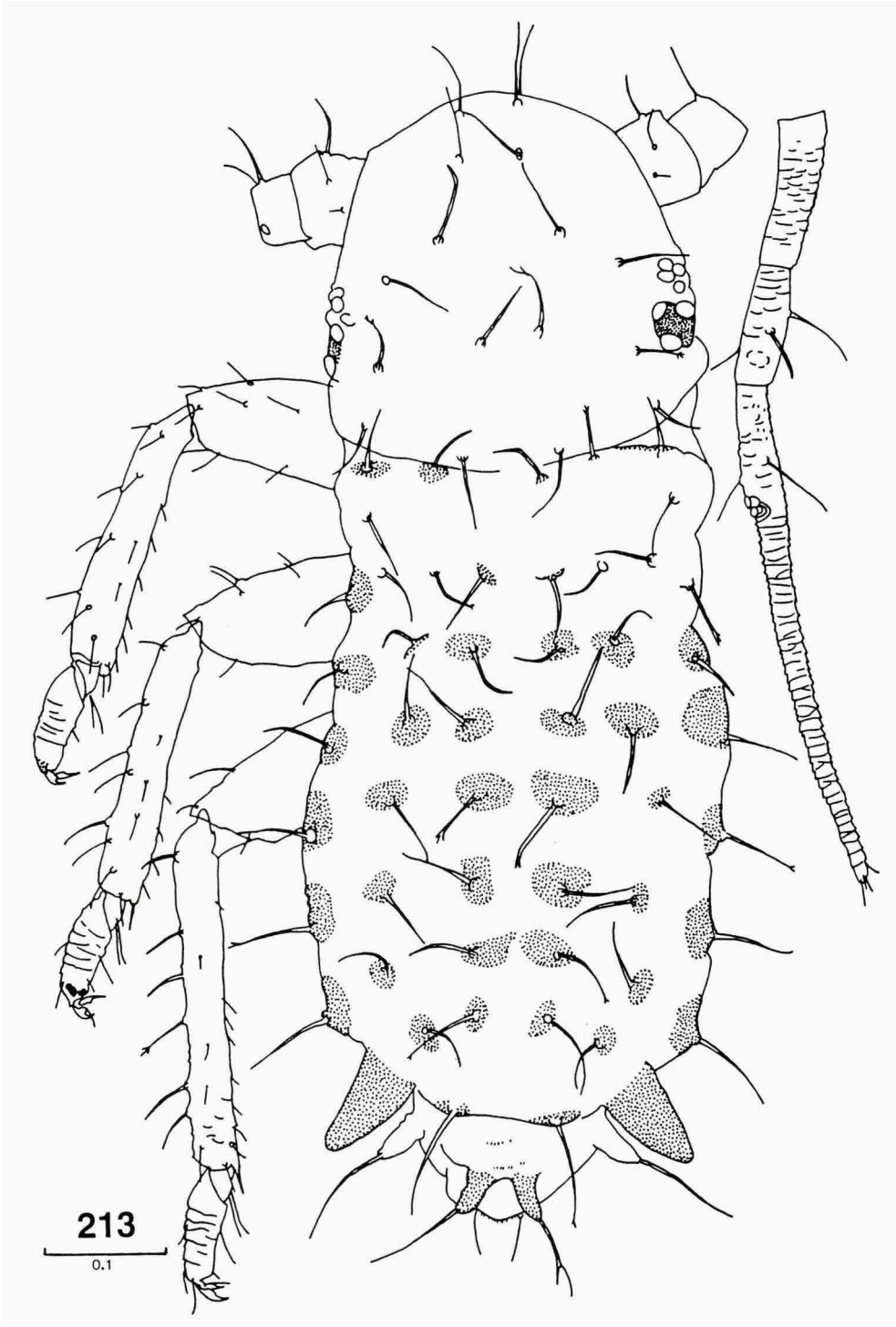
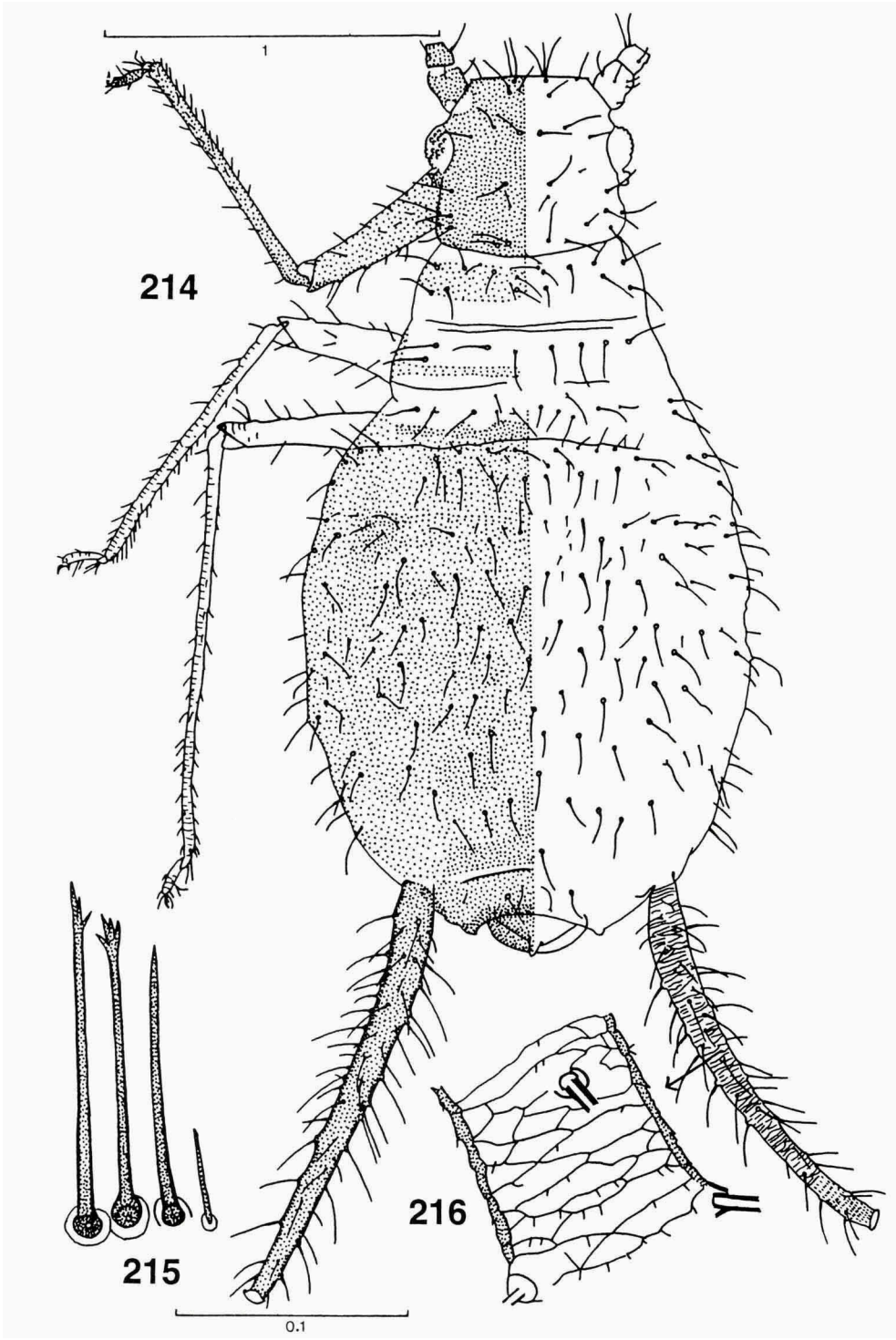
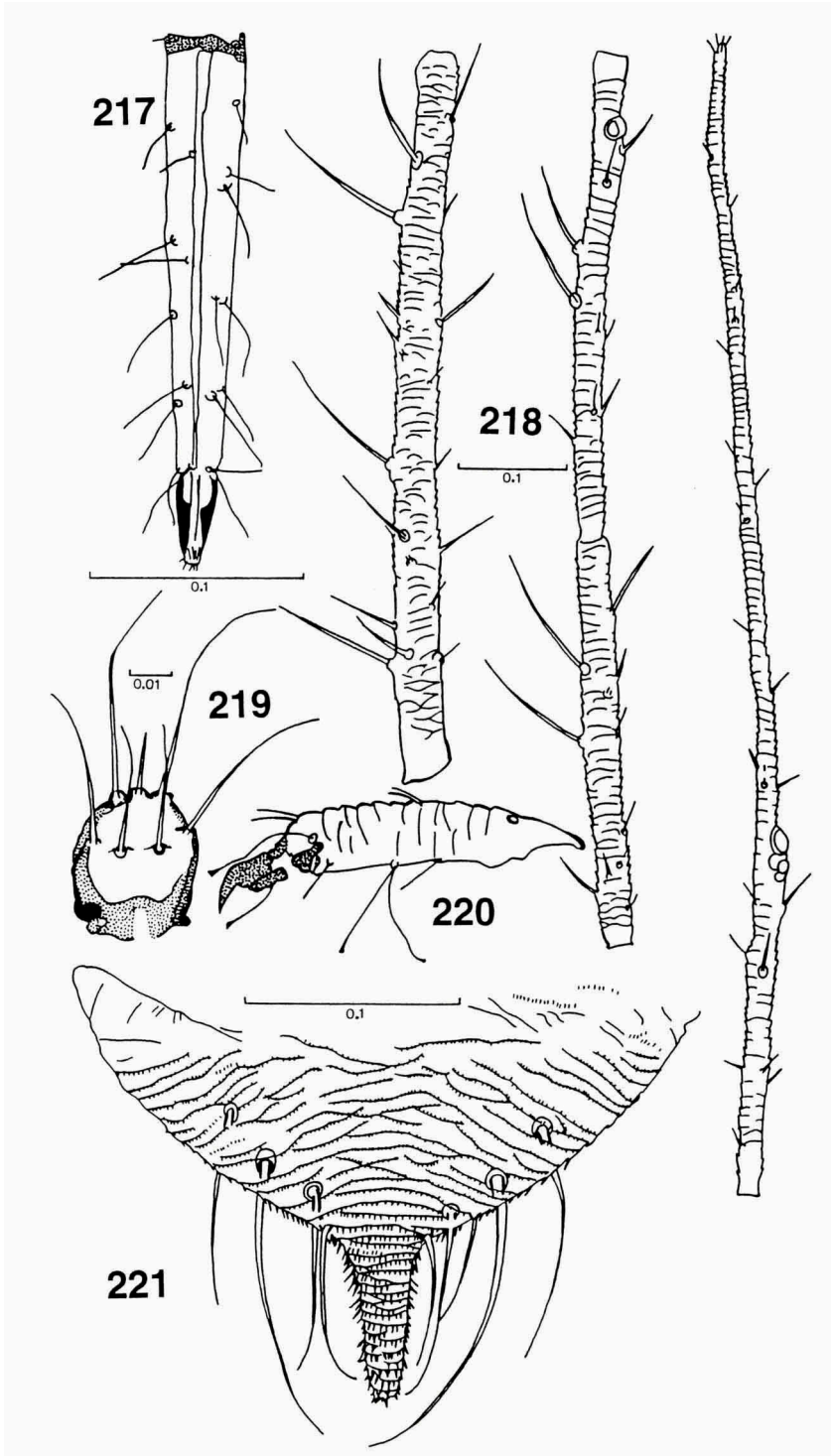


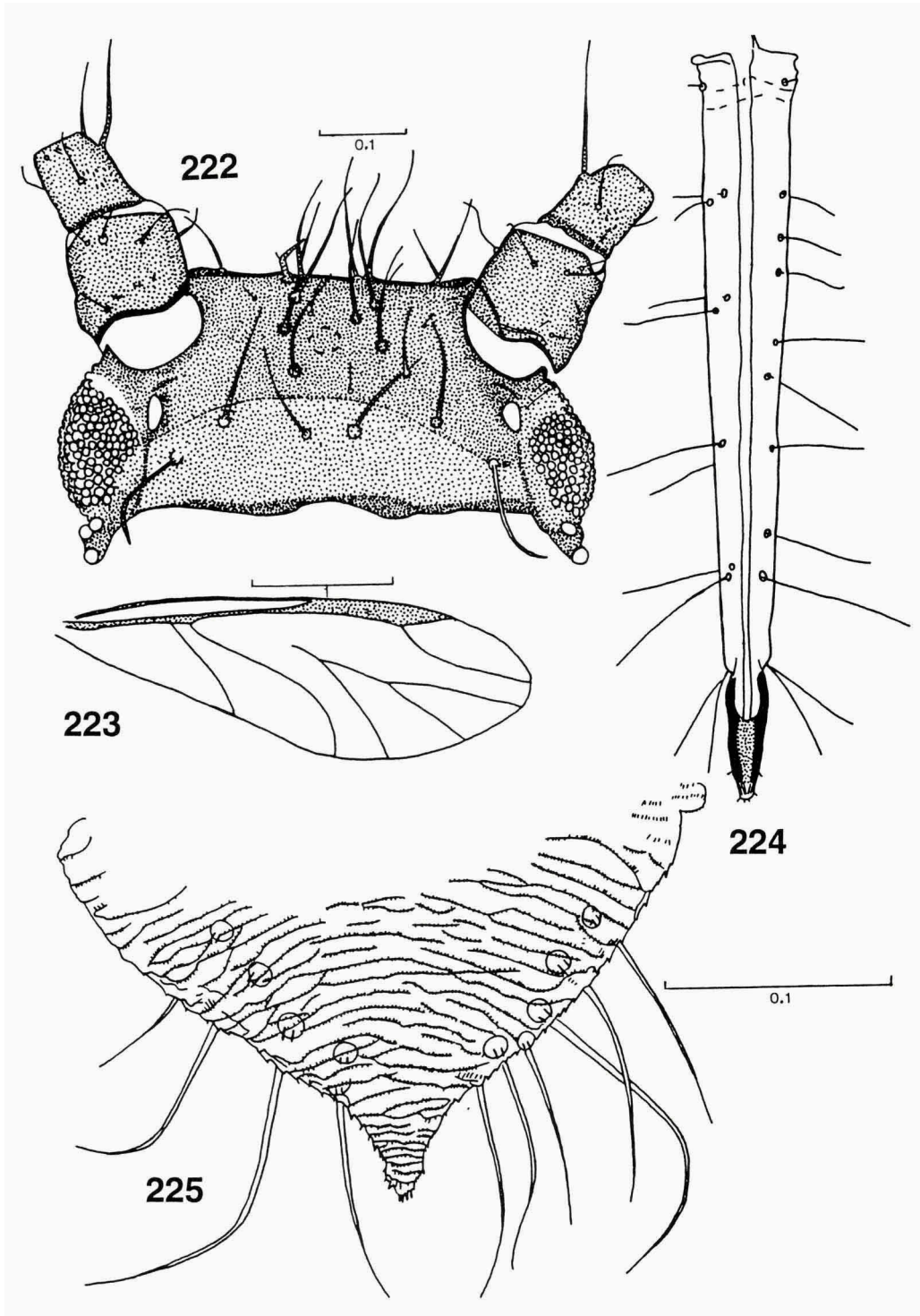
Fig. 213. *Greenidea rappardi* Raychaudhuri, first stage larva of apterous viviparous ♀, dorsal side of the body.



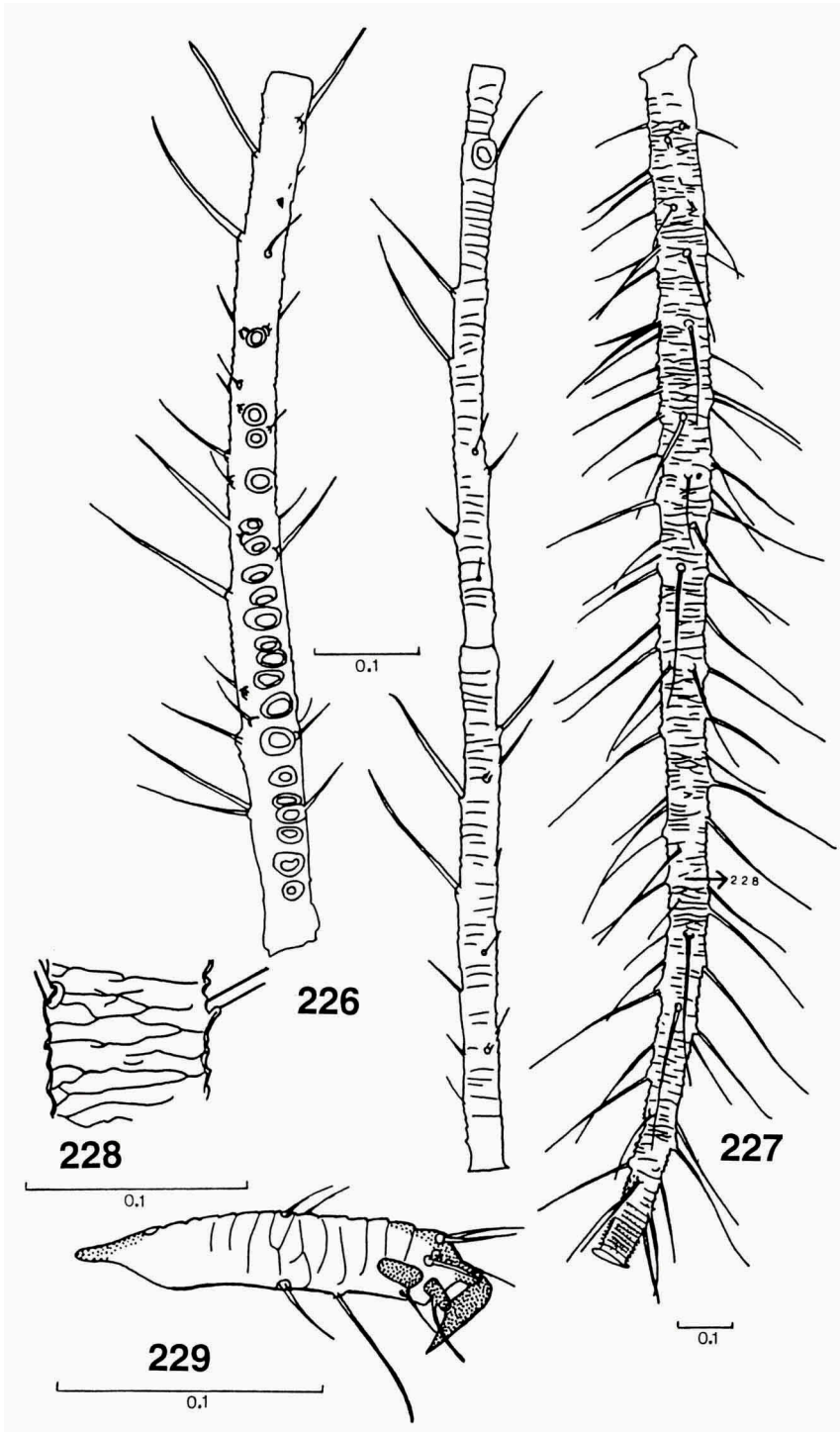
Figs. 214-216. *Greenidea schimae* Takahashi, apterous viviparous ♀. Fig. 214, dorsal side of the body. Fig. 215, dorsal abdominal hairs. Fig. 216, part of the siphunculus.



Figs 217-221. *Greenidea schimae* Takahashi, apterous viviparous ♀. Fig. 217, ultimate rostral segment. Fig. 218, antennal segments III, IV plus V, and VI. Fig. 219, first tarsal segment of the hind leg. Fig. 220, second tarsal segment of the hind leg. Fig. 221, cauda.



Figs. 222-225. *Greenidea schimae* Takahashi, alate viviparous ♀. Fig. 222, dorsal side of the head. Fig. 223, fore wing. Fig. 224, ultimate rostral segment. Fig. 225, cauda.



Figs. 226-229. *Greenidea schimae* Takahashi, alate viviparous ♀. Fig. 226, antennal segments III, IV plus V, and VI. Fig. 227, siphunculus. Fig. 228, part of the siphunculus. Fig. 229, second tarsal segment of the hind leg.

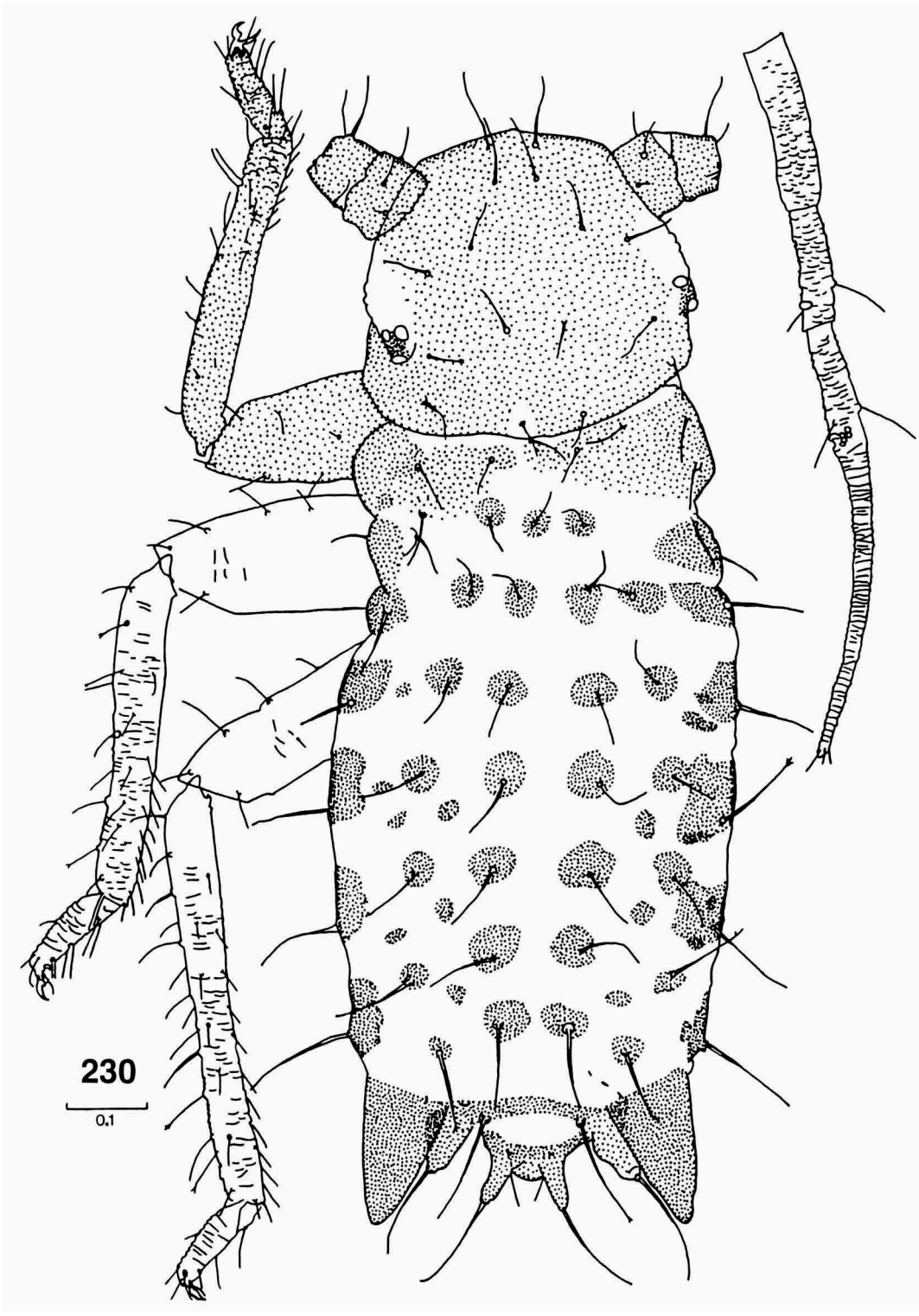
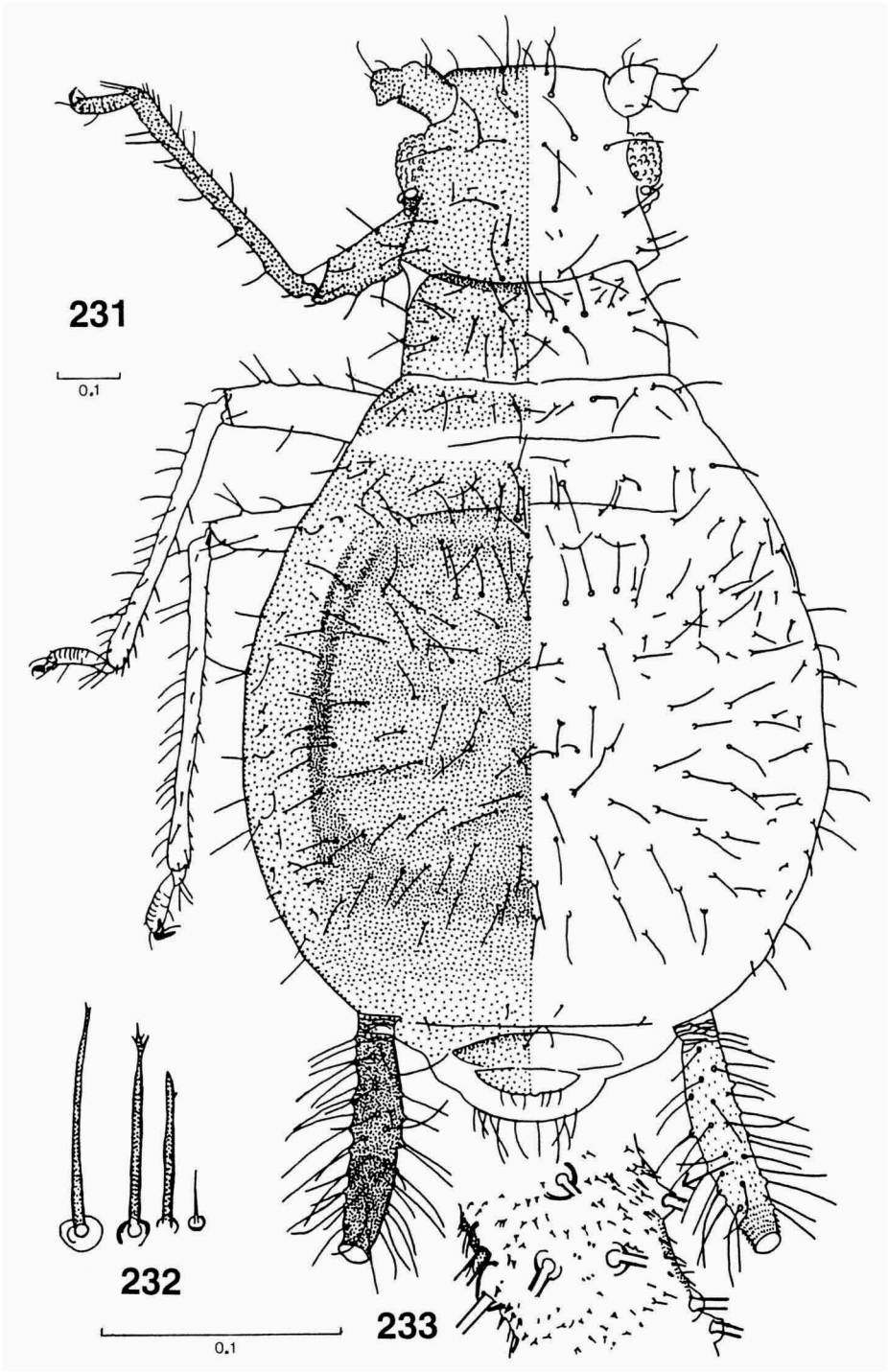
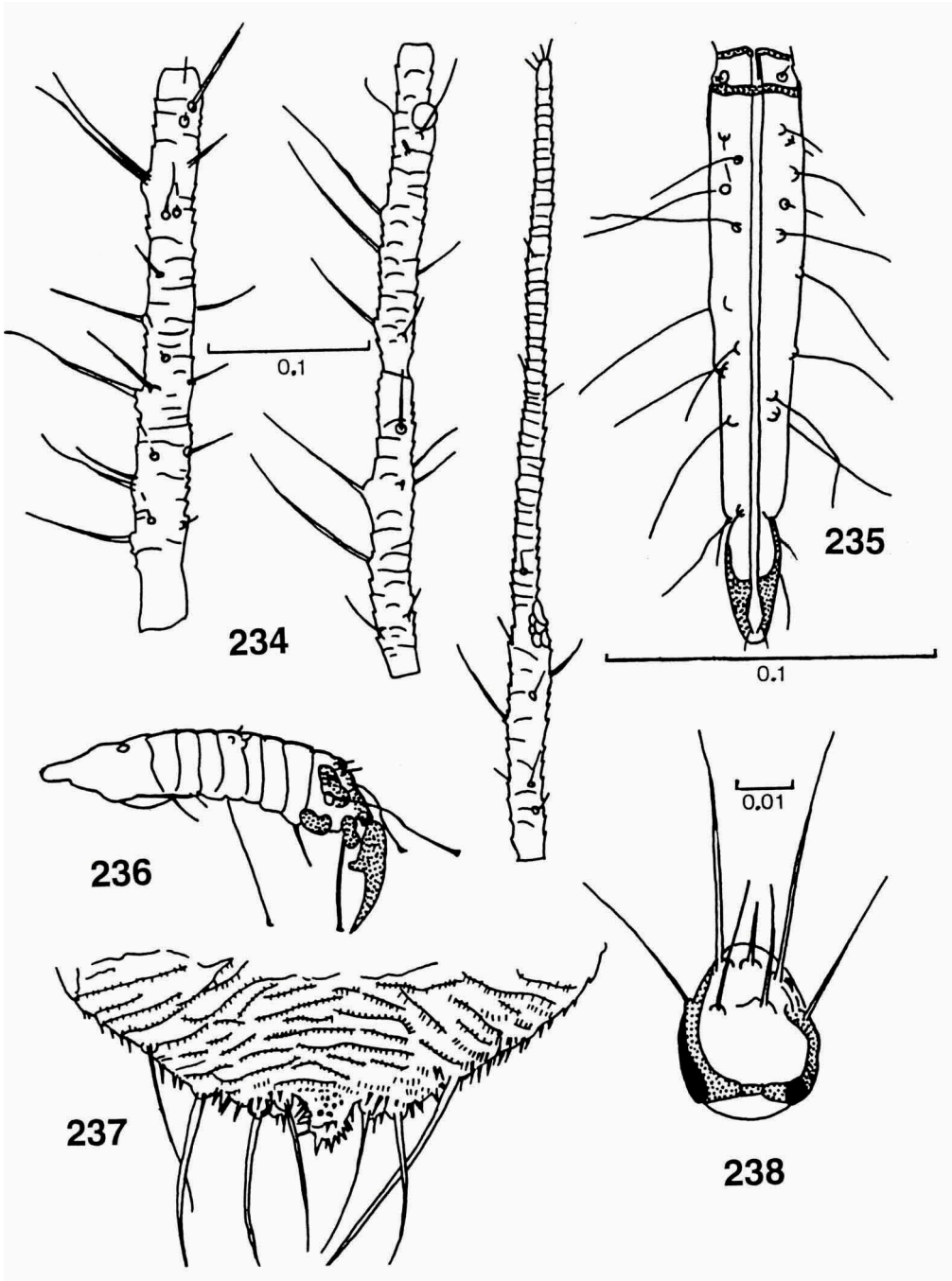


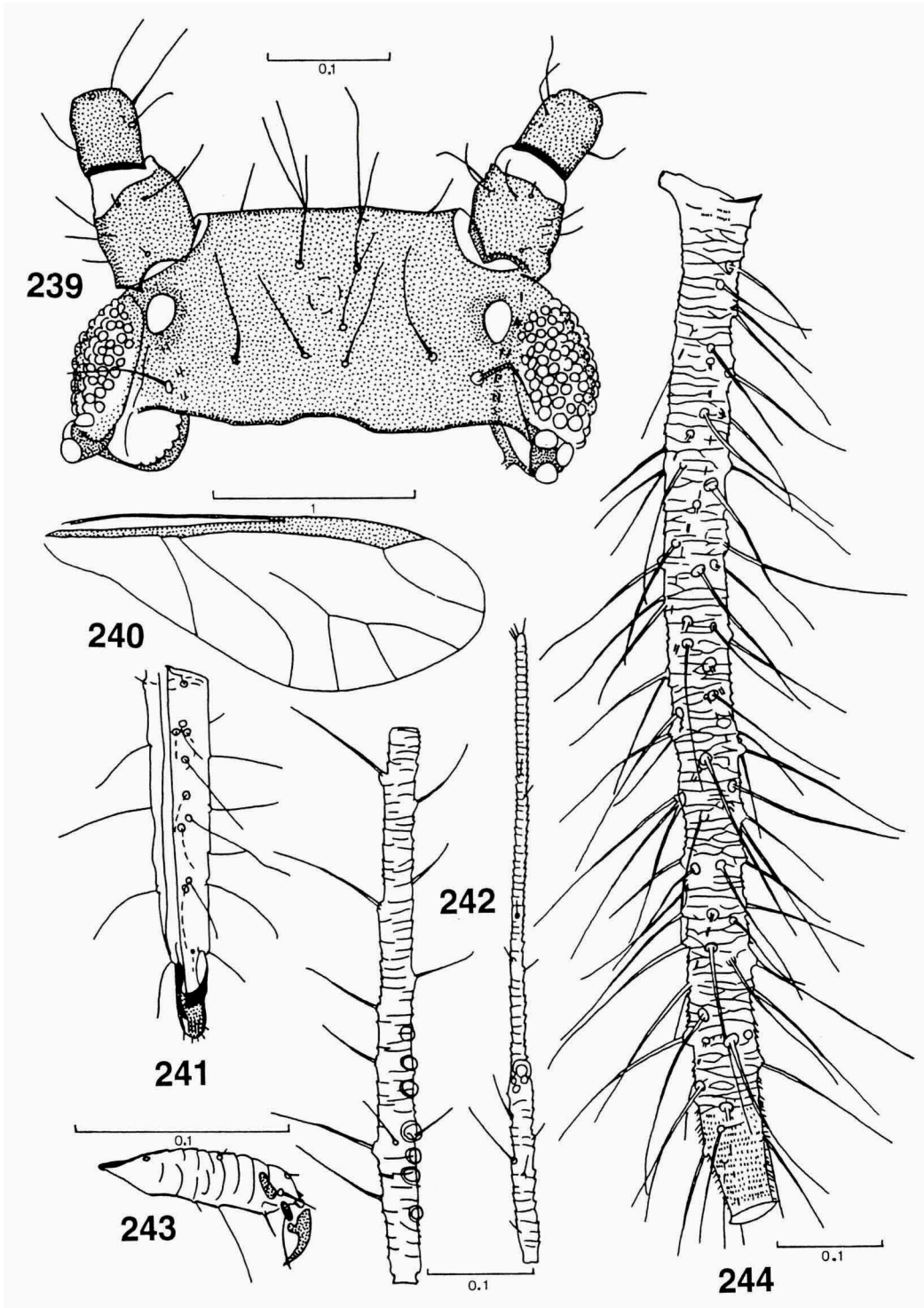
Fig. 230. *Greenidea schimae* Takahashi, first stage larva of apterous viviparous ♀, dorsal side of the body.



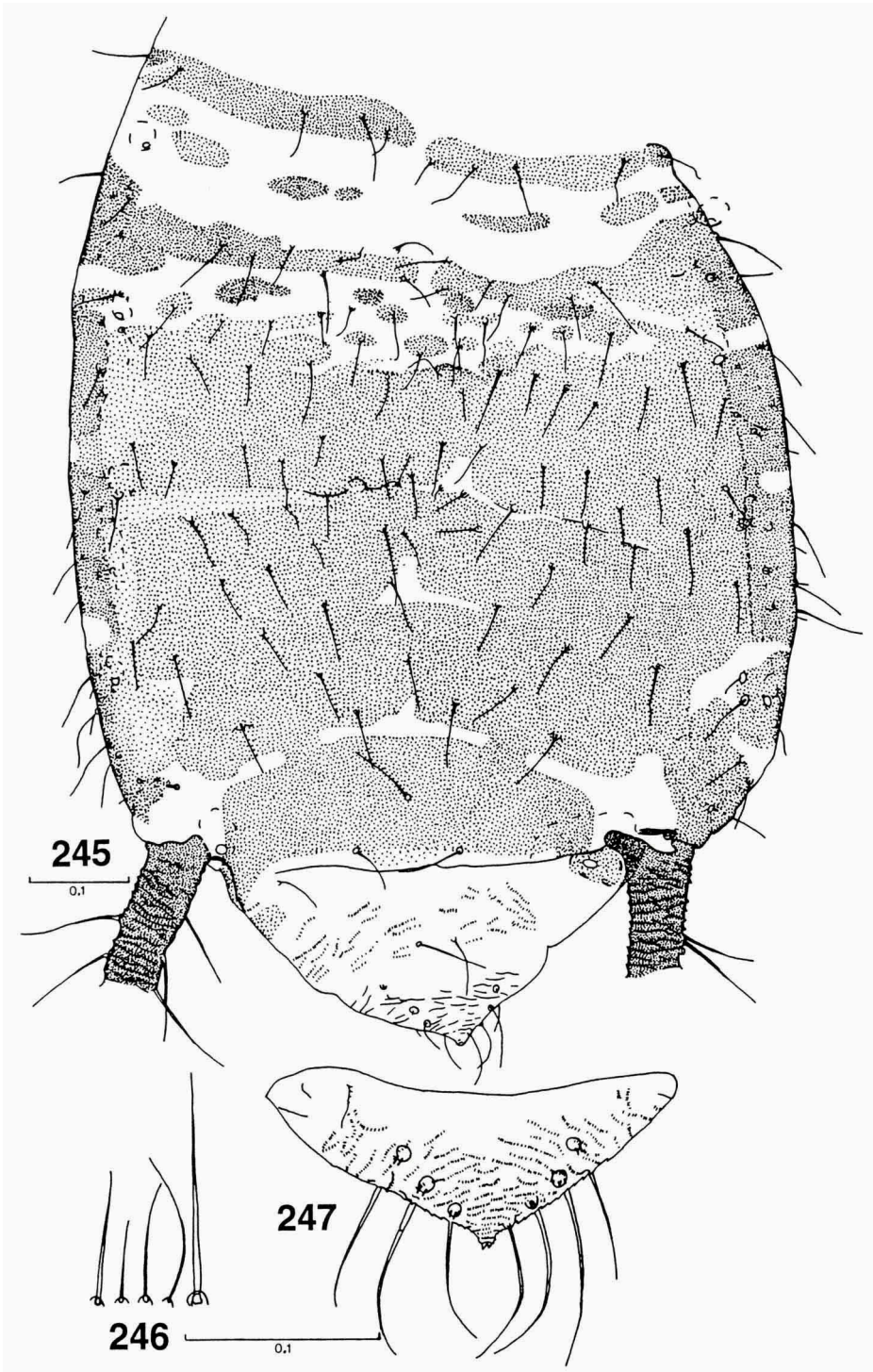
Figs. 231-233. *Greenidea (Trichosiphum) anonae* (Pergande), apterous viviparous ♀. Fig. 231, dorsal side of the body. Fig. 232, dorsal abdominal hairs. Fig. 233, part of the siphunculus.



Figs. 234-238. *Greenidea (Trichosiphum) anonae* (Pergande), apterous viviparous ♀. Fig. 234, antennal segments III, IV plus V, and VI. Fig. 235, ultimate rostral segment. Fig. 236, second tarsal segment of the hind leg. Fig. 237, cauda. Fig. 238, first tarsal segment of the hind leg.



Figs. 239-244. *Greenidea (Trichosiphum) anonae* (Pergande), alate viviparous ♀. Fig. 239, dorsal side of the head. Fig.240, fore wing. Fig. 241, ultimate rostral segment. Fig. 242, antennal segments III and VI. Fig. 243, second tarsal segment of the hind leg. Fig. 244, siphunculus.



Figs. 245-247. *Greenidea (Trichosiphum) anonae* (Pergande), alate viviparous ♀. Fig. 245, dorsal side of the abdomen. Fig. 246, hairs of **a** the mesonotum; **b** tergite IV; **c** tergite VII; **d** tergite VIII. Fig. 247, cauda.

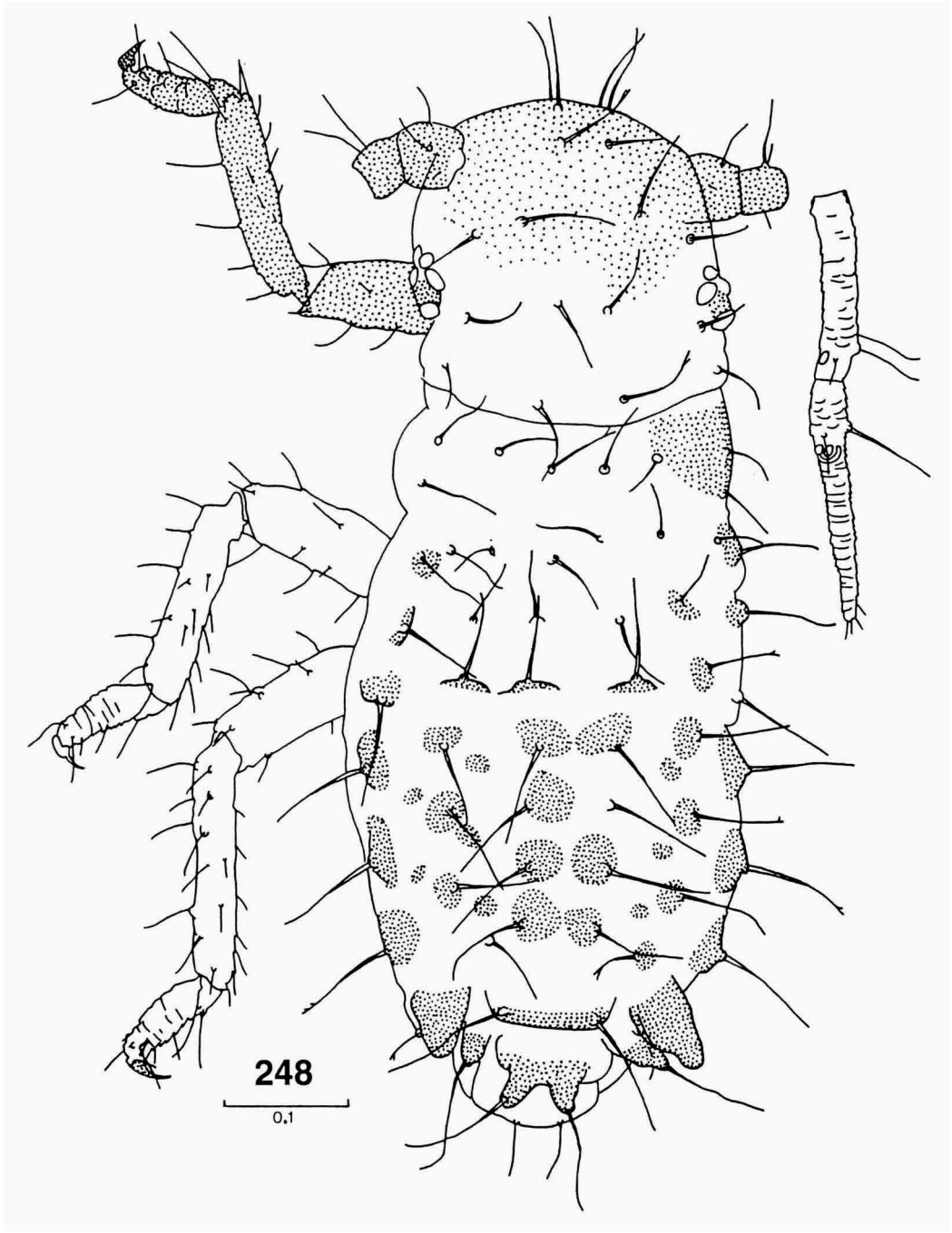
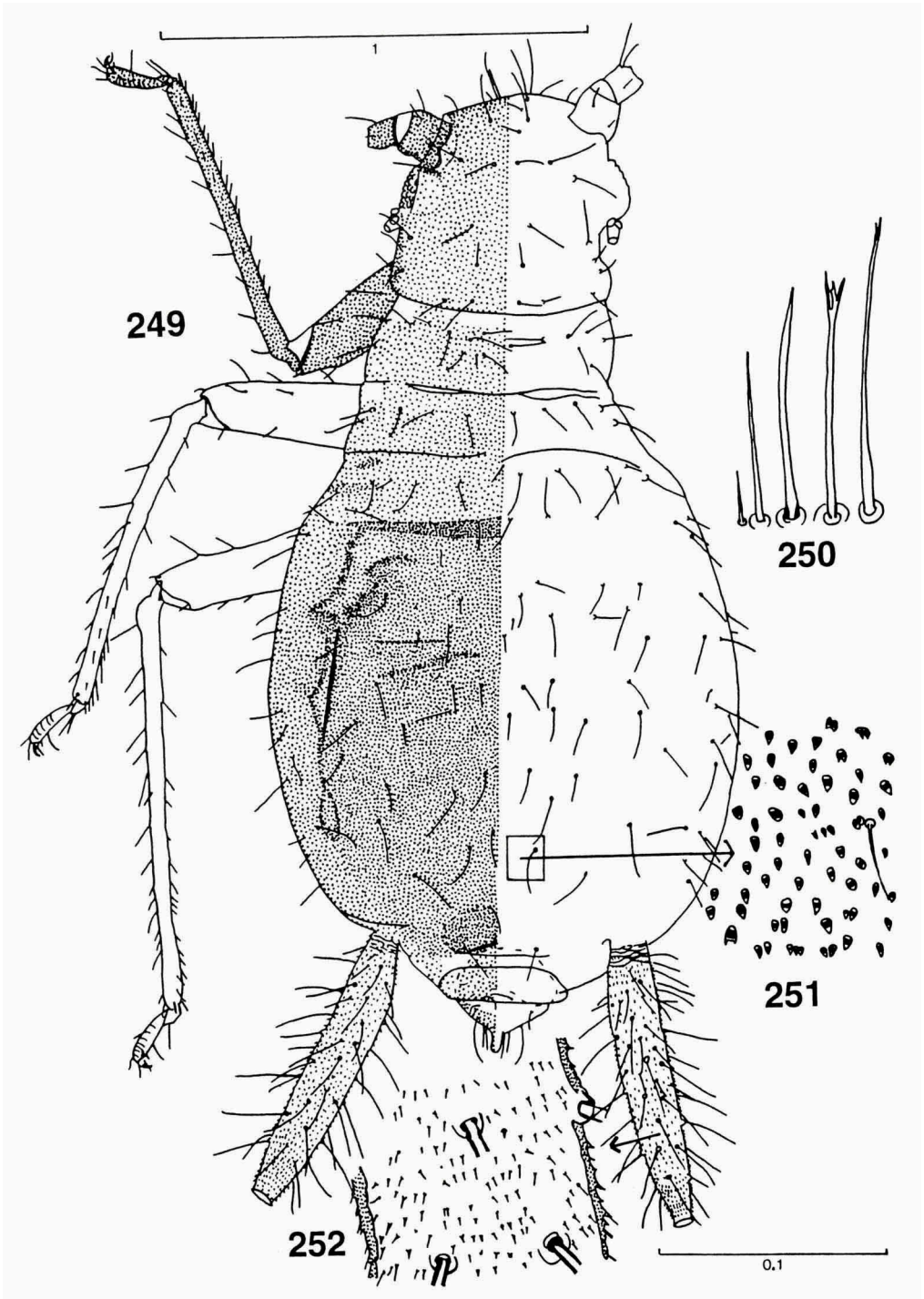
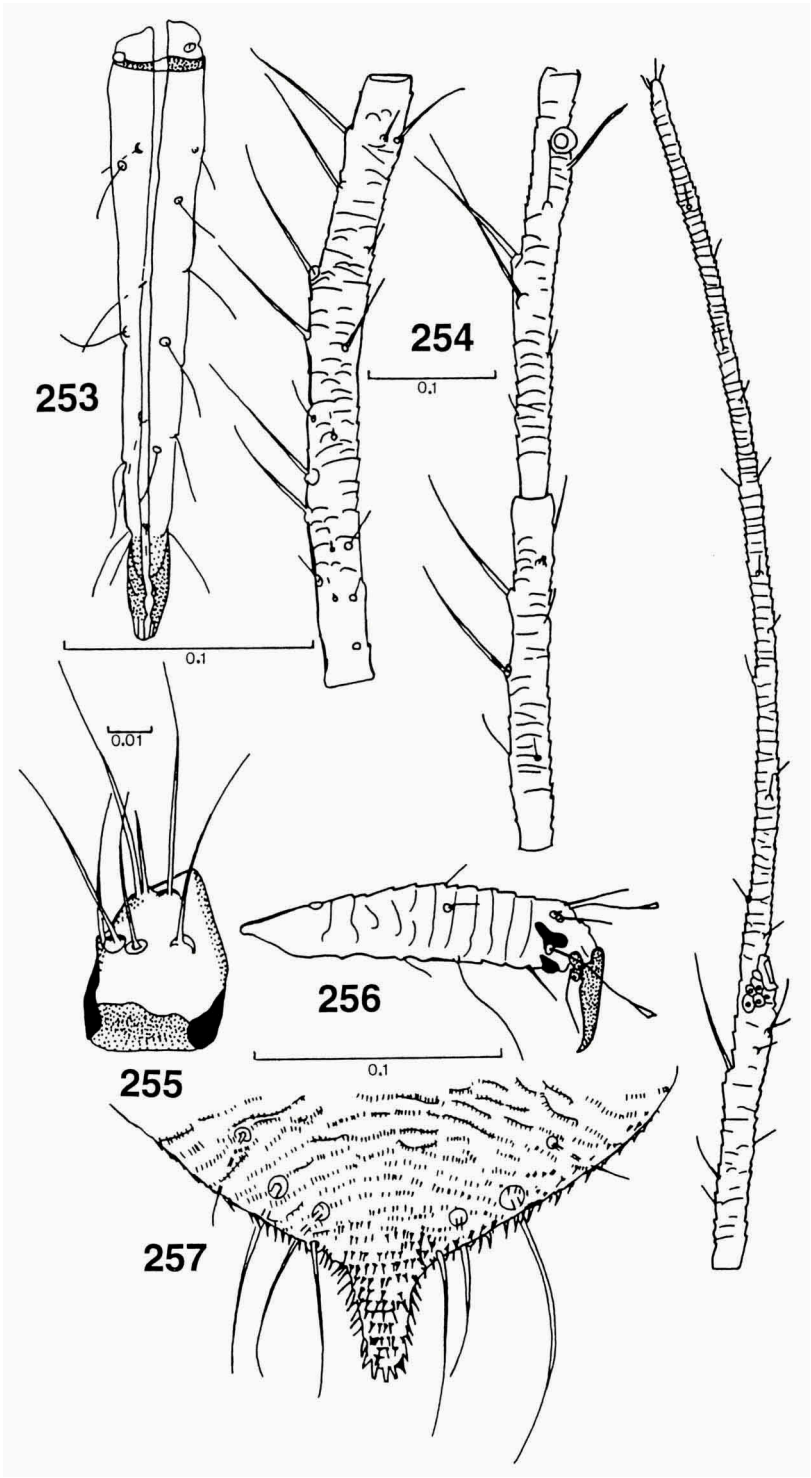


Fig. 248. *Greenidea (Trichosiphum) anonae* (Pergande), first stage larva of apterous viviparous ♀, dorsal side of the body.



Figs. 249-252. *Greenidea (Trichosiphum) castanopsidis* spec. nov., apterous viviparous ♀. Fig. 249, dorsal side of the body. Fig. 250, dorsal abdominal hairs. Fig. 251, ventral abdominal spinulae. Fig. 252, part of the siphunculus.



Figs. 253-257. *Greenidea (Trichosiphum) castanopsidis* spec. nov., apterous viviparous ♀. Fig. 253, ultimate rostral segment. Fig. 254, antennal segments III, IV plus V, and VI. Fig. 255, first tarsal segment of the hind leg. Fig. 256, second tarsal segment of the hind leg. Fig. 257, cauda.

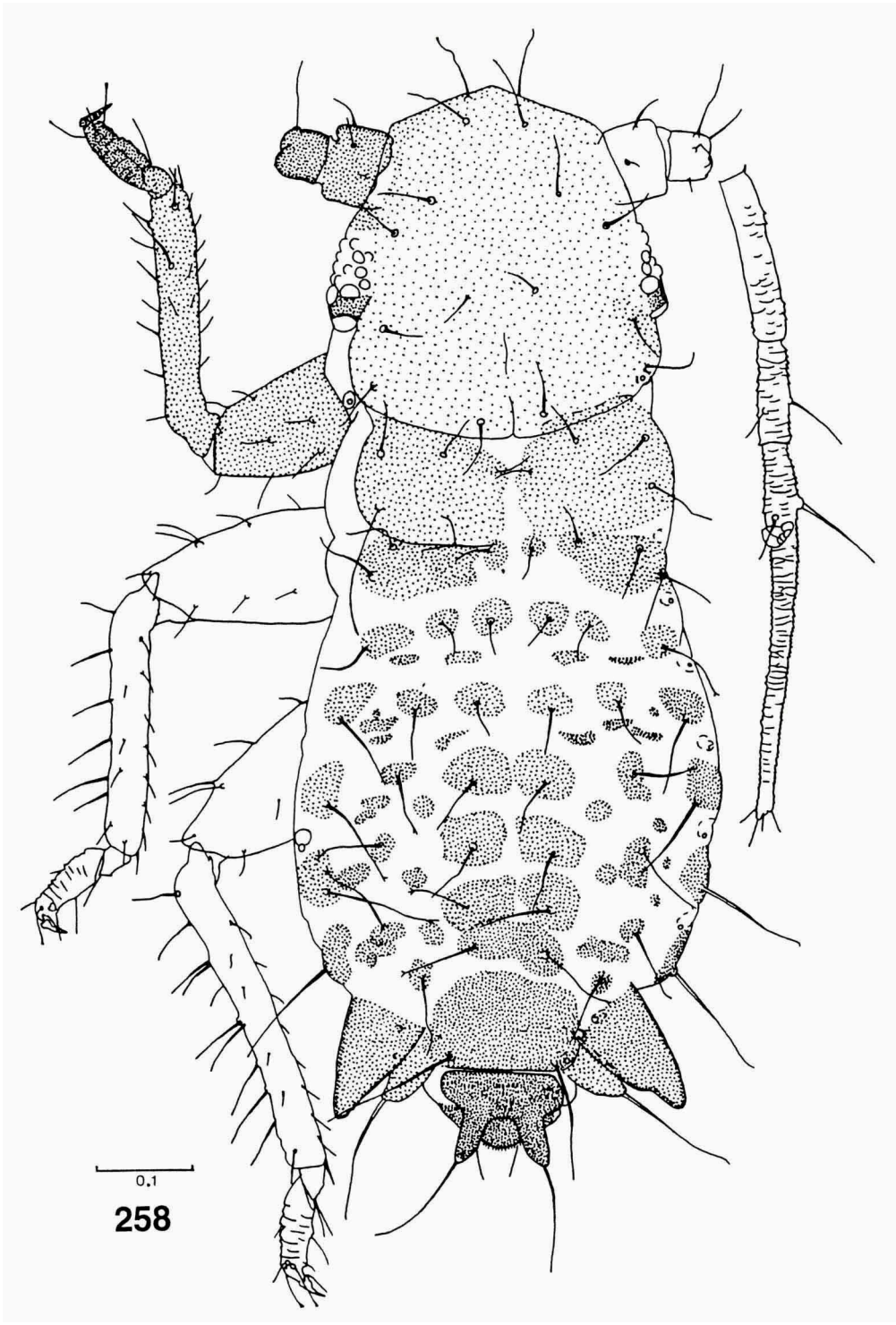
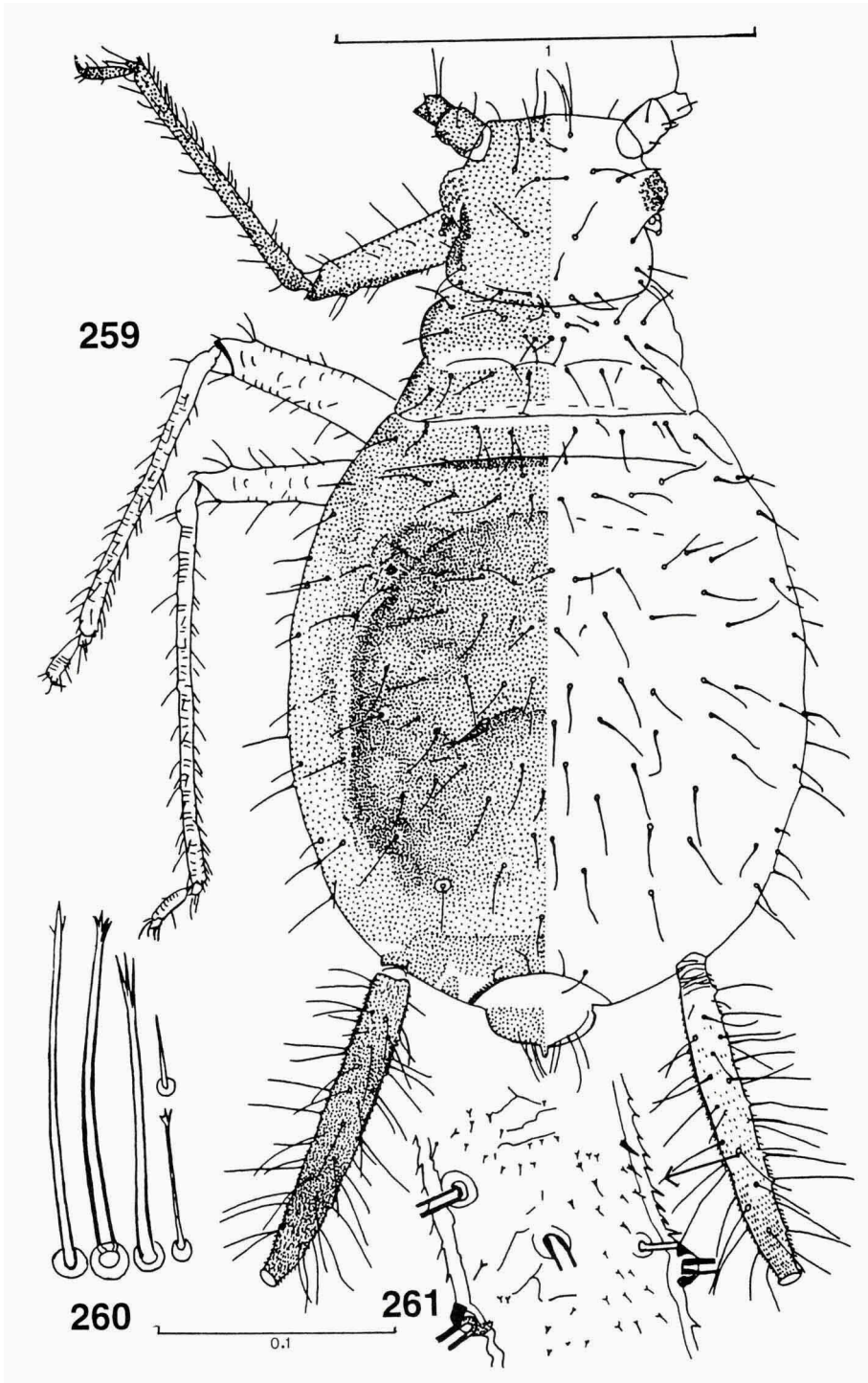
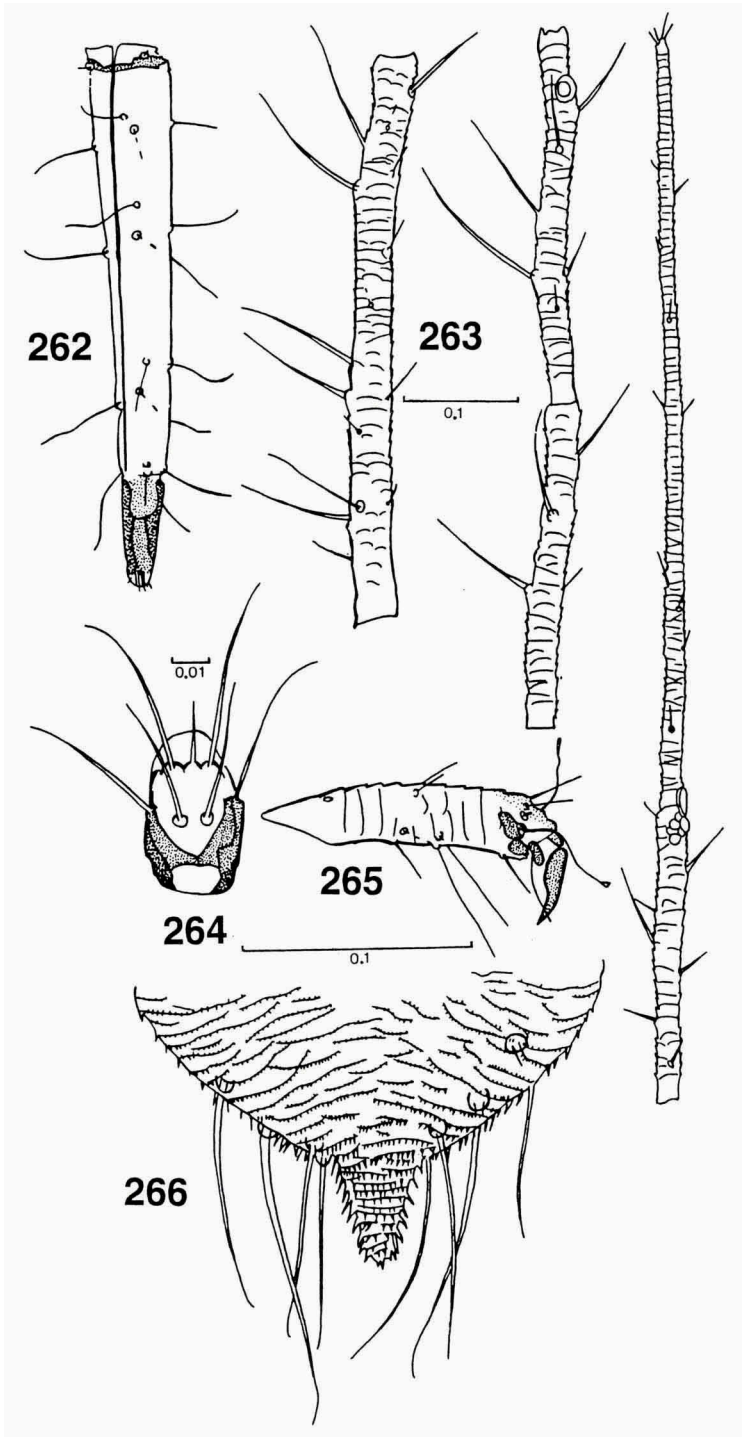


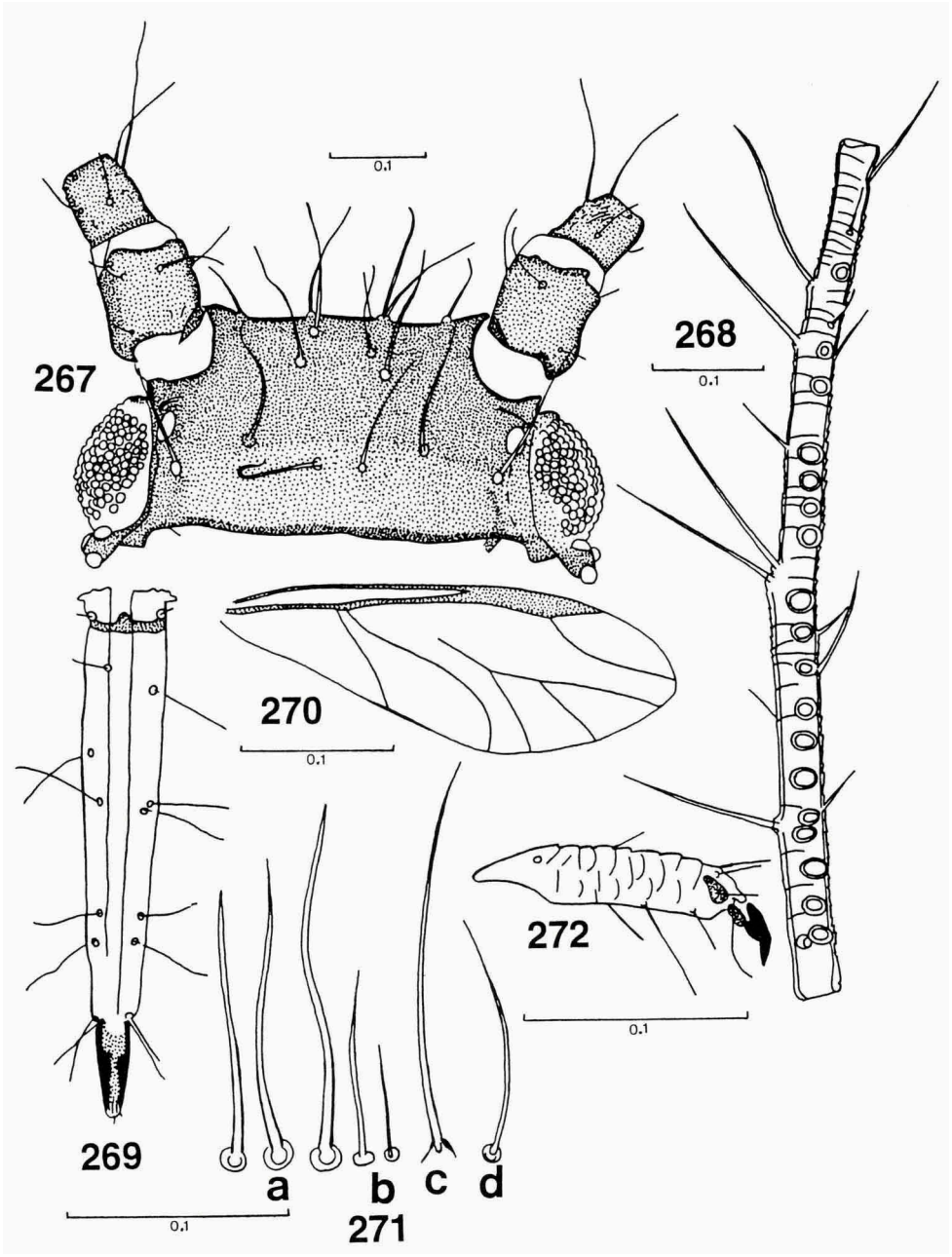
Fig. 258. *Greenidea (Trichosiphum) castanopsidis* spec. nov., first stage larva of apterous viviparous ♀.



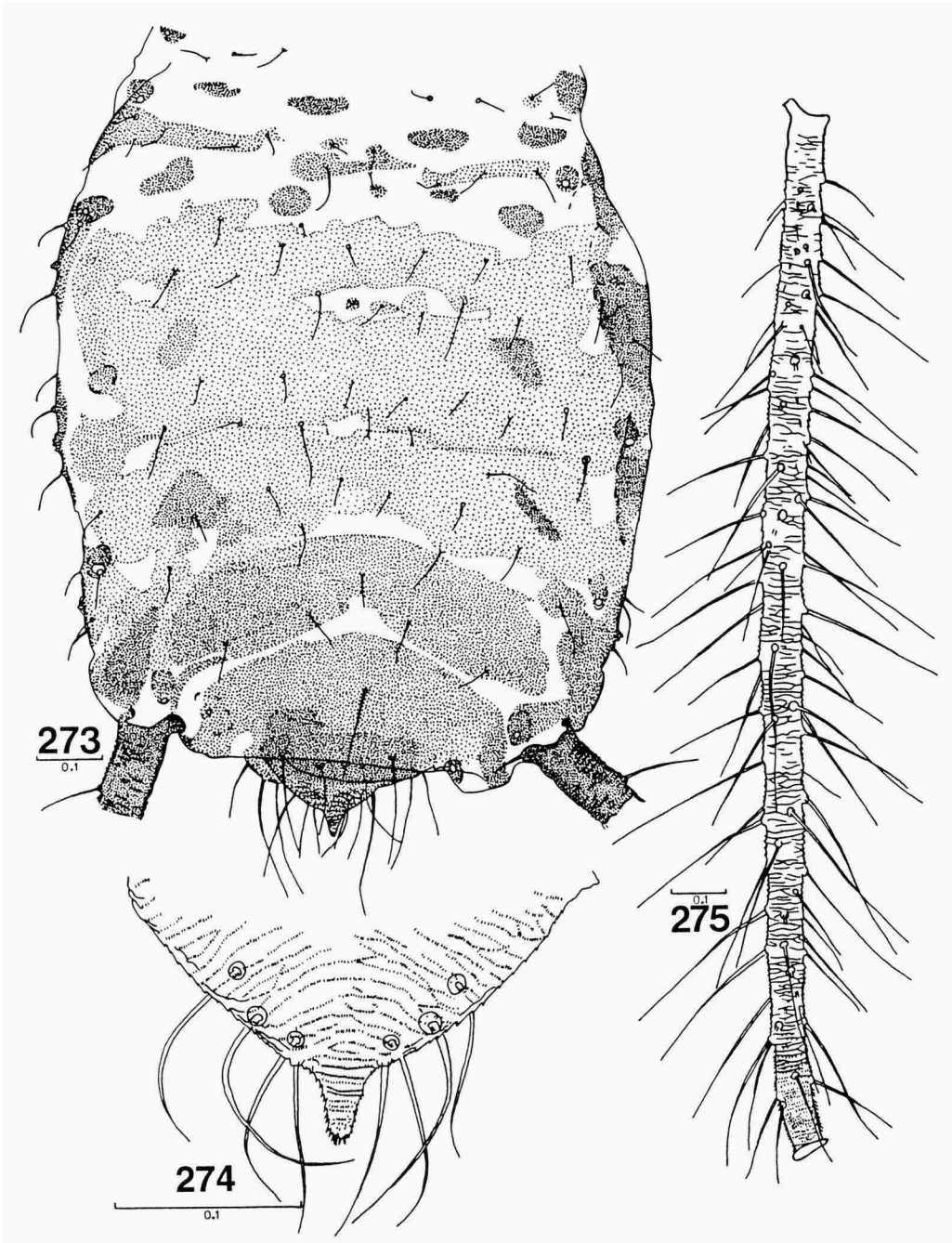
Figs. 259-261. *Greenidea (Trichosiphum) flacourtiae* van der Goot, apterous viviparous ♀. Fig.259, dorsal side of the body. Fig. 260, dorsal abdominal hairs. Fig. 261, part of the siphunculus.



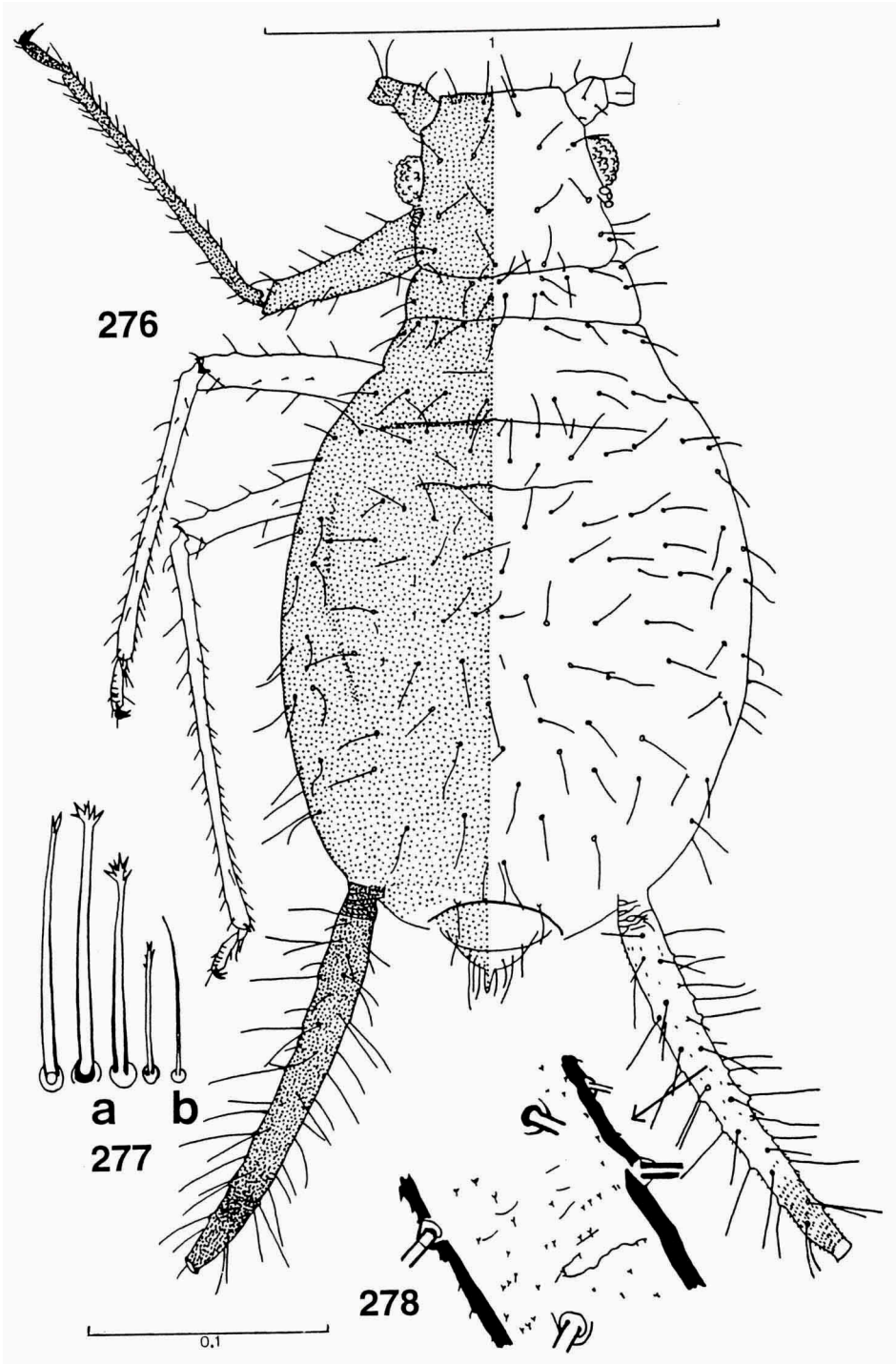
Figs. 262-266. *Greenidea (Trichosiphum) flacourtiae* van der Goot, apterous viviparous ♀. Fig. 262, ultimate rostral segment. Fig. 263, antennal segments III, IV plus V, and VI. Fig. 264, first tarsal segment of the hind leg. Fig. 265, second tarsal segment of the hind leg. Fig. 266, cauda.



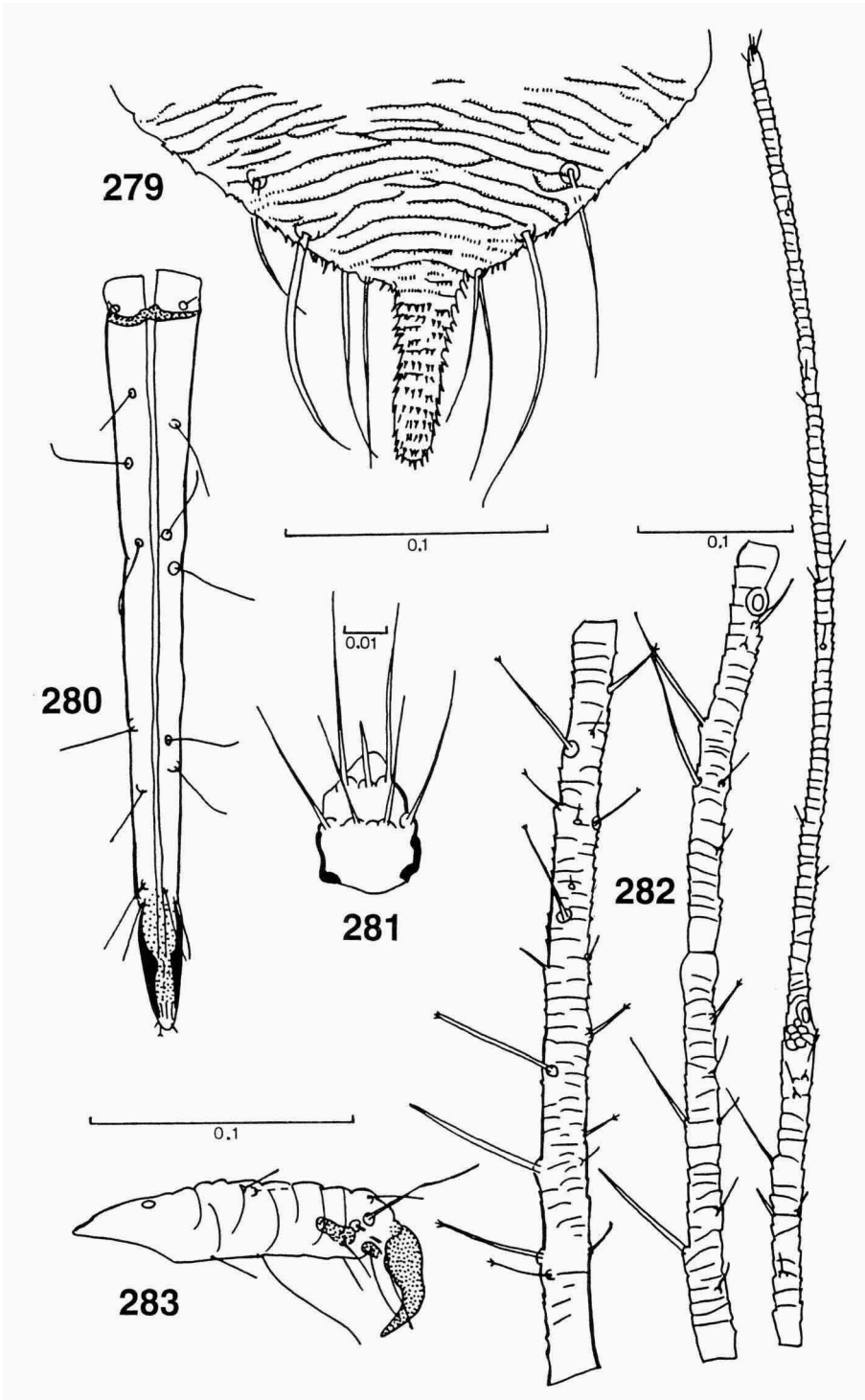
Figs. 267-272. *Greenidea (Trichosiphum) flacourtiae* van der Goot, alate viviparous ♀. Fig. 267, dorsal side of the head. Fig. 268, antennal segment III. Fig. 269, ultimate rostral segment. Fig. 270, fore wing. Fig. 271, hairs of **a** the mesonotum; **b** tergite IV; **c** tergite VII; **d** tergite VIII. Fig. 272, second tarsal segment of the hind leg.



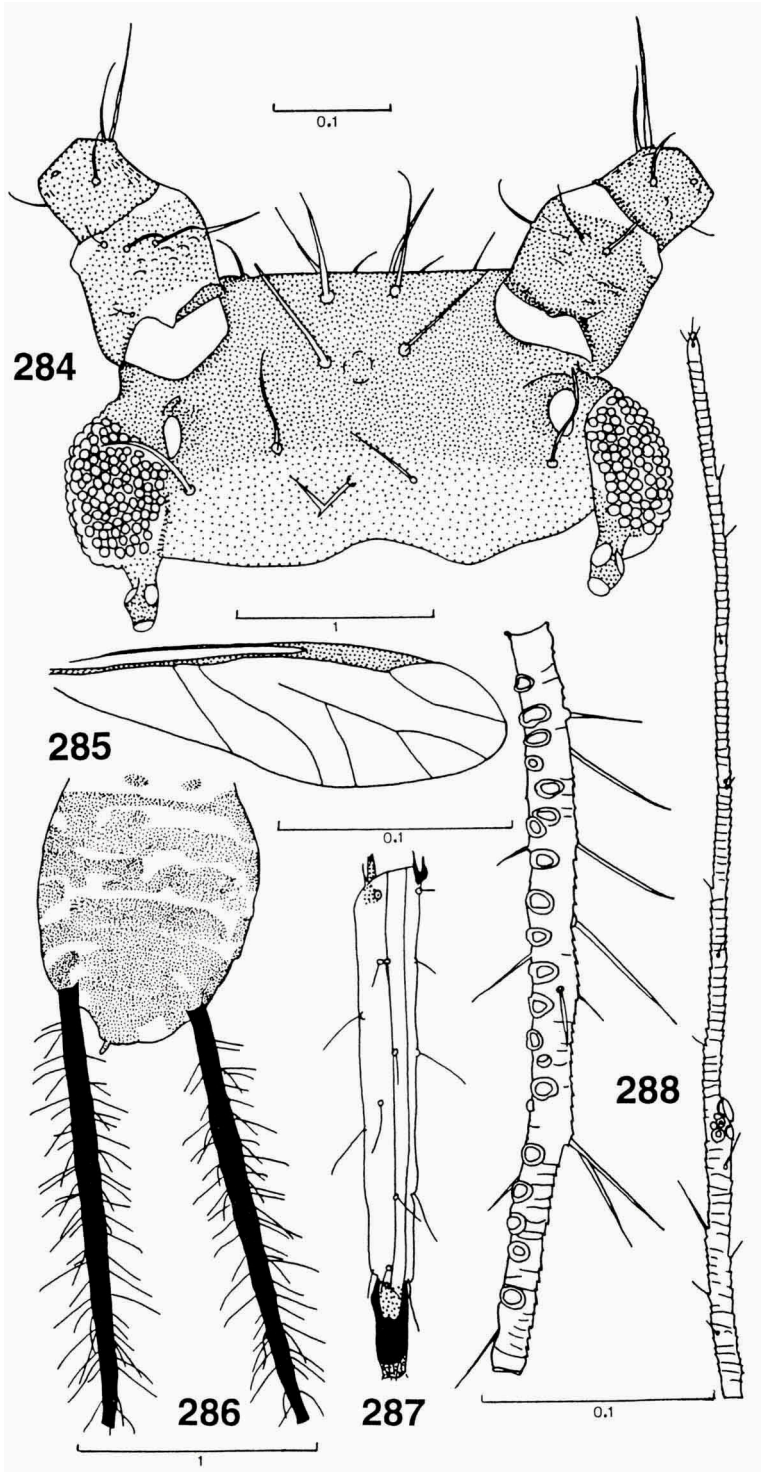
Figs. 273-275. *Greenidea (Trichosiphum) flacourtiae* van der Goot, alate viviparous ♀. Fig. 273, dorsal side of the abdomen. Fig. 274, cauda. Fig. 275, siphunculus.



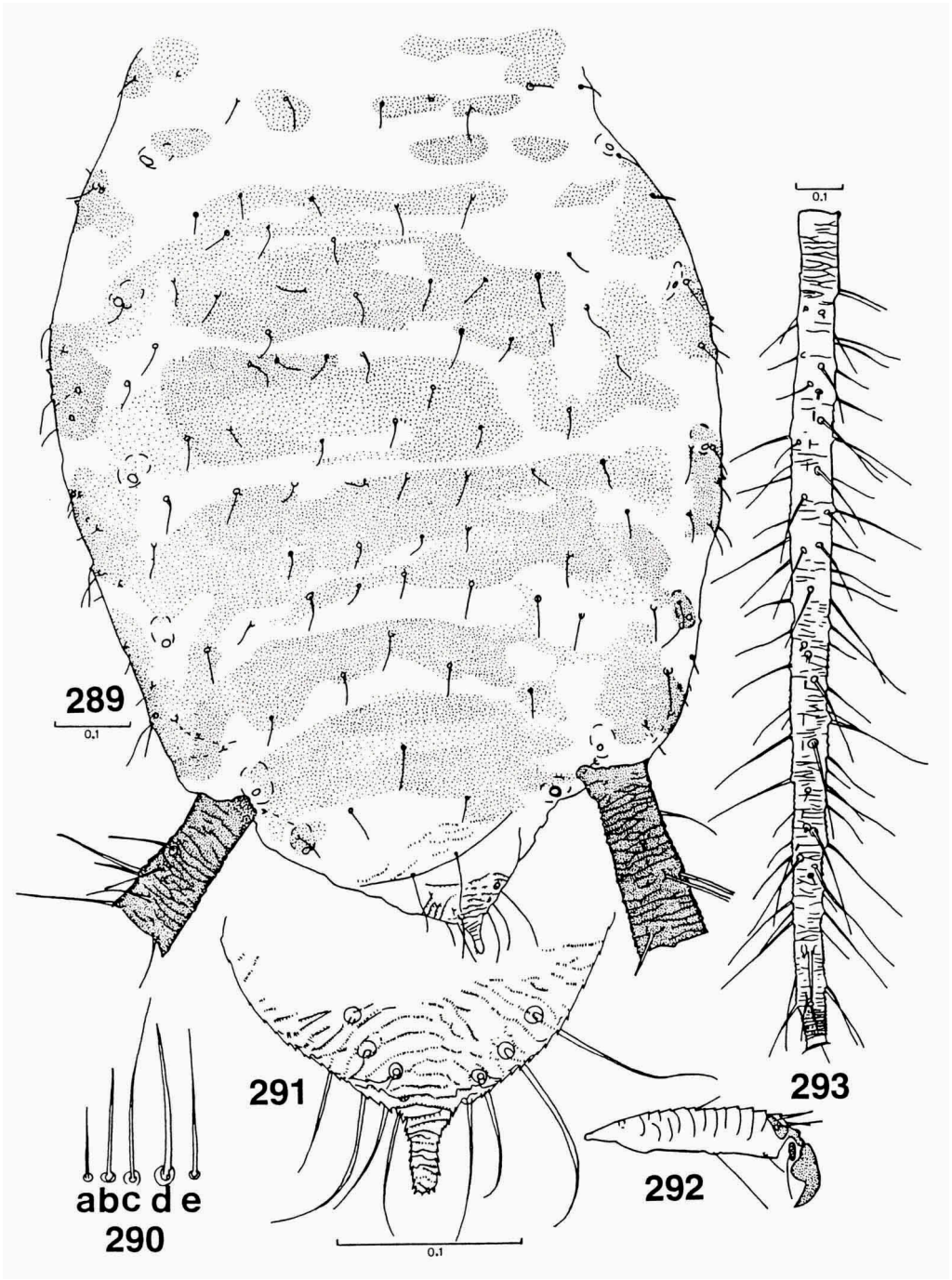
Figs. 276-278. *Greenidea (Trichosiphum) fulva* spec. nov., apterous viviparous ♀. Fig. 276, dorsal side of the body. Fig. 277, **a** four dorsal abdominal hairs; **b** ventral hair of the middle of the abdomen. Fig. 278, part of the siphunculus.



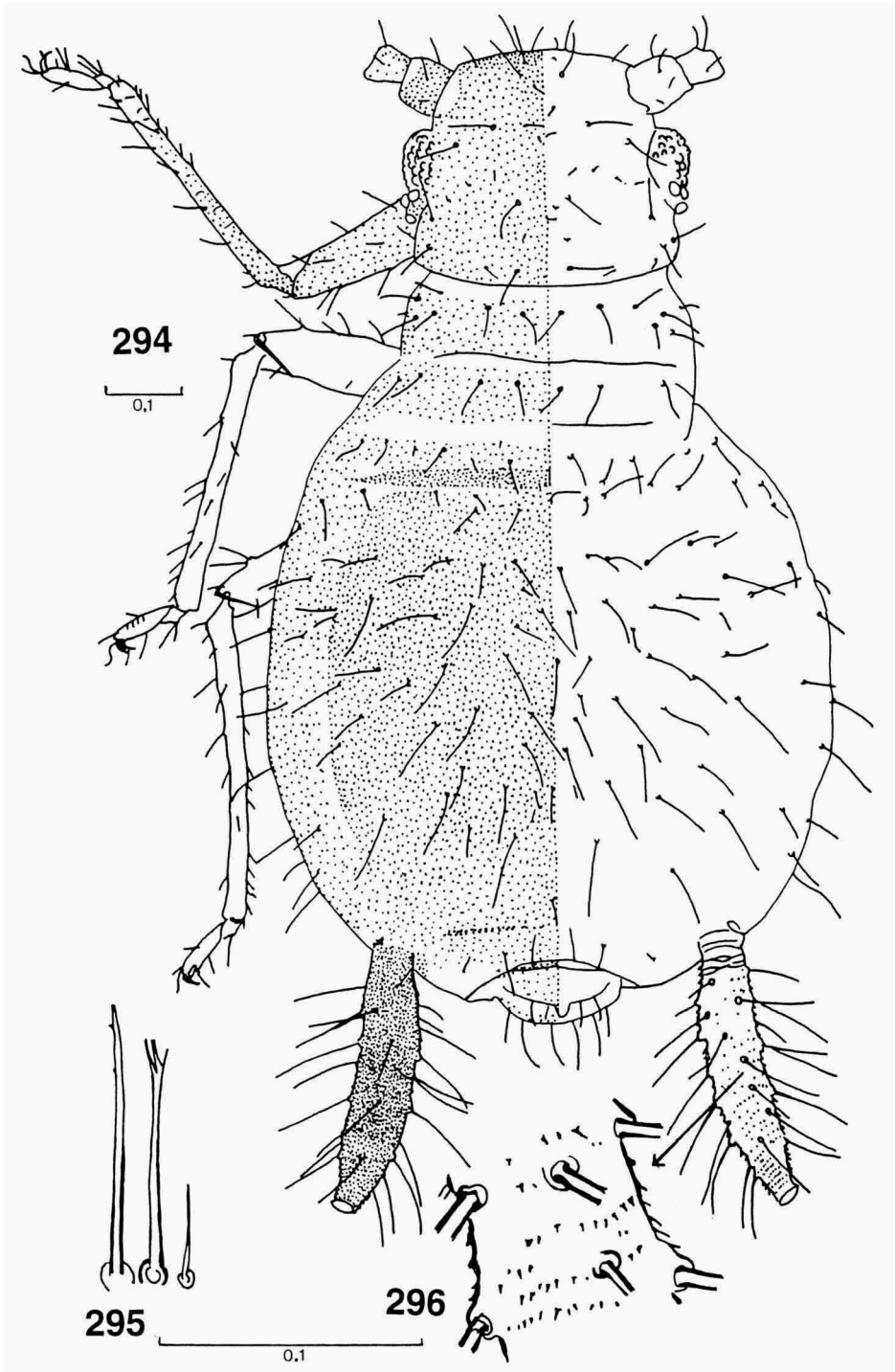
Figs. 279-283. *Greenidea (Trichosiphum) fulva* spec. nov., apterous viviparous ♀. Fig. 279, cauda. Fig 280, ultimate rostral segment. Fig. 281, first tarsal segment of the hind leg. Fig. 282, antennal segments III, IV plus V, and VI. Fig. 283, second tarsal segment of the hind leg.



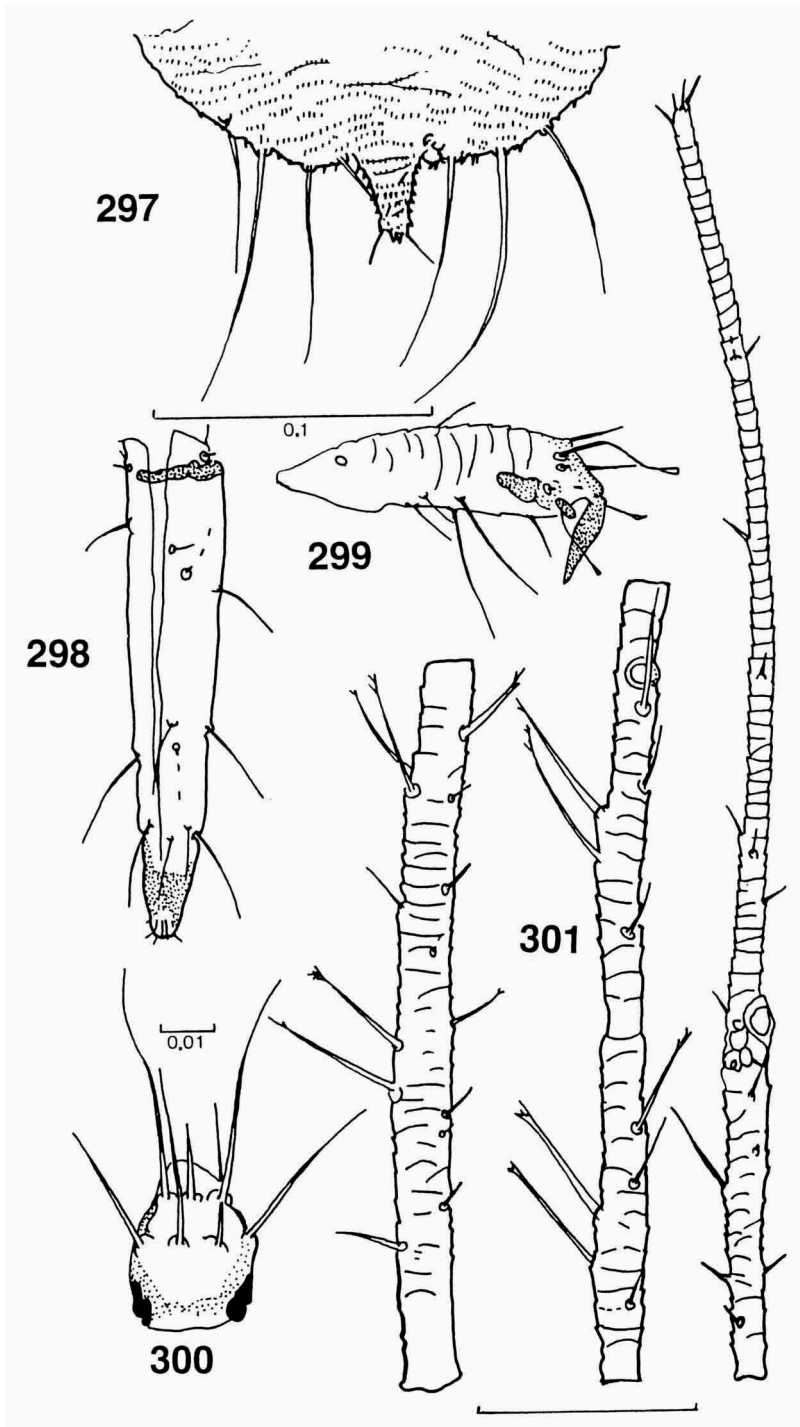
Figs. 284-288. *Greenidea (Trichosiphum) fulva* spec. nov., alate viviparous ♀. Fig. 284, dorsal side of the head. Fig. 285, fore wing. Fig. 286, dorsal side of the abdomen. Fig. 287, ultimate rostral segment. Fig. 288, antennal segments III, and VI.



Figs. 289-293. *Greenidea (Trichosiphum) fulva* spec. nov., alate viviparous ♀. Fig. 289, dorsal side of the abdomen. Fig 290, hairs of **a** tergite IV; **b** tergite VII; **c** tergite VIII; **d** mesonotum; **e** of the middle of the abdomen ventrally. Fig. 291, cauda. Fig. 292, second tarsal segment of the hind leg. Fig. 293, siphunculus.



Figs. 294-296. *Greenidea (Trichosiphum) nigricans* spec. nov., apterous viviparous ♀. Fig. 294, dorsal side of the body. Fig. 295, dorsal abdominal hairs. Fig. 296, part of the siphunculus.



Figs. 297-301. *Greenidea (Trichosiphum) nigricans* spec. nov., apterous viviparous ♀. Fig. 297, cauda. Fig. 298, ultimate rostral segment. Fig. 299, second tarsal segment of the hind leg. Fig. 300, first tarsal segment of the hind leg. Fig. 301, antennal segments III, IV plus V, and VI.

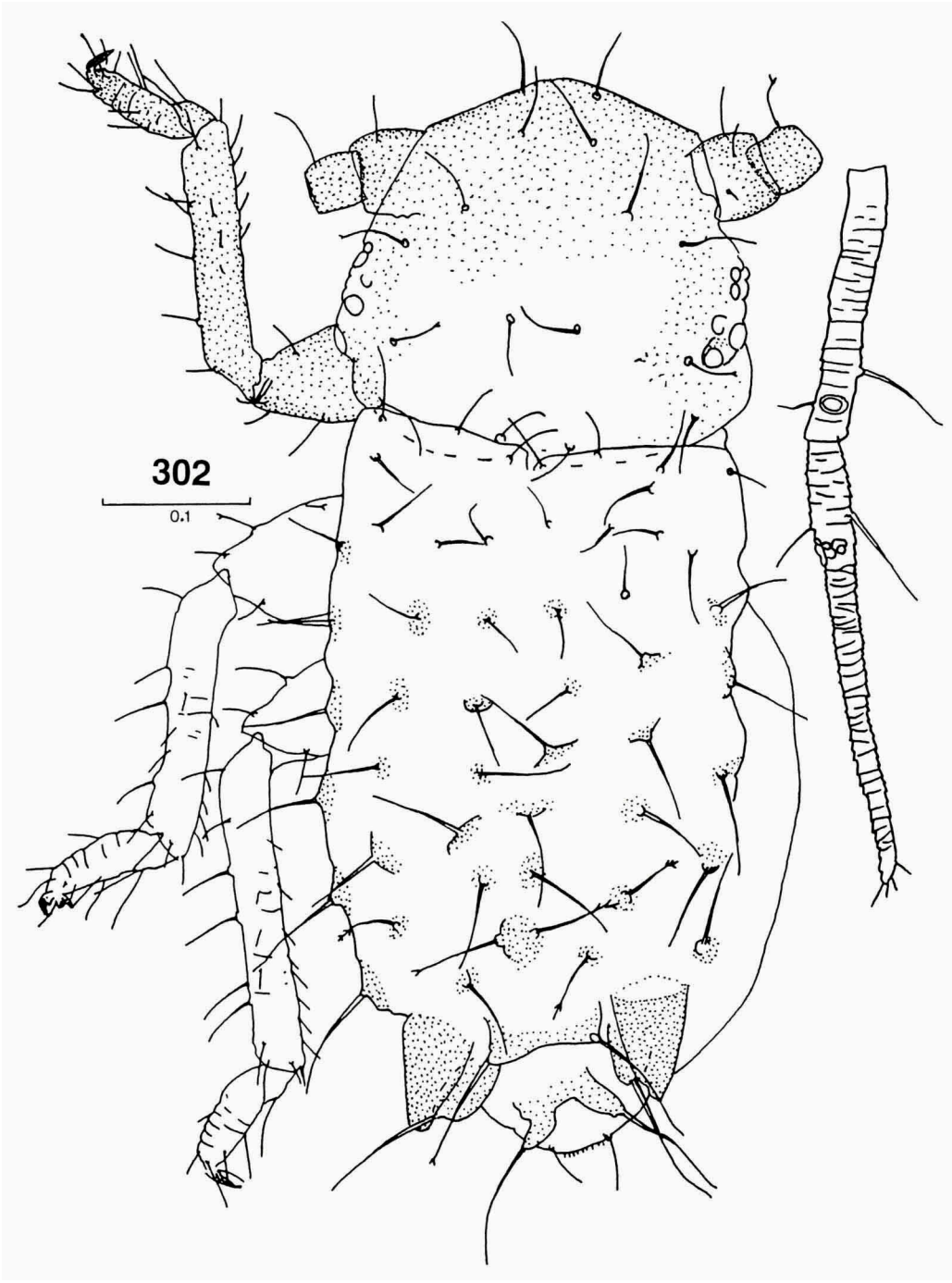
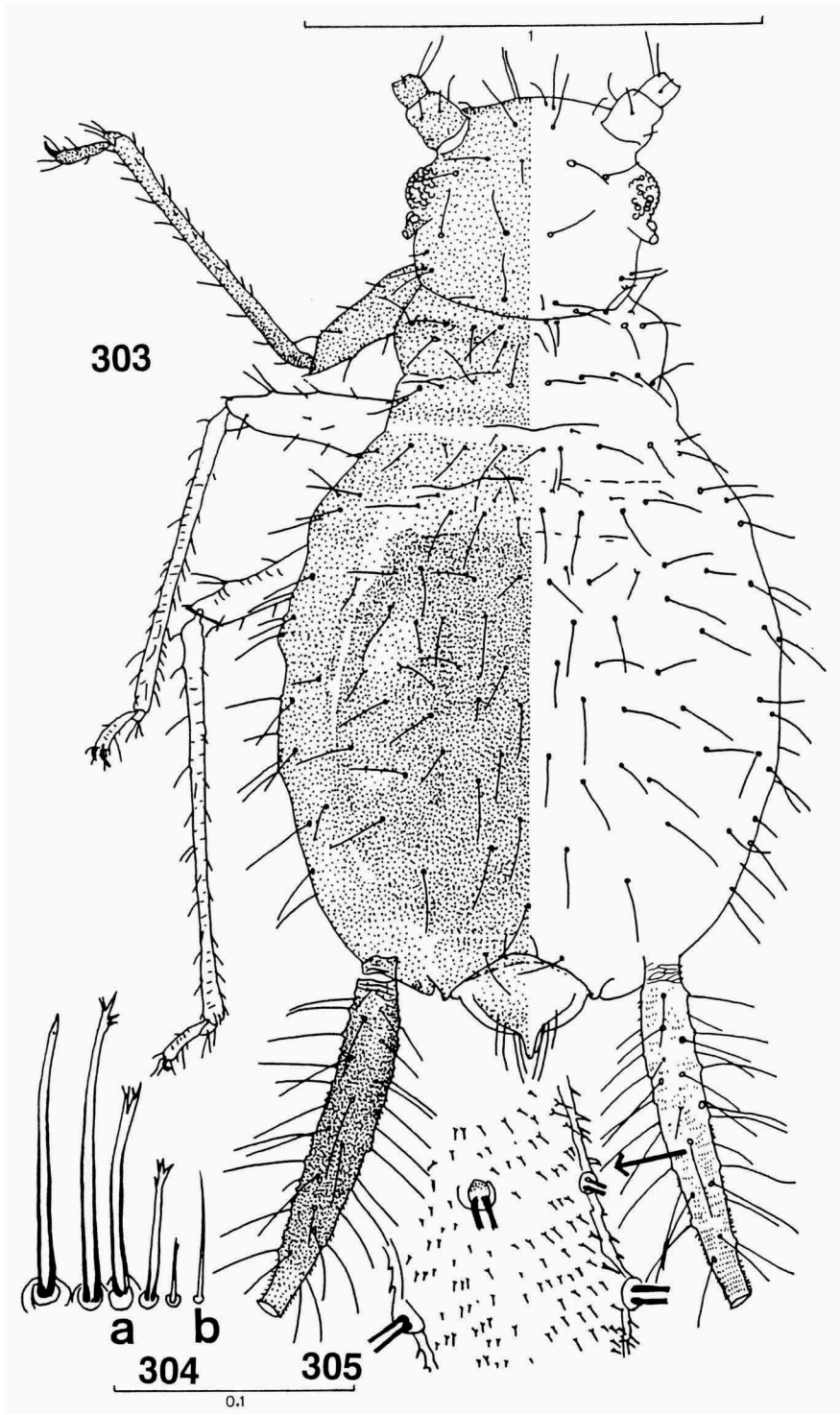
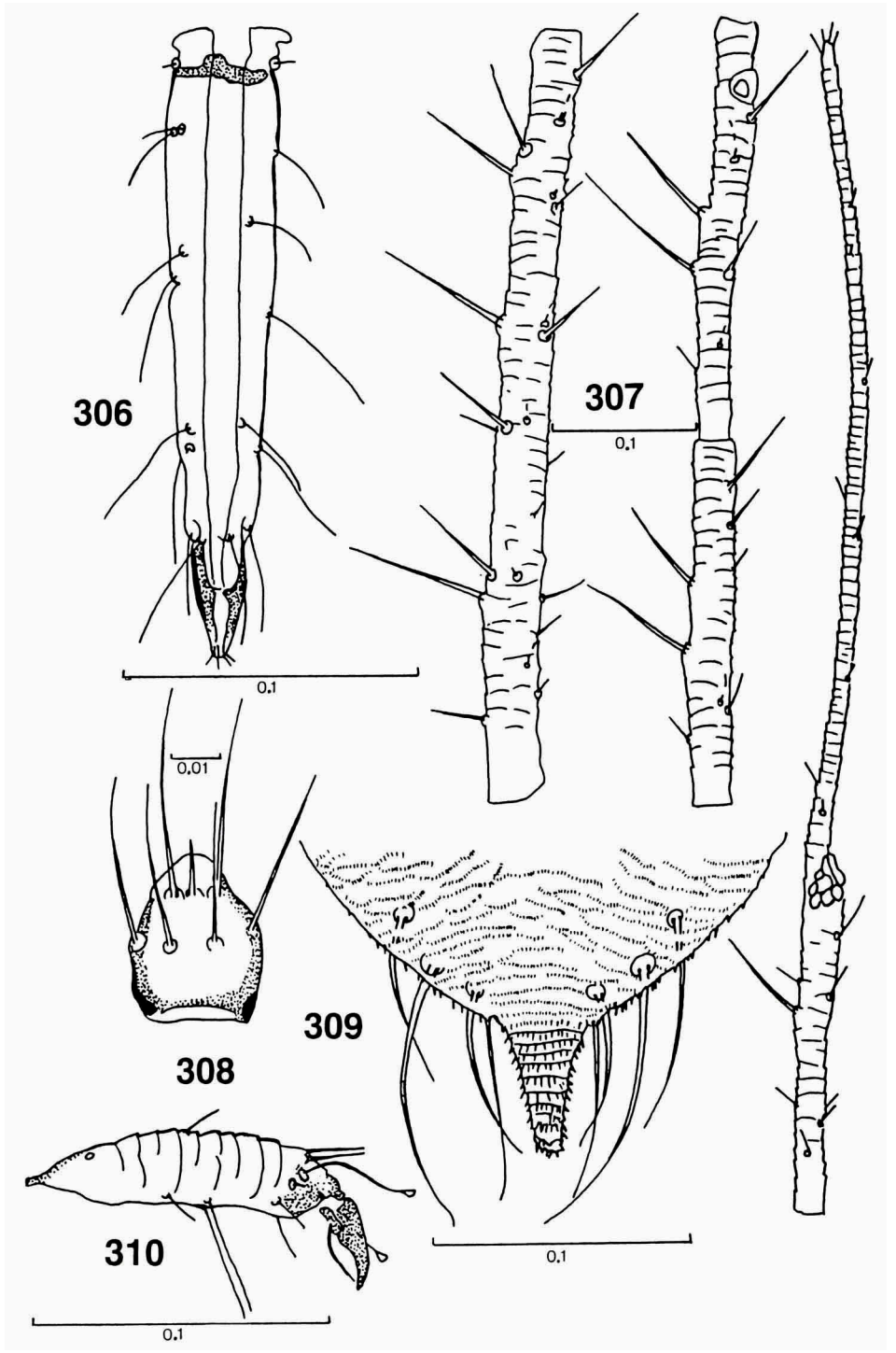


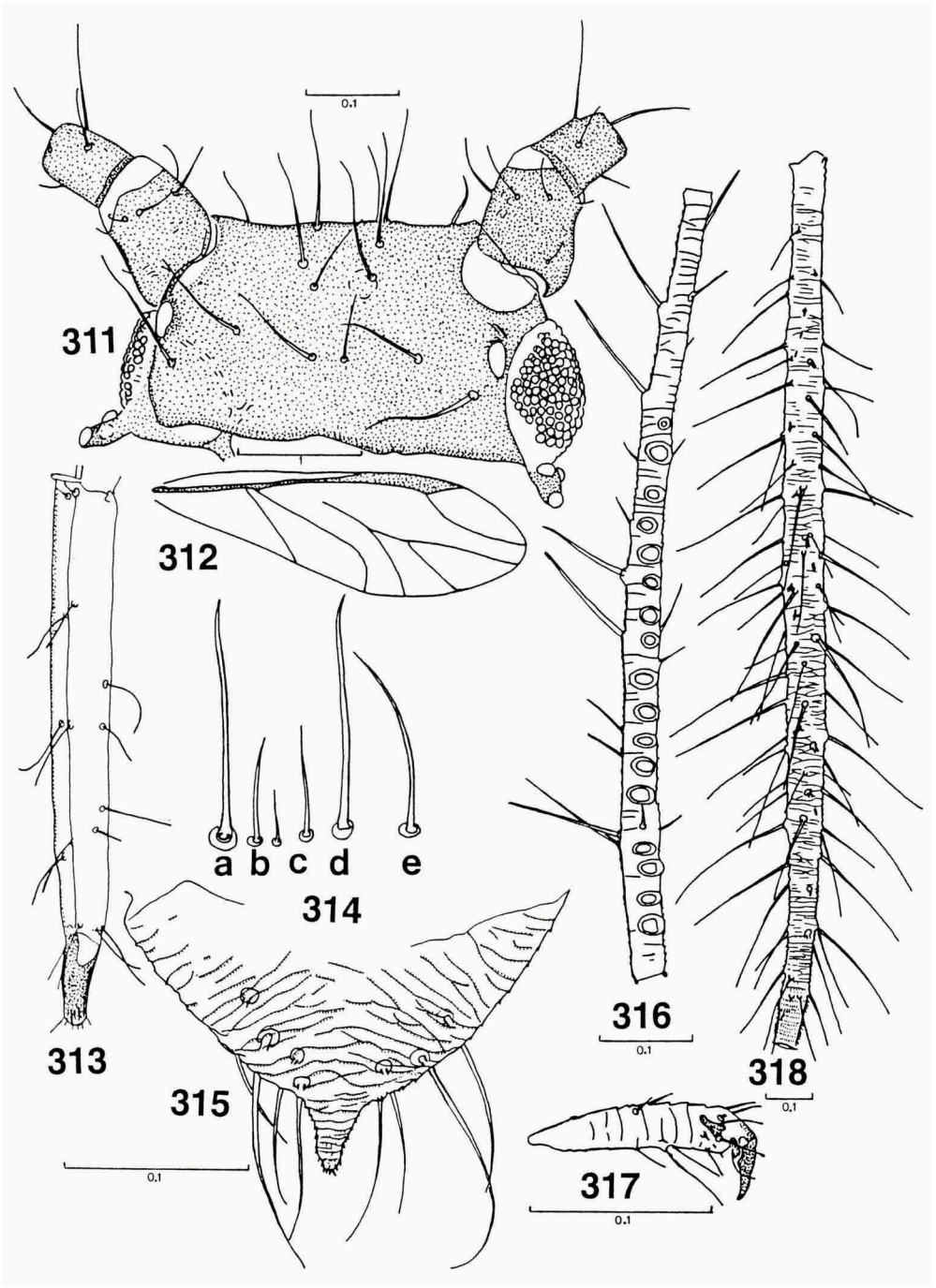
Fig. 302. *Greenidea (Trichosiphum) nigricans* spec. nov., first stage larva of apterous viviparous ♀, dorsal side of the body.



Figs. 303-305. *Greenidea (Trichosiphum) pallidipes* spec. nov., apterous viviparous ♀. Fig. 303, dorsal side of the body. Fig. 304, **a** dorsal abdominal hairs; **b** ventral hair of the middle of the abdomen. Fig. 305, part of the siphunculus.



Figs. 306-310. *Greenidea (Trichosiphum) pallidipes* spec. nov., apterous viviparous ♀. Fig. 306, ultimate rostral segment. Fig. 307, antennal segments III, IV plus V, and VI. Fig. 308, first tarsal segment of the hind leg. Fig.309, cauda. Fig. 310, second tarsal segment of the hind leg.



Figs 311-318. *Greenidea (Trichosiphum) pallidipes* spec. nov., alate viviparous ♀. Fig. 311, dorsal side of the head. Fig. 312, fore wing. Fig. 313, ultimate rostral segment. Fig. 314, hairs of **a** the mesonotum; **b** tergite IV; **c** tergite VII; **d** tergite VII; **e** tergite VIII. Fig. 315, cauda. Fig. 316, antennal segment III. Fig. 317, second tarsal segment of the hind leg. Fig. 318, siphunculus.

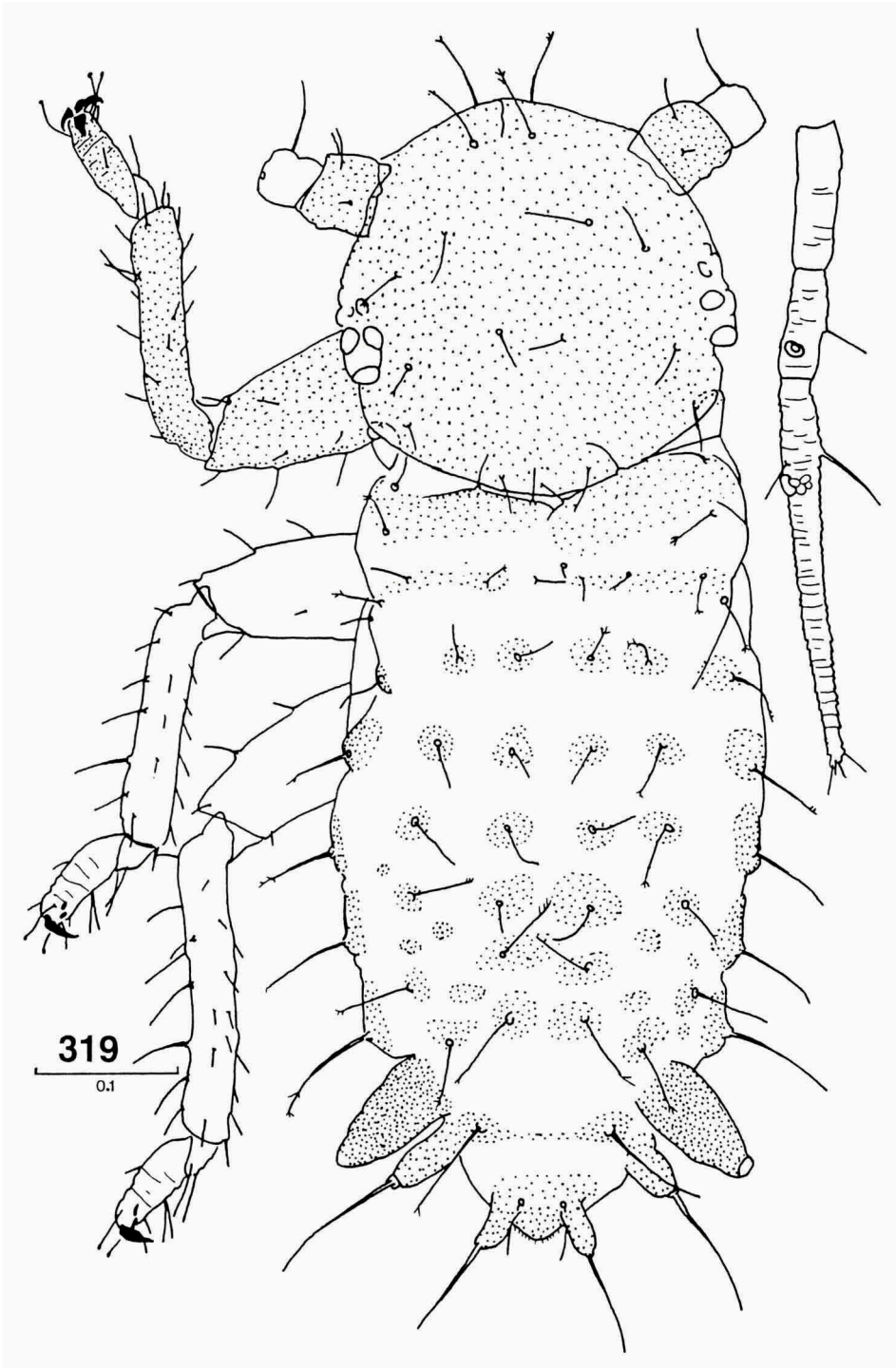
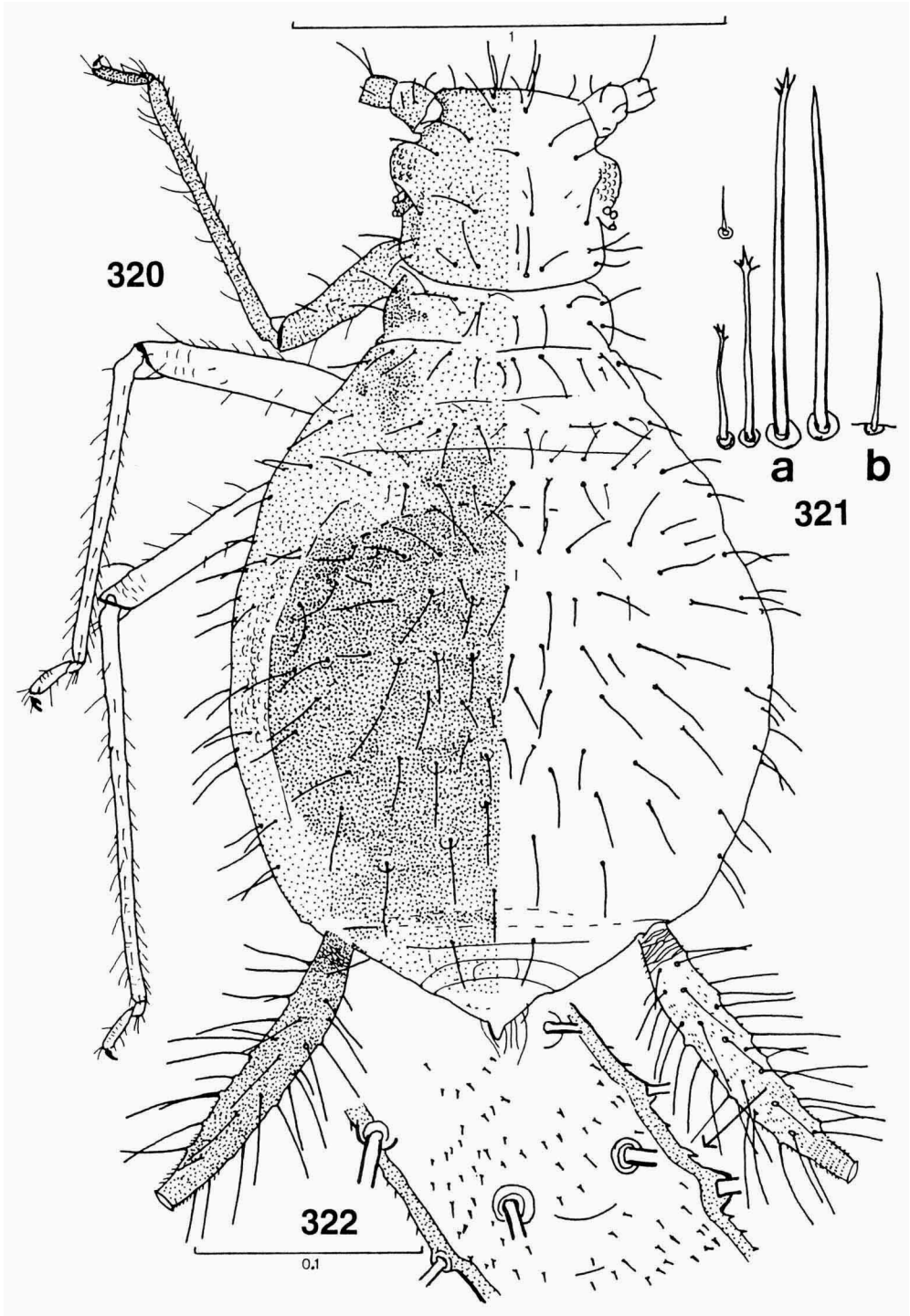
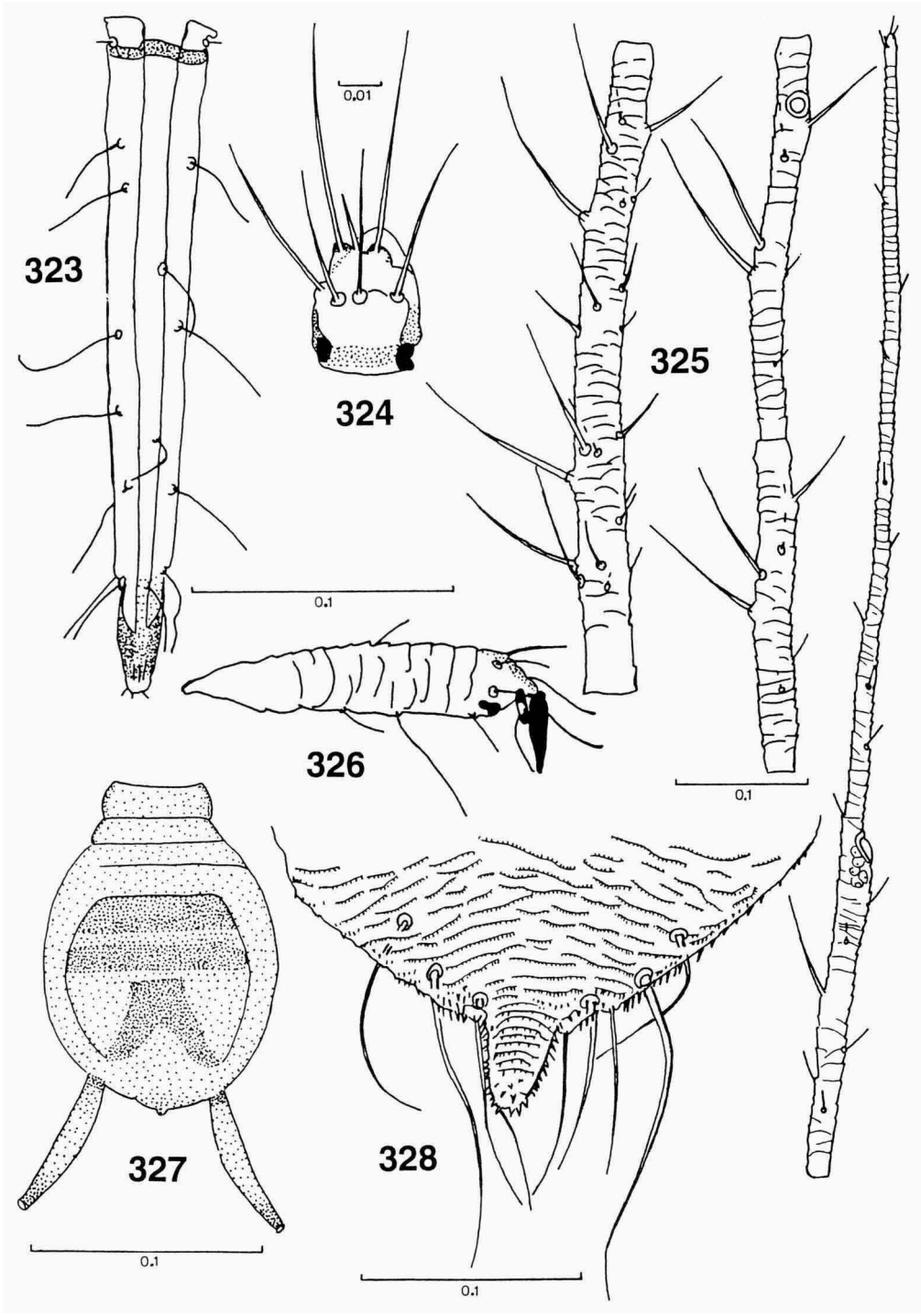


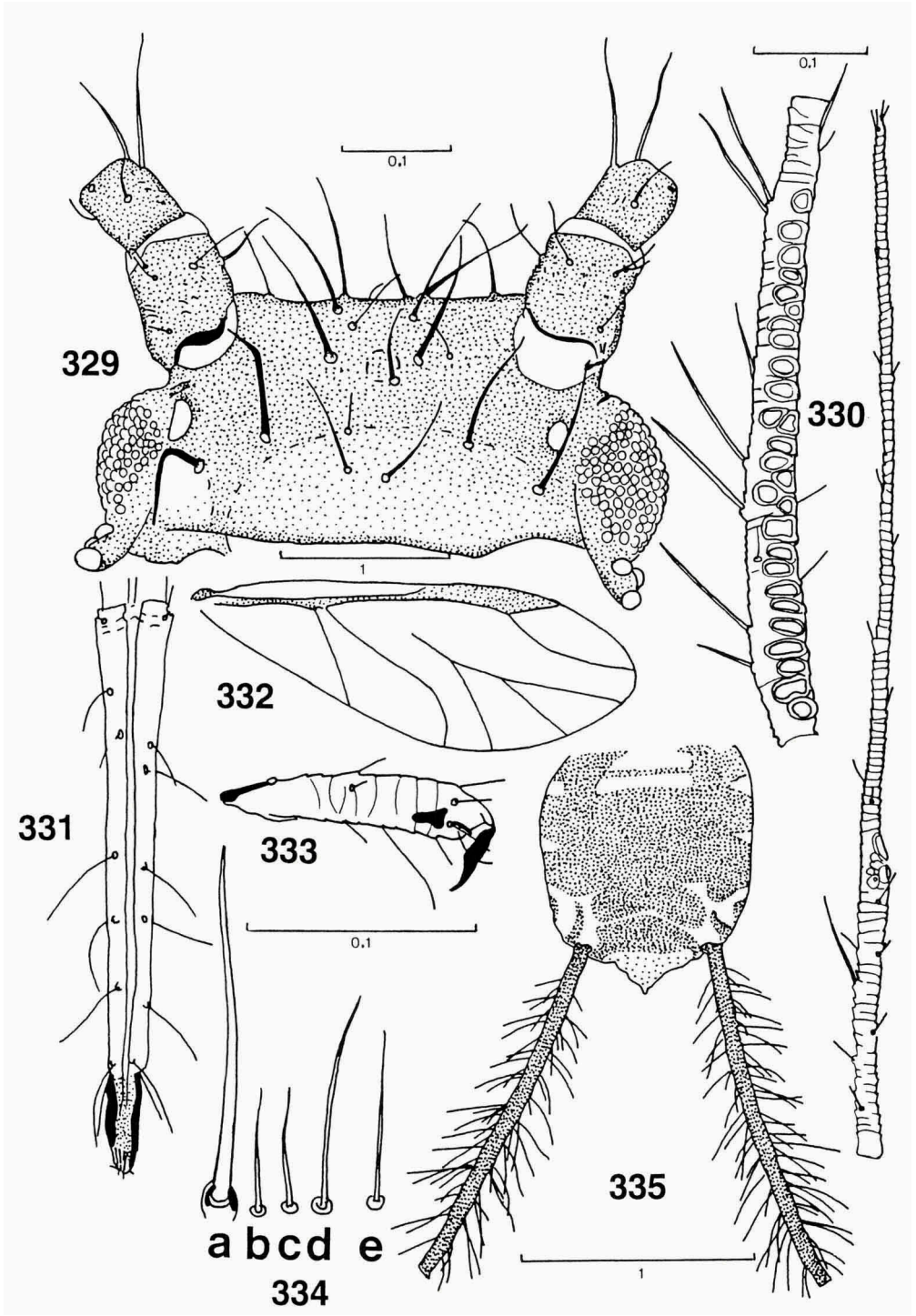
Fig. 319. *Greenidea (Trichosiphum) pallidipes* spec. nov., first stage larva of apterous viviparous ♀, dorsal side of the body.



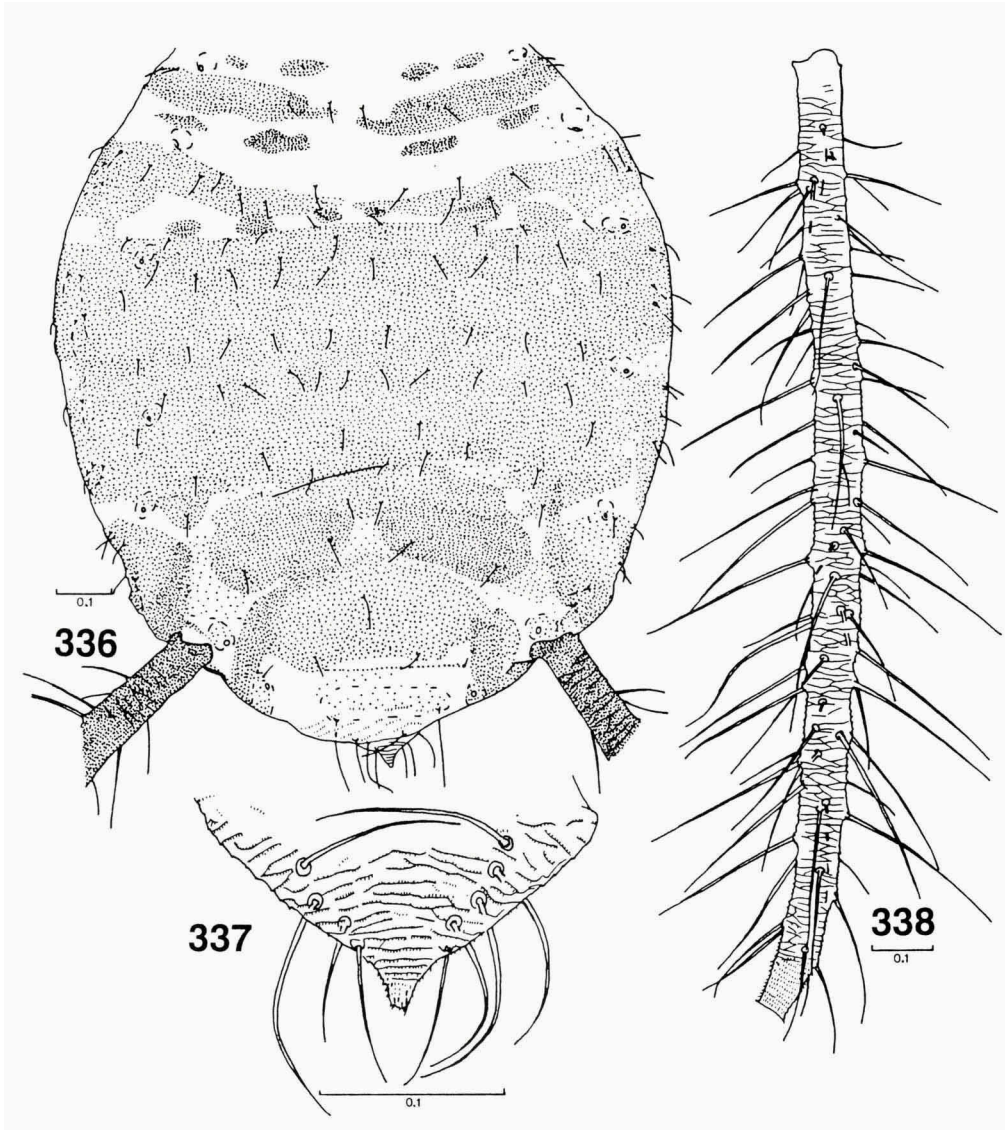
Figs. 320-322. *Greenidea (Trichosiphum) psidii* van der Goot, apterous viviparous ♀. Fig. 320, dorsal side of the body. Fig. 321, **a** dorsal abdominal hairs; **b** ventral hair of the middle of the abdomen. Fig. 322, part of the siphunculus.



Figs. 323-328. *Greenidea (Trichosiphum) psidii* van der Goot, apterous viviparous ♀. Fig. 323, ultimate rostral segment. Fig. 324, first tarsal segment of the hind leg. Fig. 325, antennal segments III, IV plus V, and VI. Fig. 326, second tarsal segment of the hind leg. Fig. 327, colour distribution in life of thorax and abdomen. Fig. 328, cauda.



Figs 329-335. *Greenidea (Trichosiphum) psidii* van der Goot, alate viviparous ♀. Fig. 329, dorsal side of the head. Fig. 330, antennal segments III, and VI. Fig. 331, ultimate rostral segment. Fig. 332, fore wing. Fig. 333, second tarsal segment of the hind leg. Fig. 334, hairs of **a** the mesonotum; **b** tergite IV; **c** tergite VII; **d** tergite VIII; **e** the middle of the abdomen ventrally. Fig. 335, dorsal side of the abdomen.



Figs. 336-338. *Greenidea (Trichosiphum) psidii* van der Goot, alate viviparous ♀. Fig. 336, dorsal side of the abdomen. Fig. 337, cauda. Fig. 338, siphunculus.

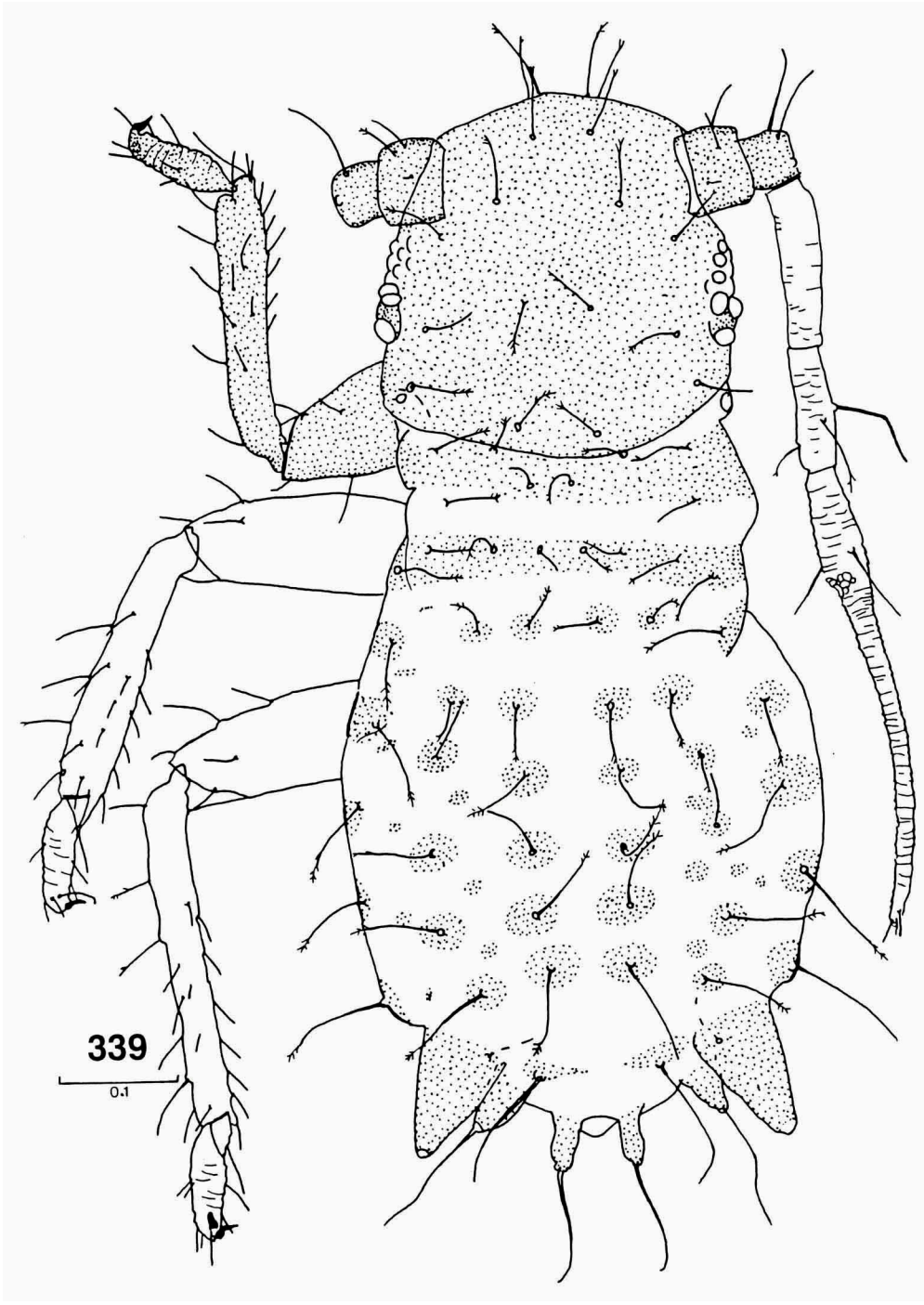
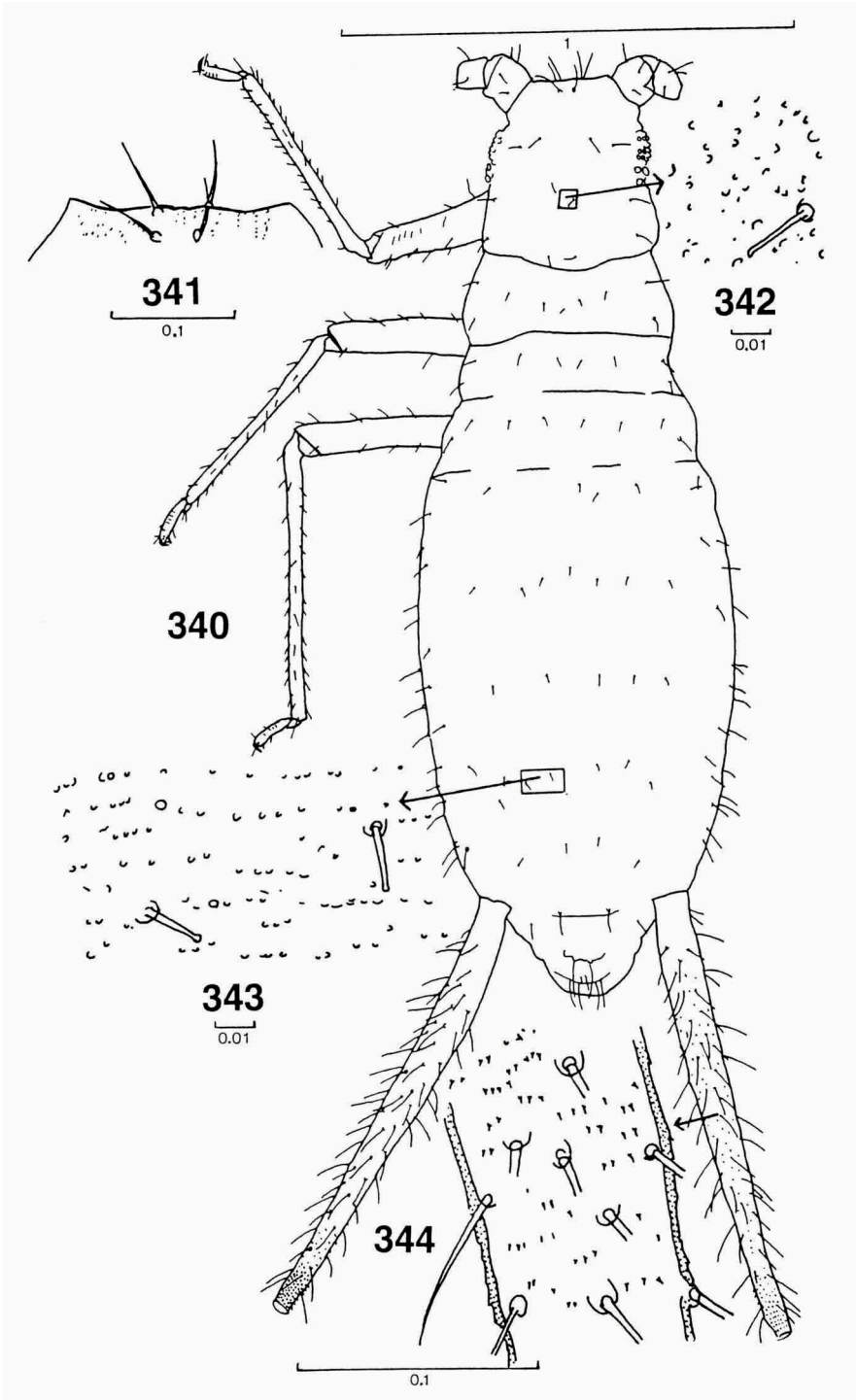
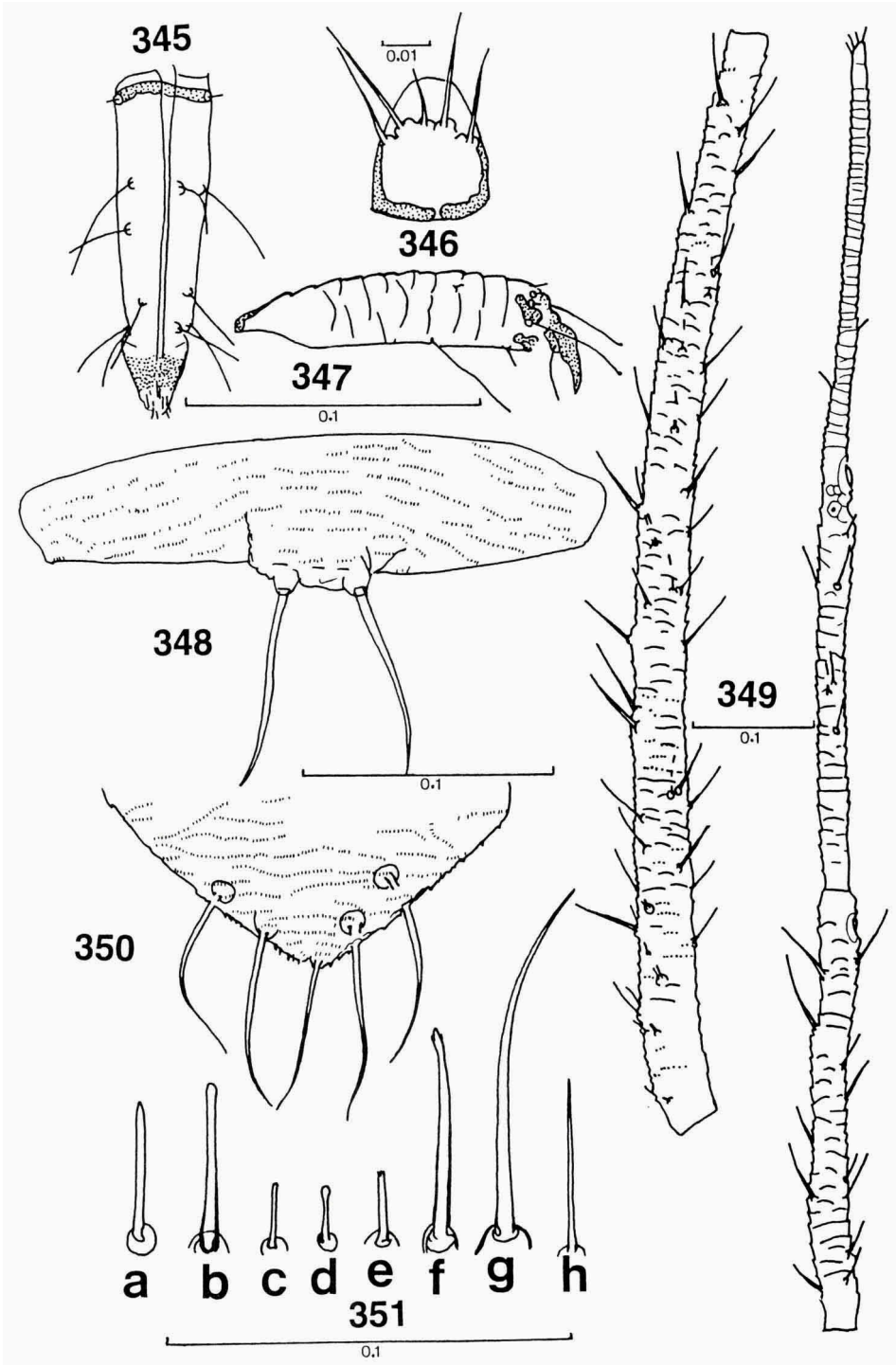


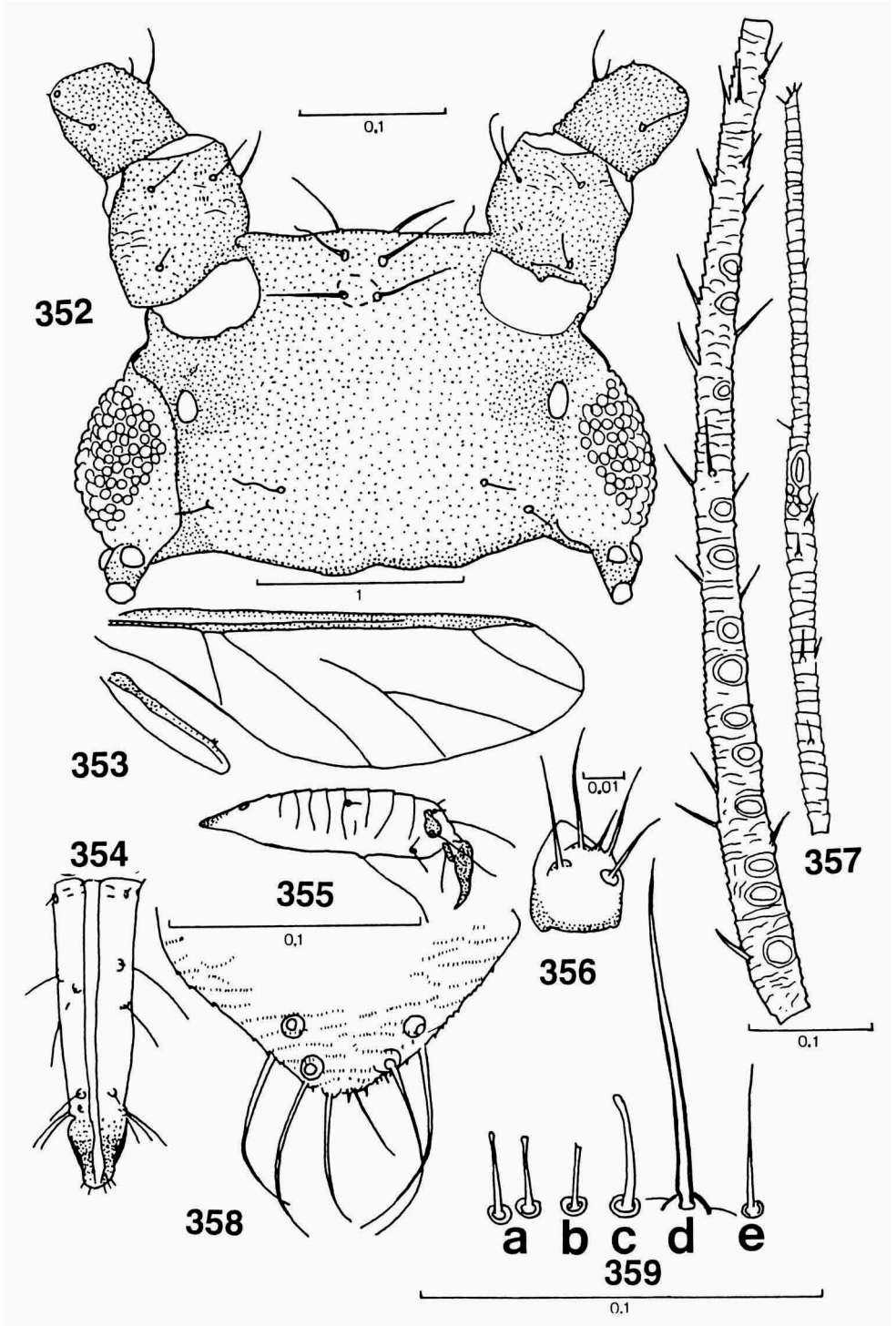
Fig. 339. *Greenidea (Trichosiphum) psidii* van der Goot, first stage larva of apterous viviparous ♀, dorsal side of the body.



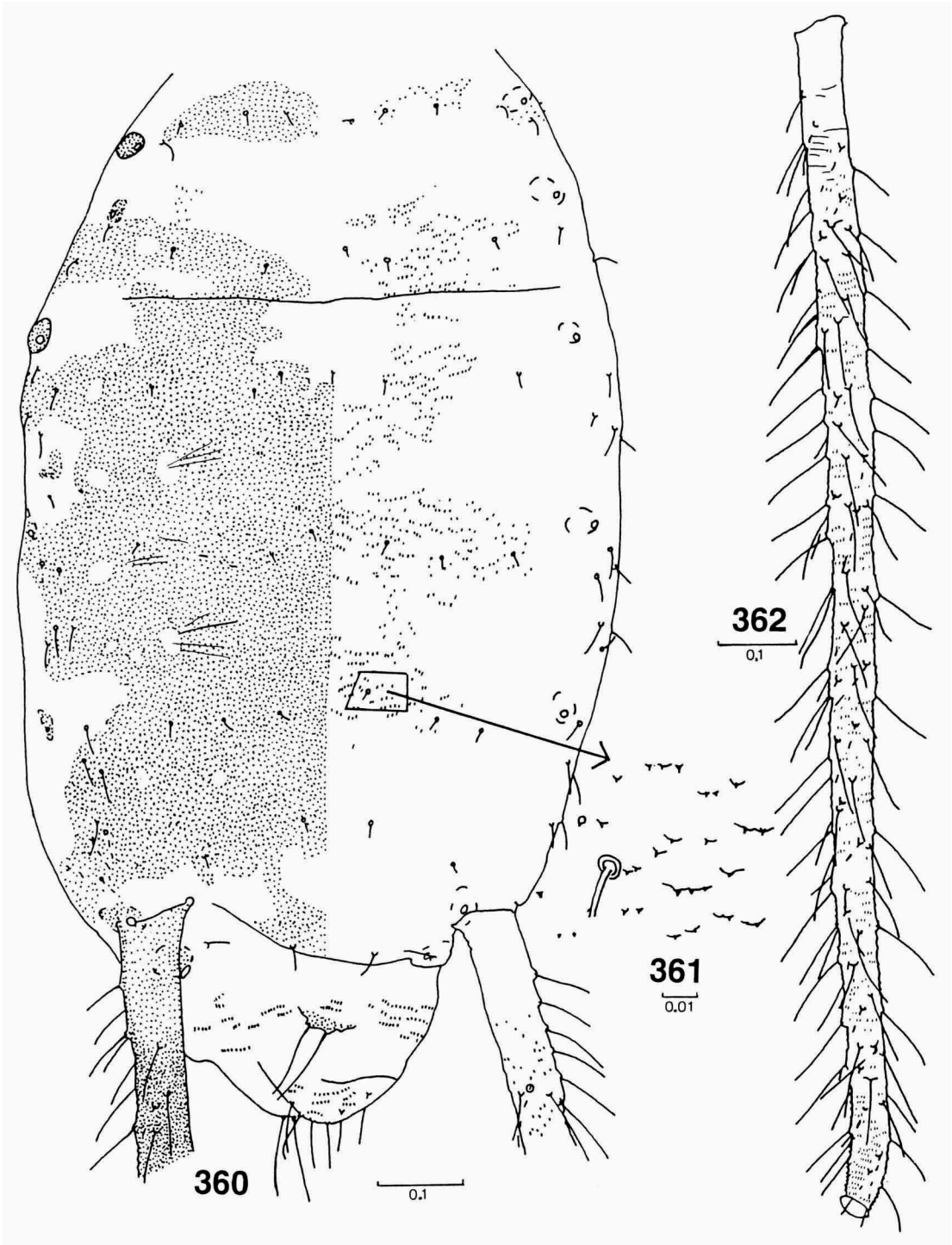
Figs. 340-344. *Greenideoida elongata* van der Goot, apterous viviparous ♀. Fig. 340, dorsal side of the body. Fig. 341, frons of the head. Fig. 342, part of the dorsal side of the head. Fig. 343, part of the dorsal side of the abdomen. Fig. 344, part of the siphunculus.



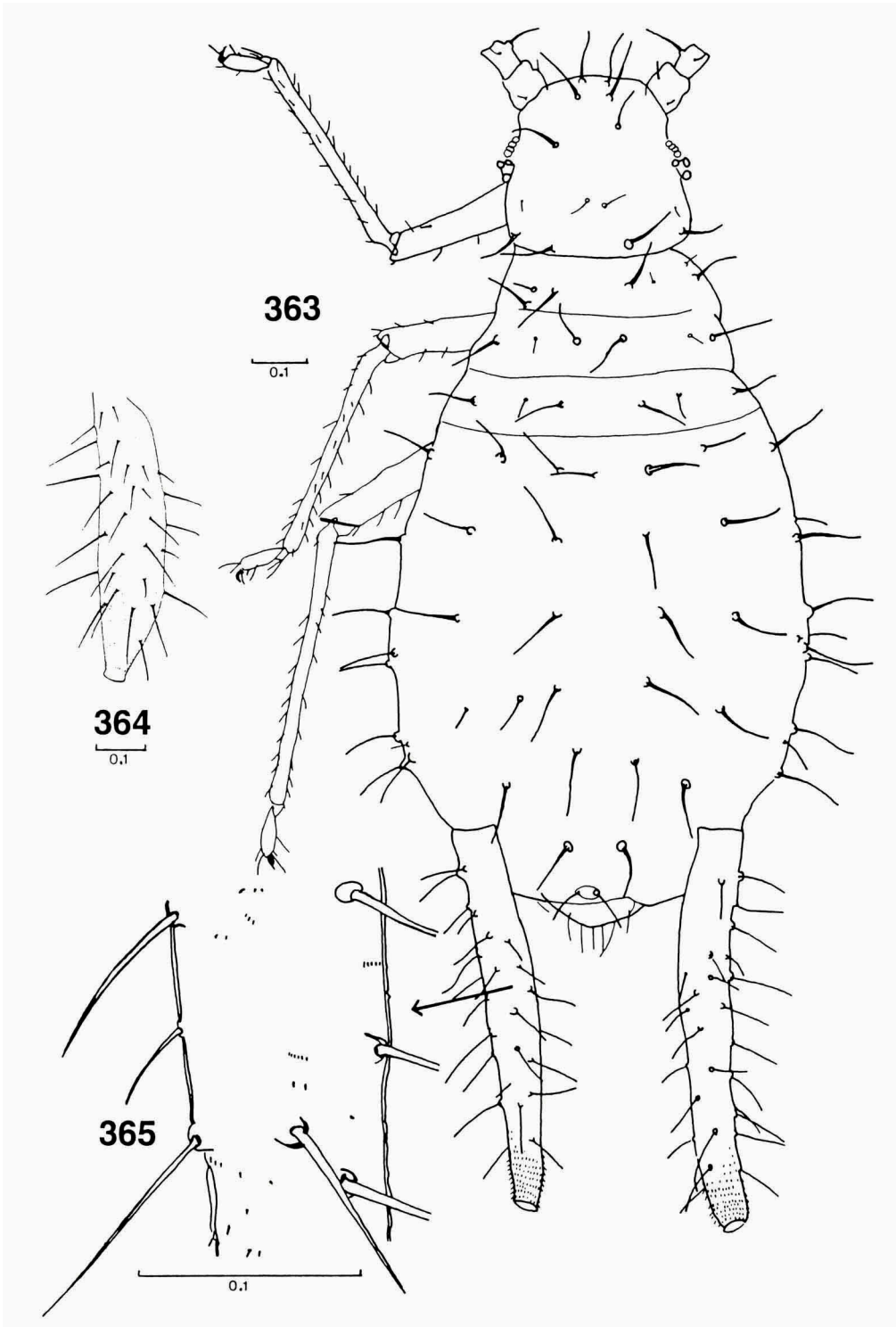
Figs. 345-351. *Greenideoida elongata* van der Goot, apterous viviparous ♀. Fig. 345, ultimate rostral segment. Fig. 346, first tarsal segment of the hind leg. Fig. 347, second tarsal segment of the hind leg. Fig. 348, tergite VIII. Fig. 349, antennal segments III, IV plus V. Fig. 350, cauda. Fig. 351, hairs of **a** the middle of the head; **b** the abdomen marginally; **c** abdomen dorsally; **d** tergite III; **e** tergite IV; **f** tergite VII; **g** tergite VIII; **h** the middle of the abdomen ventrally.



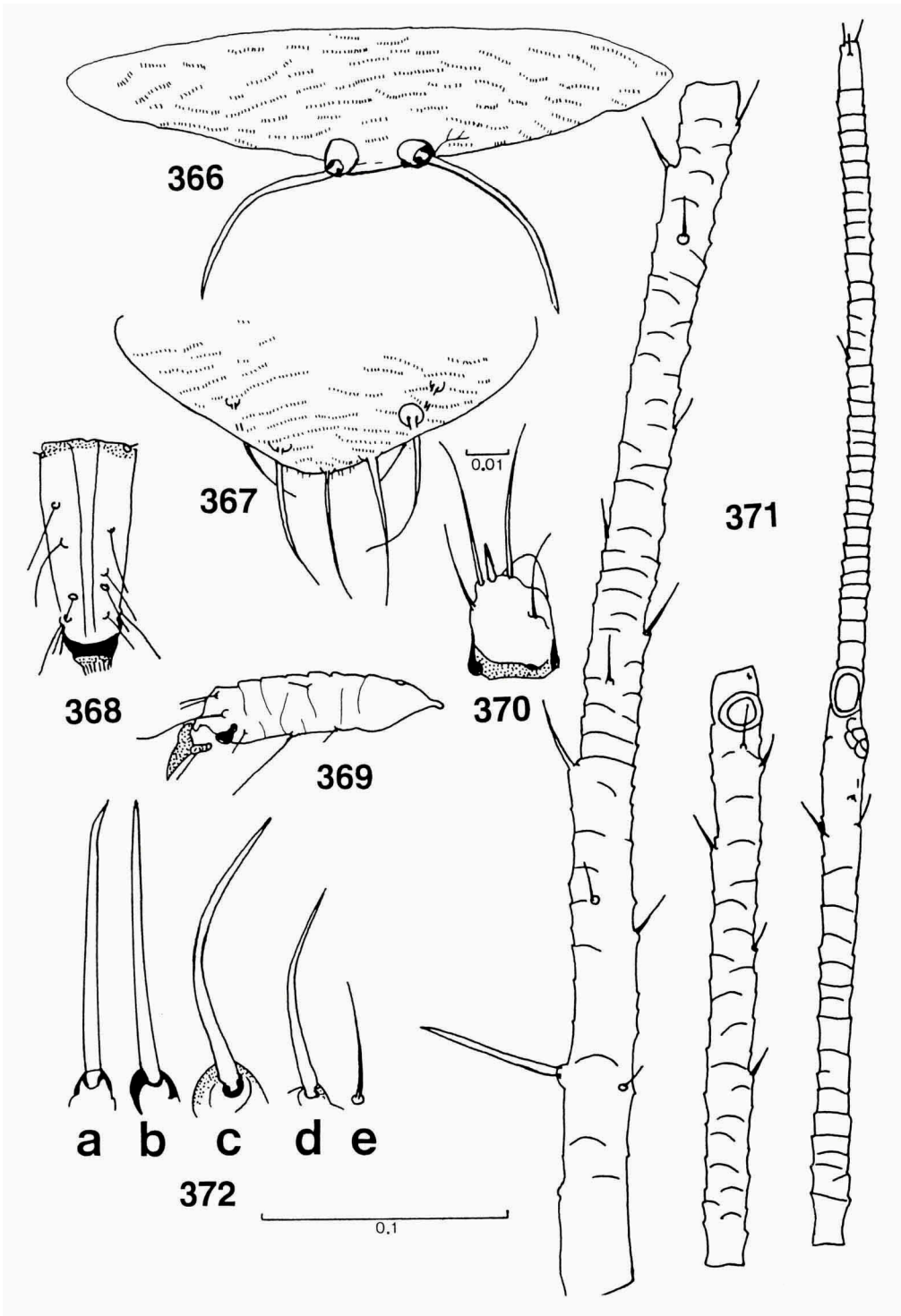
Figs. 352-359. *Greenideoida elongata* van der Goot, alate viviparous ♀. Fig. 352, dorsal side of the head. Fig. 353, fore wing and hind wing. Fig. 354, ultimate rostral segment. Fig. 355, second tarsal segment of the hind leg. Fig. 356, first tarsal segment of the hind leg. Fig. 357, antennal segments III and VI. Fig. 358, cauda. Fig. 359, hairs of **a** the mesonotum; **b** tergite IV; **c** tergite VII; **d** tergite VIII; **e** the middle of the abdomen ventrally.



Figs. 360-362. *Greenideoida elongata* van der Goot, alate viviparous ♀. Fig. 360, dorsal side of the abdomen. Fig. 361, part of the dorsal side of the abdomen. Fig. 362, siphunculus.



Figs. 363-365. *Greenideoida fransseni* spec. nov., apterous viviparous ♀. Fig. 363, dorsal side of the body. Fig. 365, part of the siphunculus. Fig. 364. *Greenideoida hannae* Van der Goot, apterous viviparous ♀, siphunculus (copy from Van der Goot, 1917: 146, fig. 22.).



Figs. 366-372. *Greenideoida fransseni* spec. nov., apterous viviparous ♀. Fig. 366, tergite VIII. Fig. 367, cauda. Fig. 368, ultimate rostral segment. Fig. 369, second tarsal segment of the hind leg. Fig. 370, first tarsal segment of the hind leg. Fig. 371, antennal segments III, IV, and V. Fig. 372, hairs of **a** the head; **b** tergite IV; **c** tergite VII; **d** tergite VIII; **e** the middle of the abdomen ventrally.

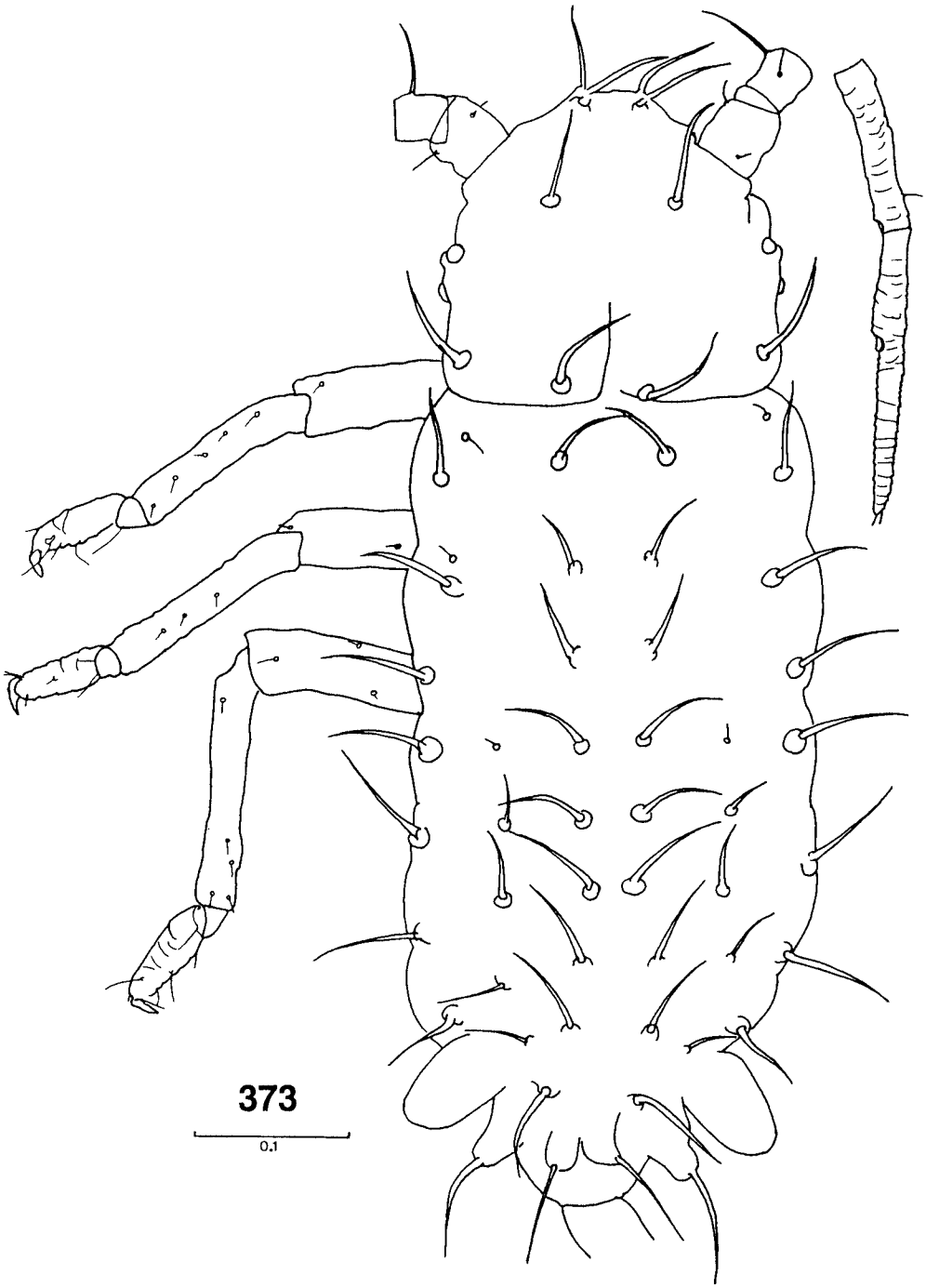
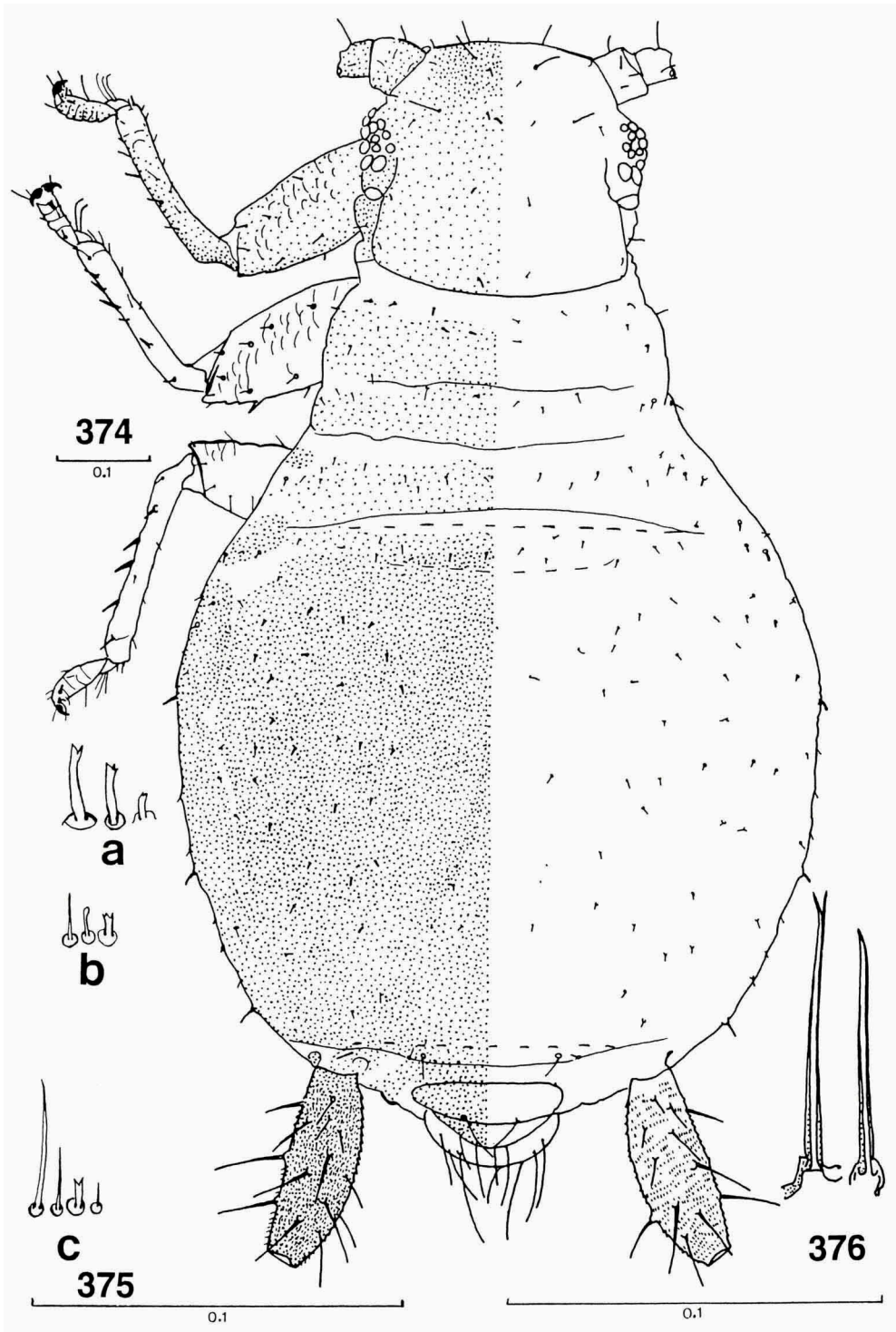
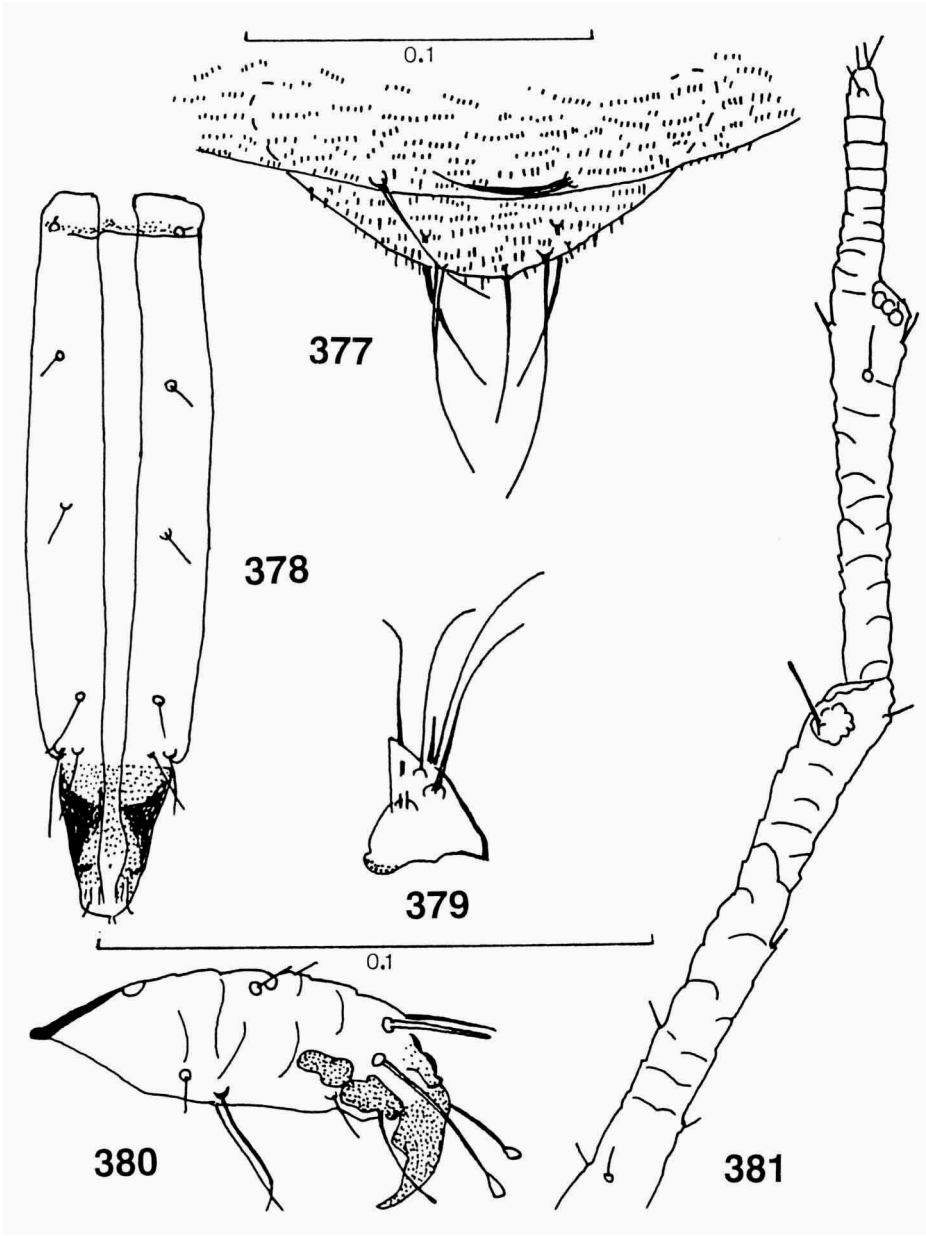


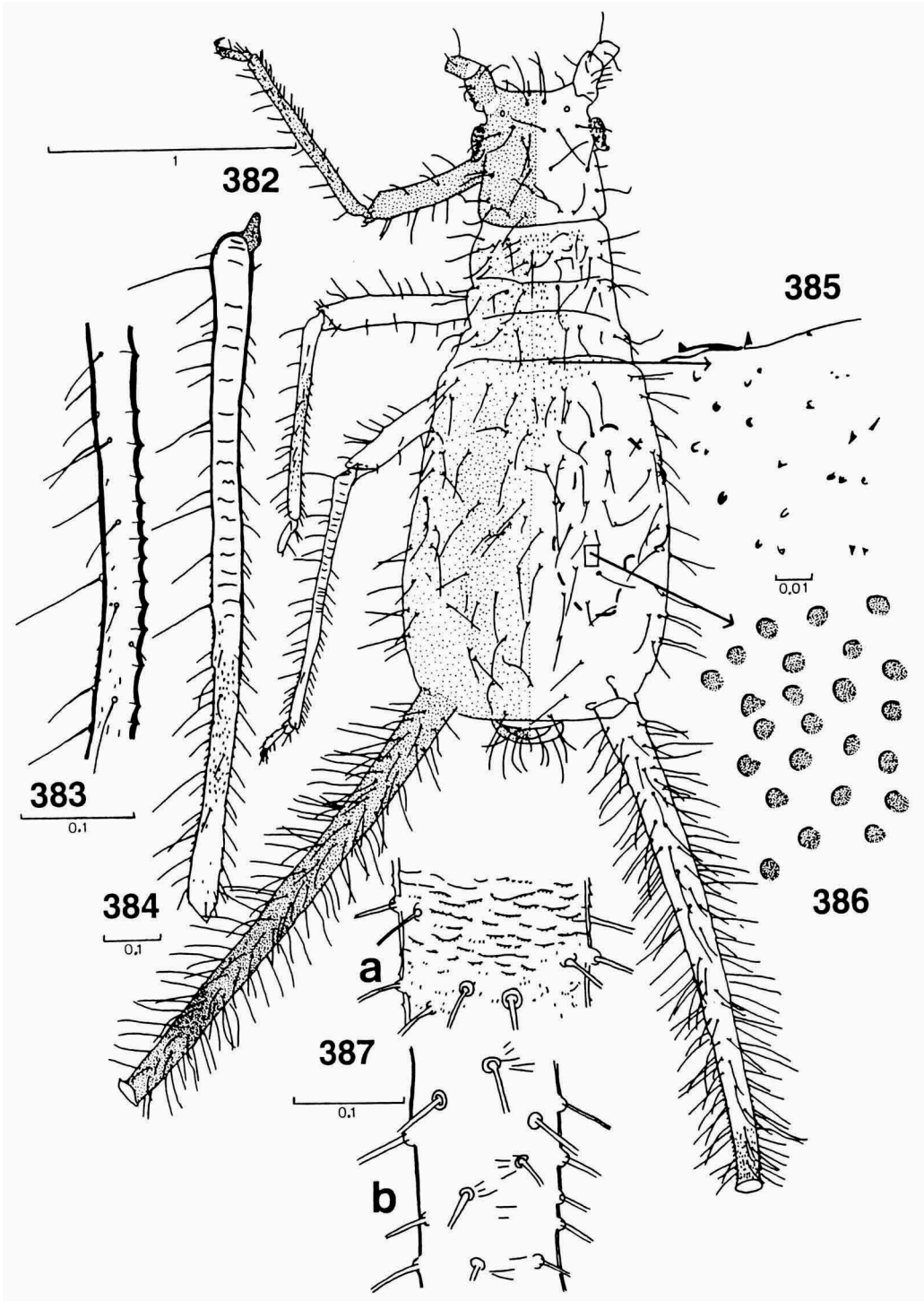
Fig. 373. *Greenideoida fransseni* spec. nov., first stage larva of apterous viviparous ♀, dorsal side of the body.



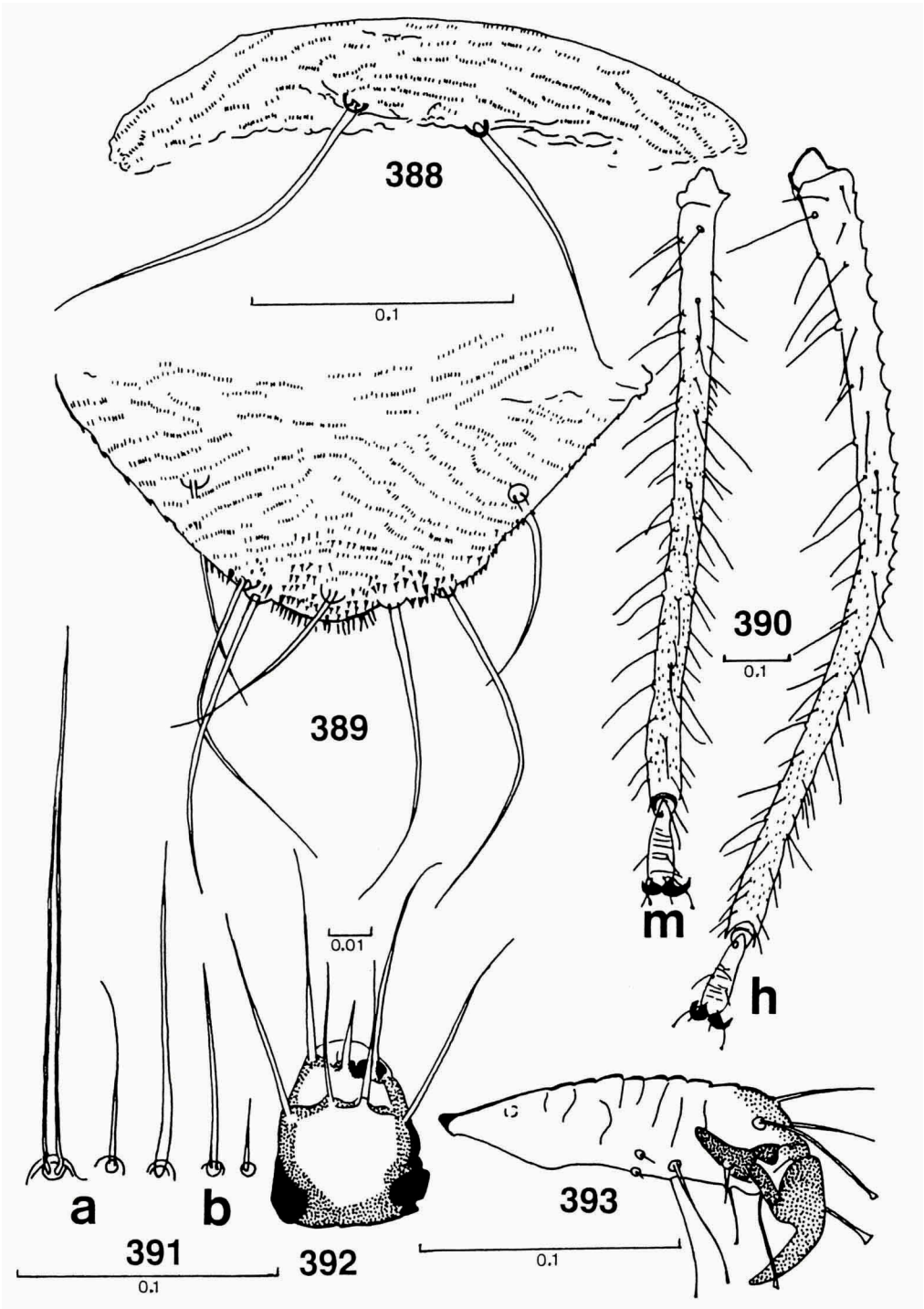
Figs. 374-376. *Mesotrichosiphum brevisetosum* spec. nov., apterous viviparous ♀. Fig. 374, dorsal side of the body. Fig. 375, hairs of **a** the abdomen marginally; **b** the abdomen dorsally; **c** the middle of the abdomen ventrally. Fig. 376, hairs of the siphunculi.



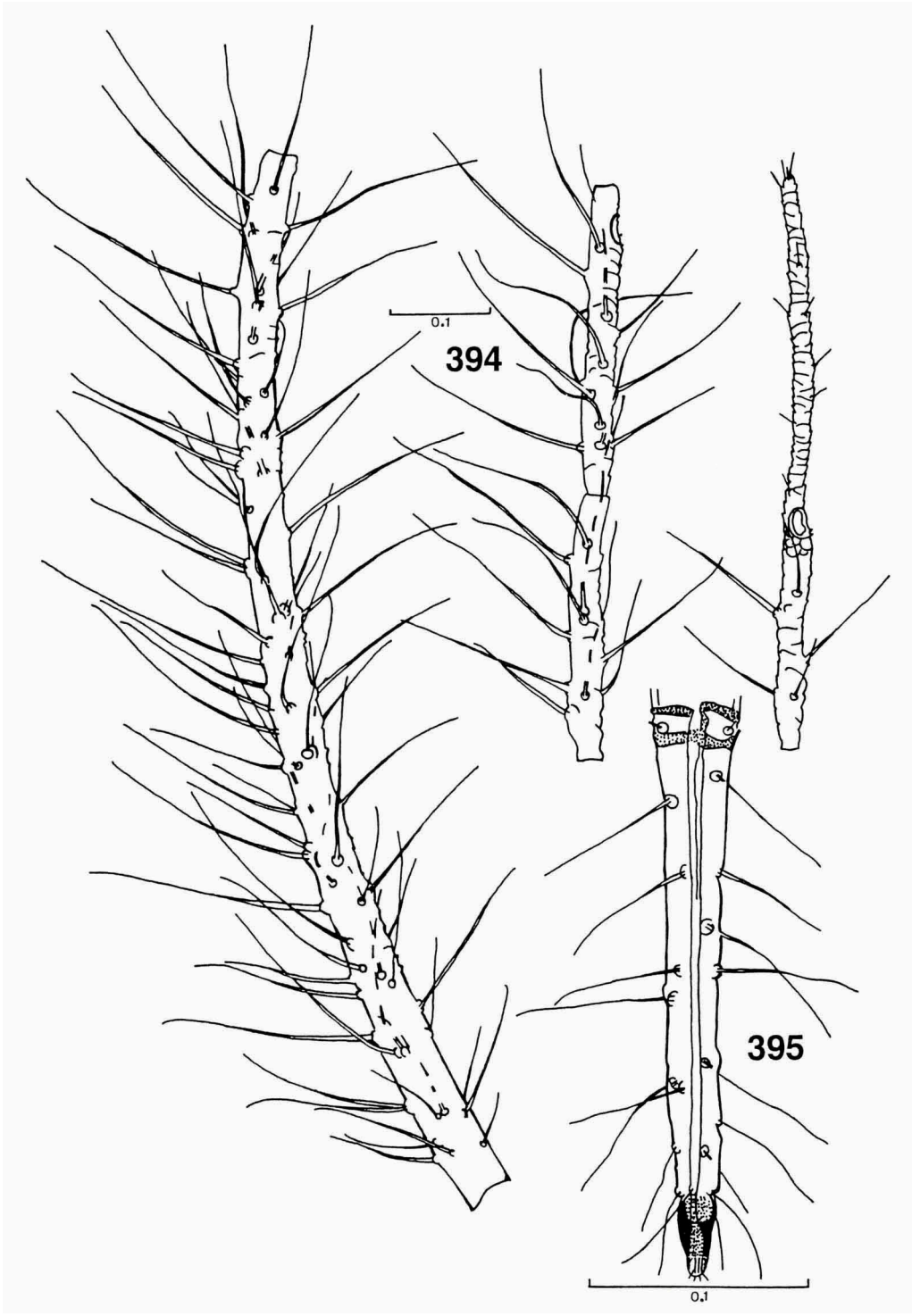
Figs. 377-381. *Mesotrichosiphum brevisetosum*, spec. nov., apterous viviparous ♀. Fig. 377, cauda, partly covered by the abdominal tergite VIII with two hairs. Fig. 378, ultimate rostral segment. Fig. 379, first tarsal segment of the hind leg. Fig. 380, second tarsal segment of the hind leg. Fig. 381, antennal segments III plus IV.



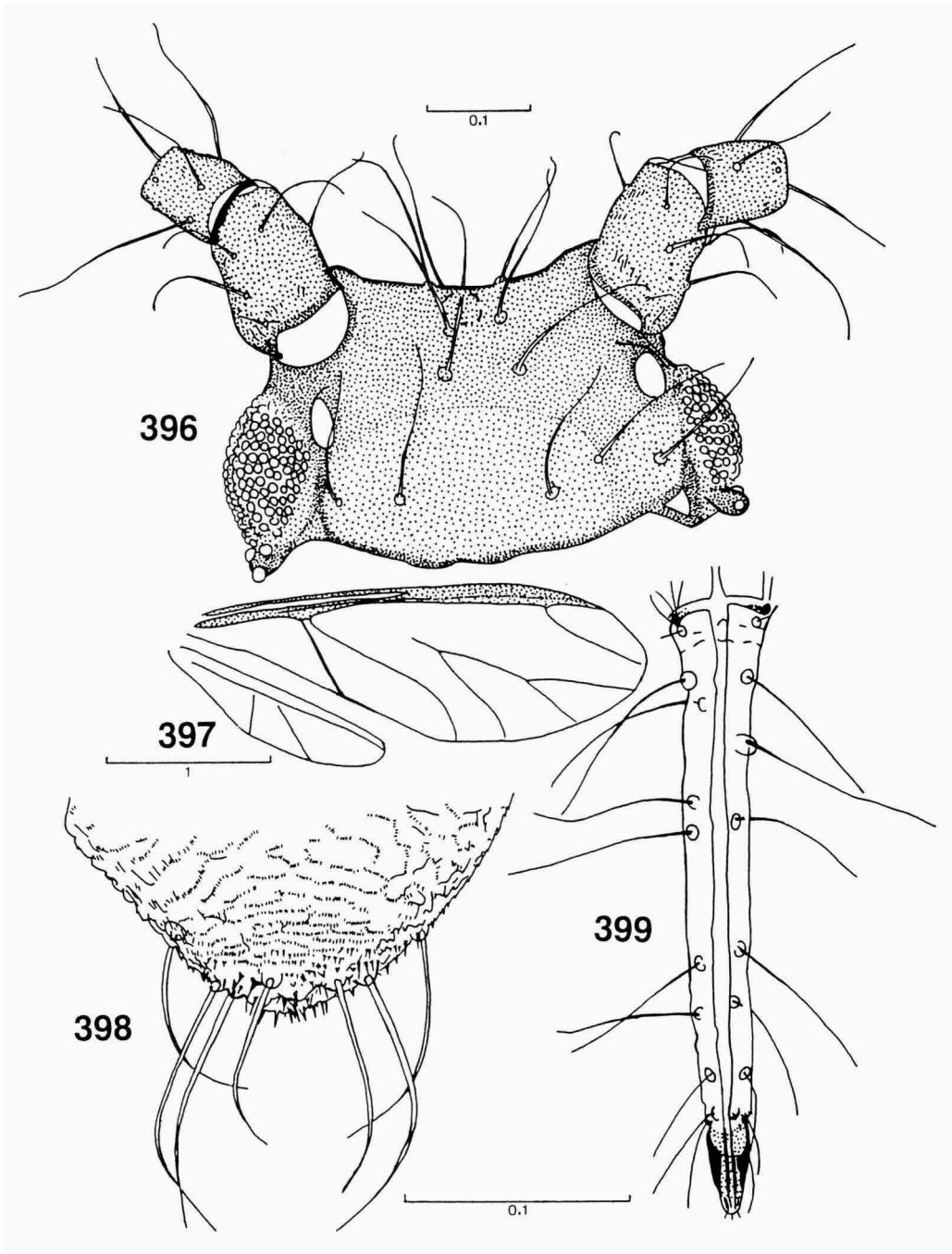
Figs. 382-387. *Mollitrichosiphum tenuicorpus* (Okajima), apterous viviparous ♀. Fig. 382, dorsal side of the body. Fig. 383, hind tibia. Fig. 384 as 383, ridges seen from the side. Fig. 385, spinulae on tergite II. Fig. 386, ventral abdominal spinulae. Fig. 387, **a** base, and **b** middle part of the siphunculi.



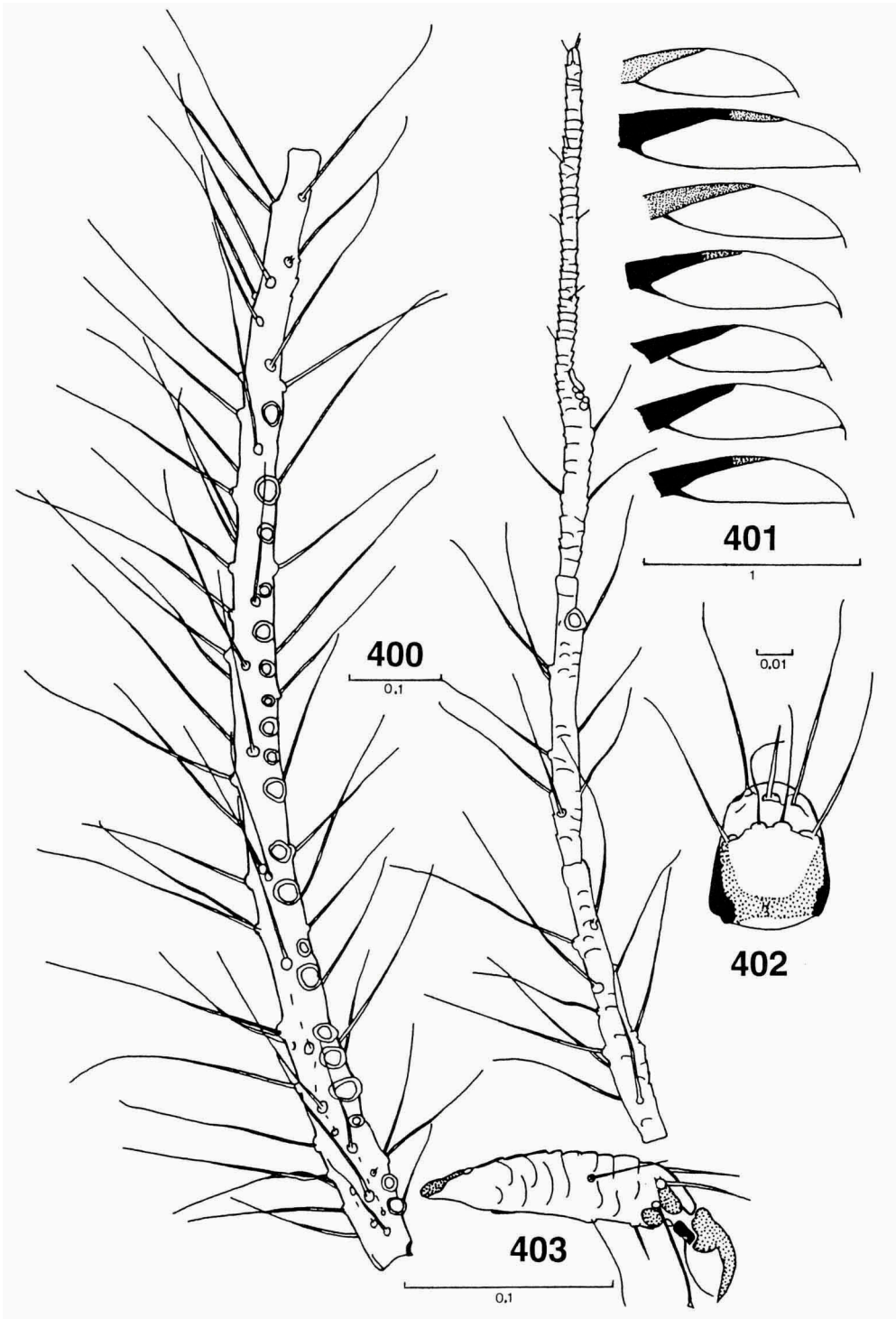
Figs. 388-393. *Mollitrichosiphum tenuicorpus* (Okajima), apterous viviparous ♀. Fig. 388, tergite VIII. Fig. 389, cauda. Fig. 390, **m** middle tibia, **h** hind tibia. Fig. 391, **a** two dorsal abdominal hairs; **b** three ventral abdominal hairs. Fig. 392, first tarsl segment of the hind leg. Fig. 393, second tarsal segment of the hind leg.



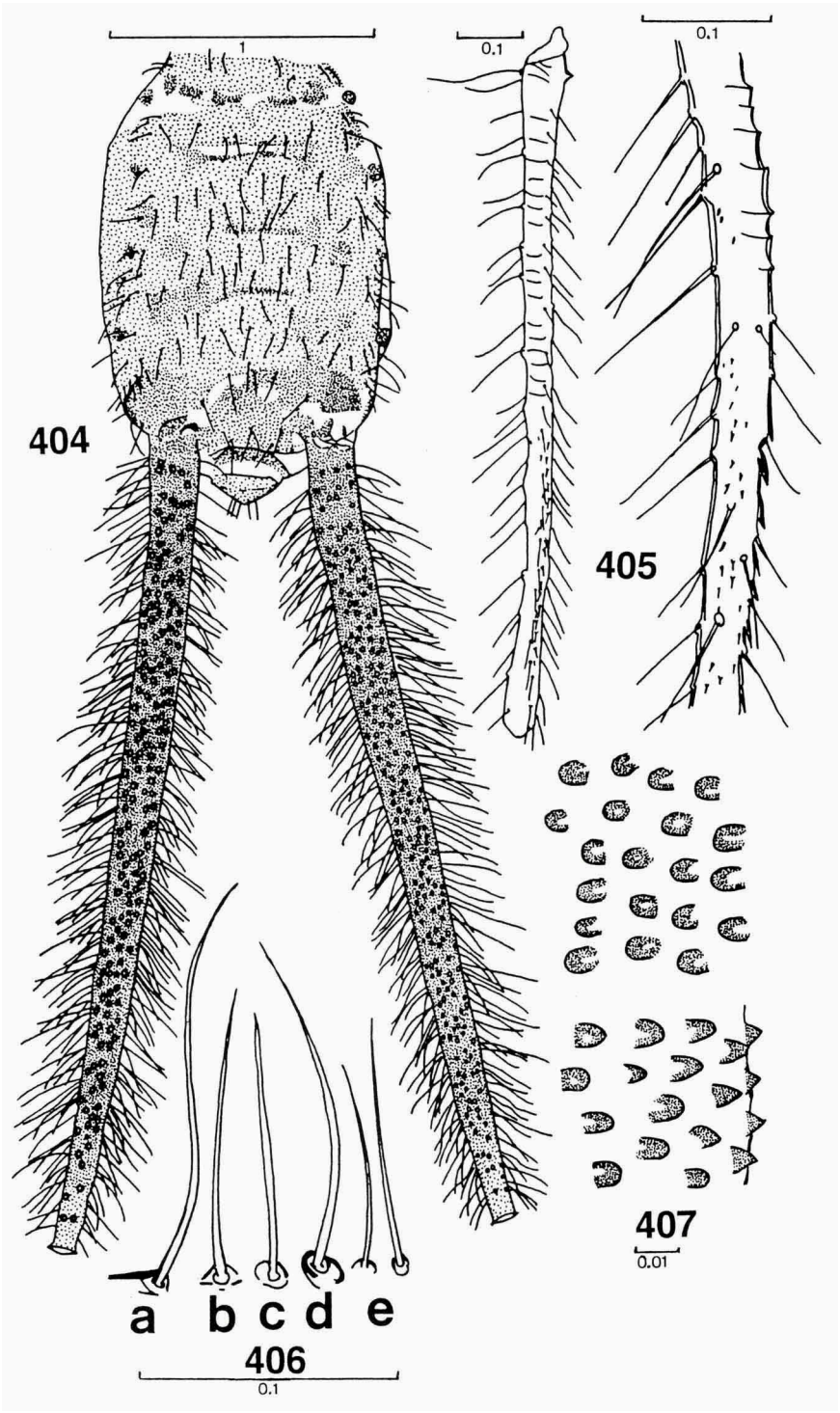
Figs. 394-395. *Mollitrichosiphum tenuicorpus* (Okajima), apterous viviparous ♀. Fig. 394, antennal segments III, IV plus V, and VI. Fig. 395, ultimate rostral segment.



Figs. 396-399. *Mollitrichosiphum tenuicorpus* (Okajima), alate viviparous ♀. Fig. 396, dorsal side of the head. Fig. 397, fore wing and hind wing. Fig. 398, cauda. Fig. 399, ultimate rostral segment.



Figs. 400-403. *Mollitrichosiphum tenuicorpus* (Okajima), alate viviparous ♀. Fig. 400, antennal segments III, and IV-VI. Fig. 401, radial sector of the fore wing. Fig. 402, first tarsal segment of the hind leg. Fig. 403, second tarsal segment of the hind leg.



Figs. 404-407. *Mollitrichosiphum tenuicorpus* (Okajima), alate viviparous ♀. Fig. 404, dorsal side of the abdomen. Fig. 405, hind tibiae. Fig. 406, hairs of a the mesonotum; b tergite IV; c tergite VII; d tergite VIII; e the abdomen ventrally. Fig. 407 ventral spinulae of the abdomen.

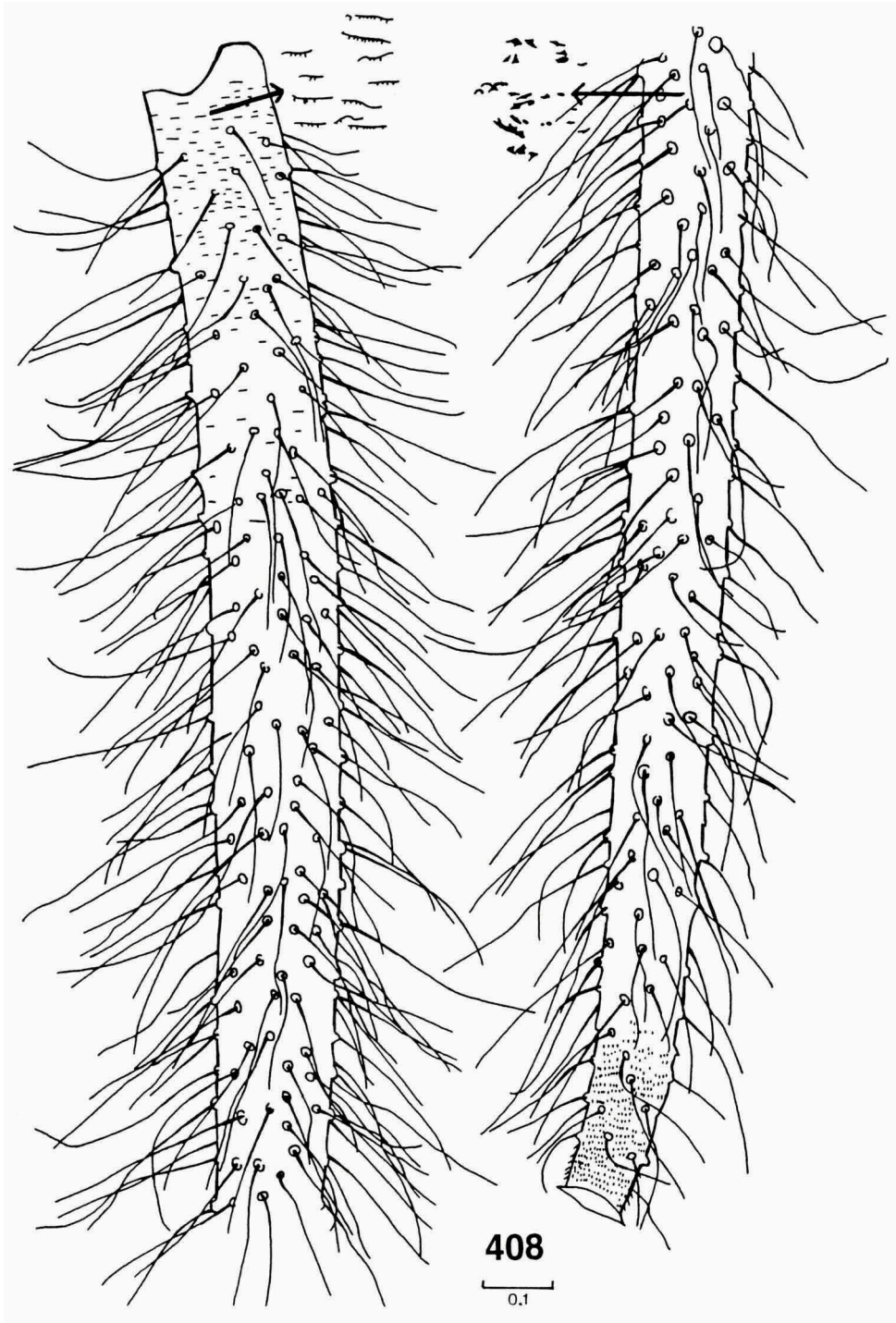
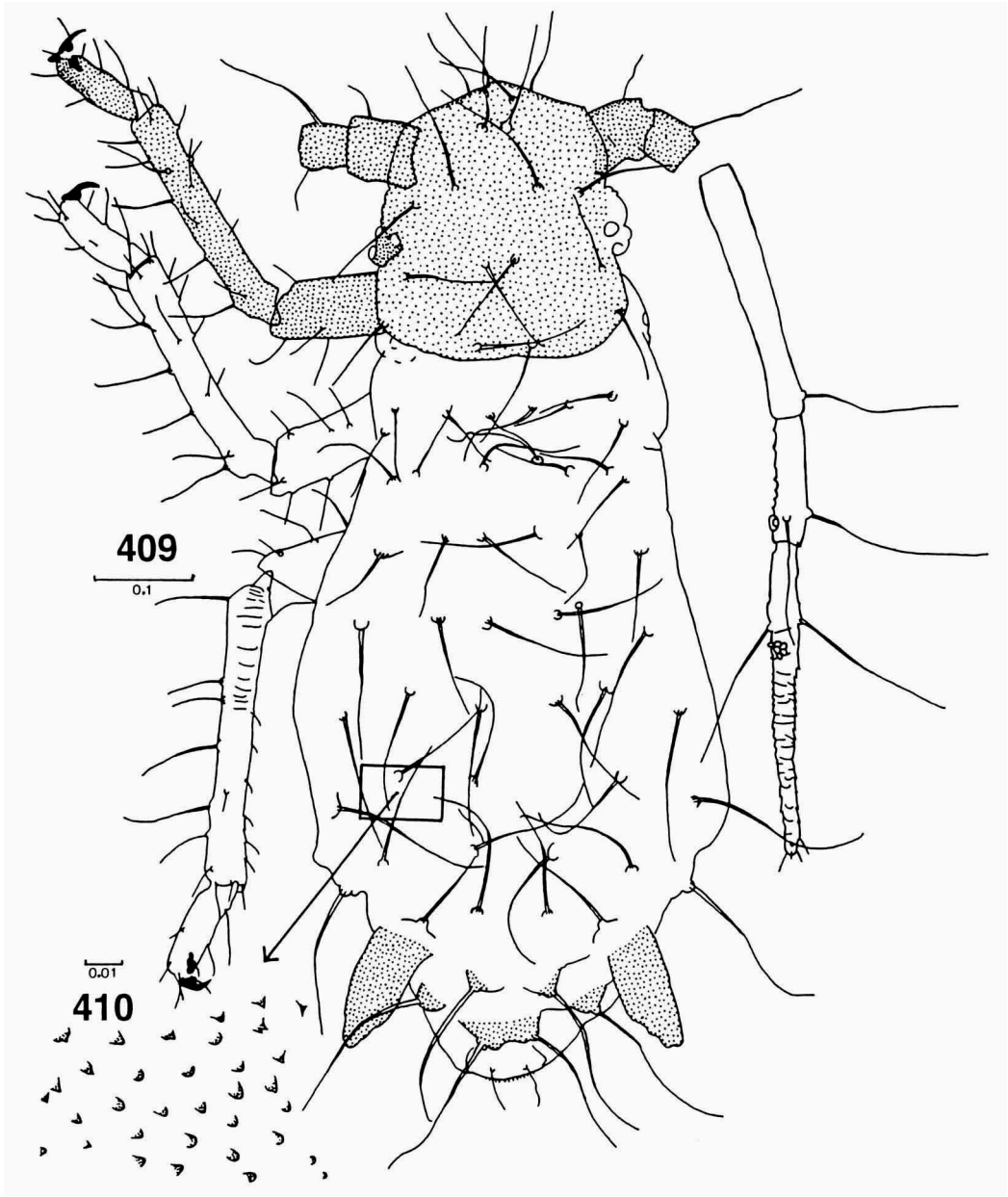
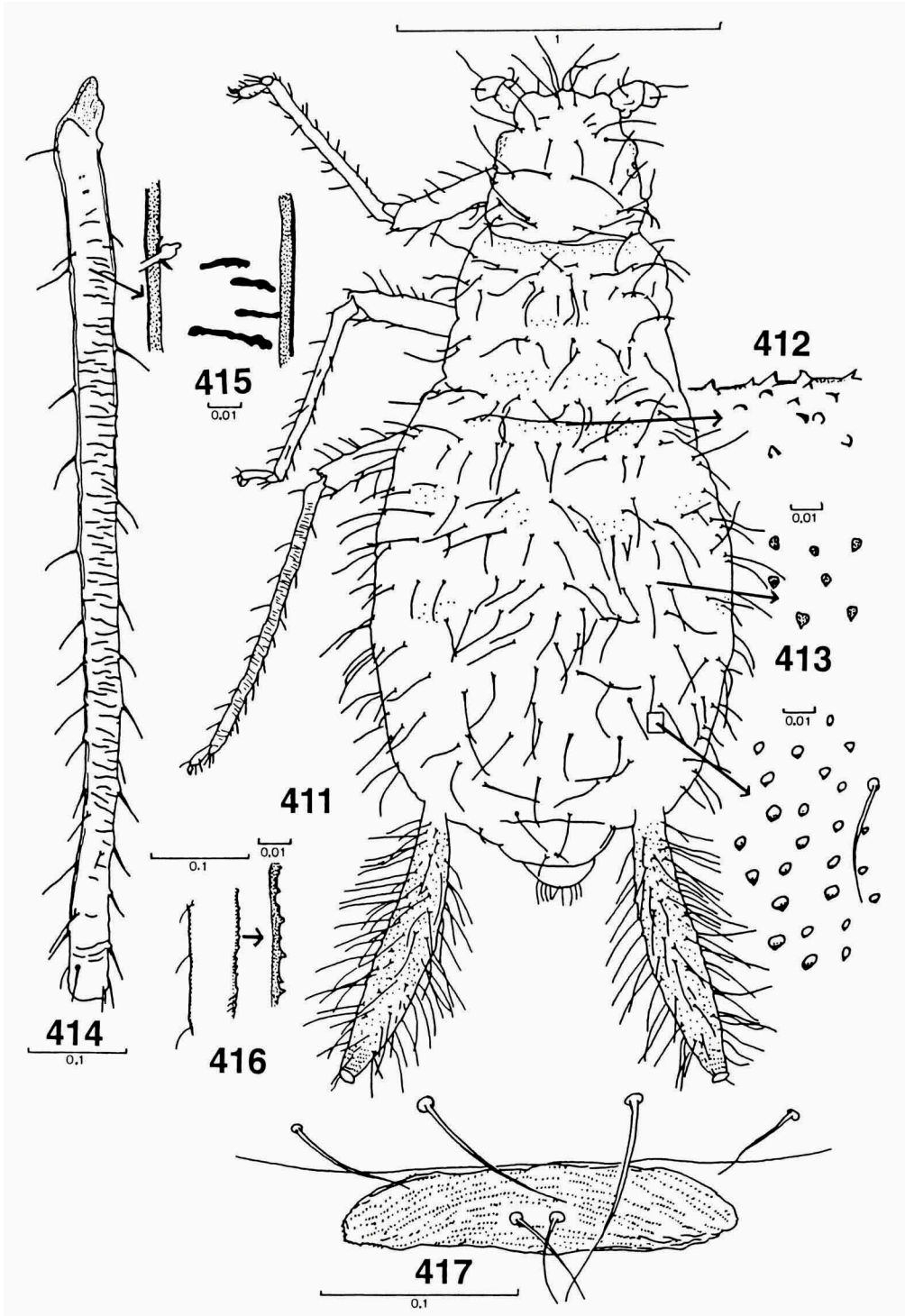


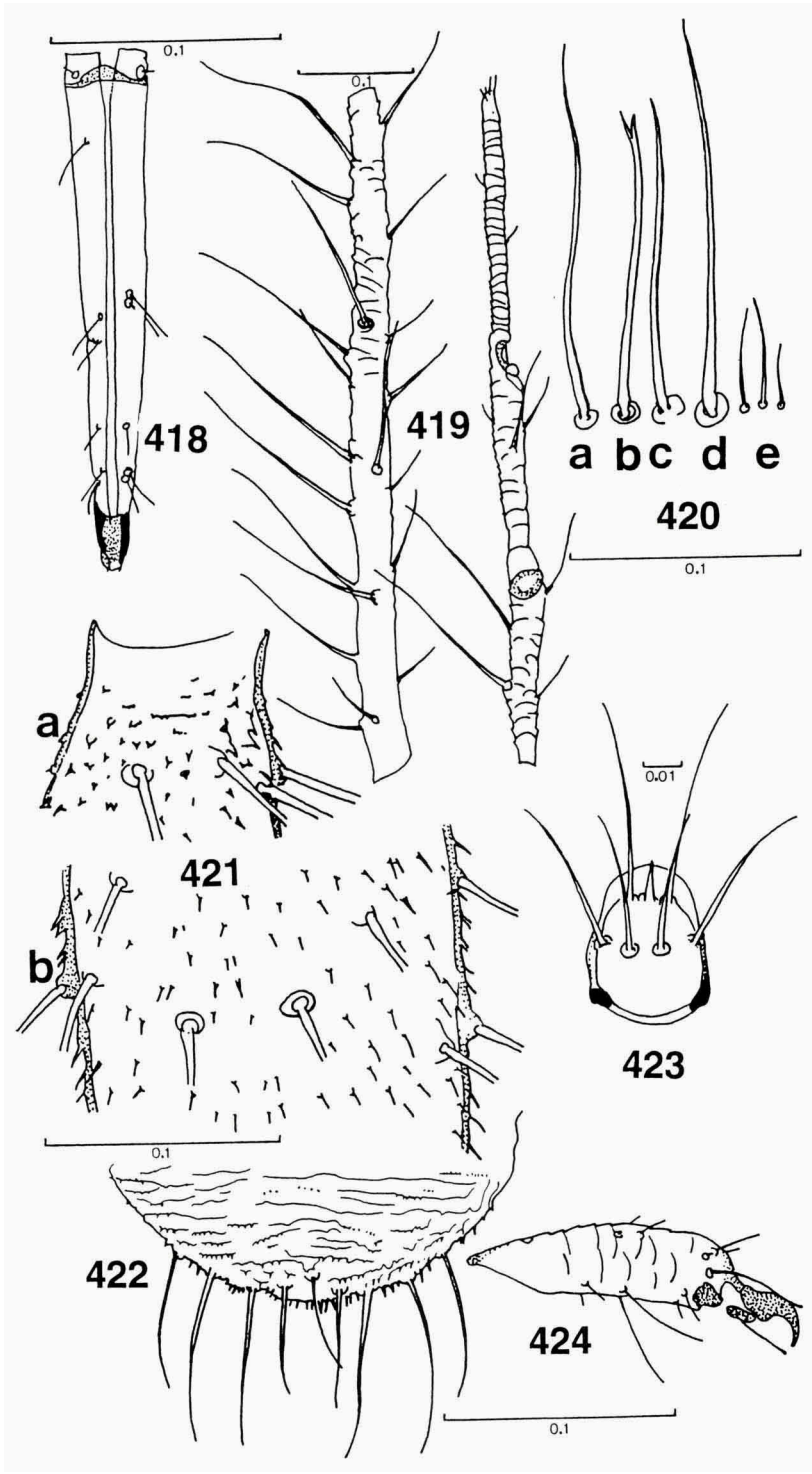
Fig. 408. *Mollitrichosiphum tenuicorpus* (Okajima), alate viviparous ♀, siphunculus.



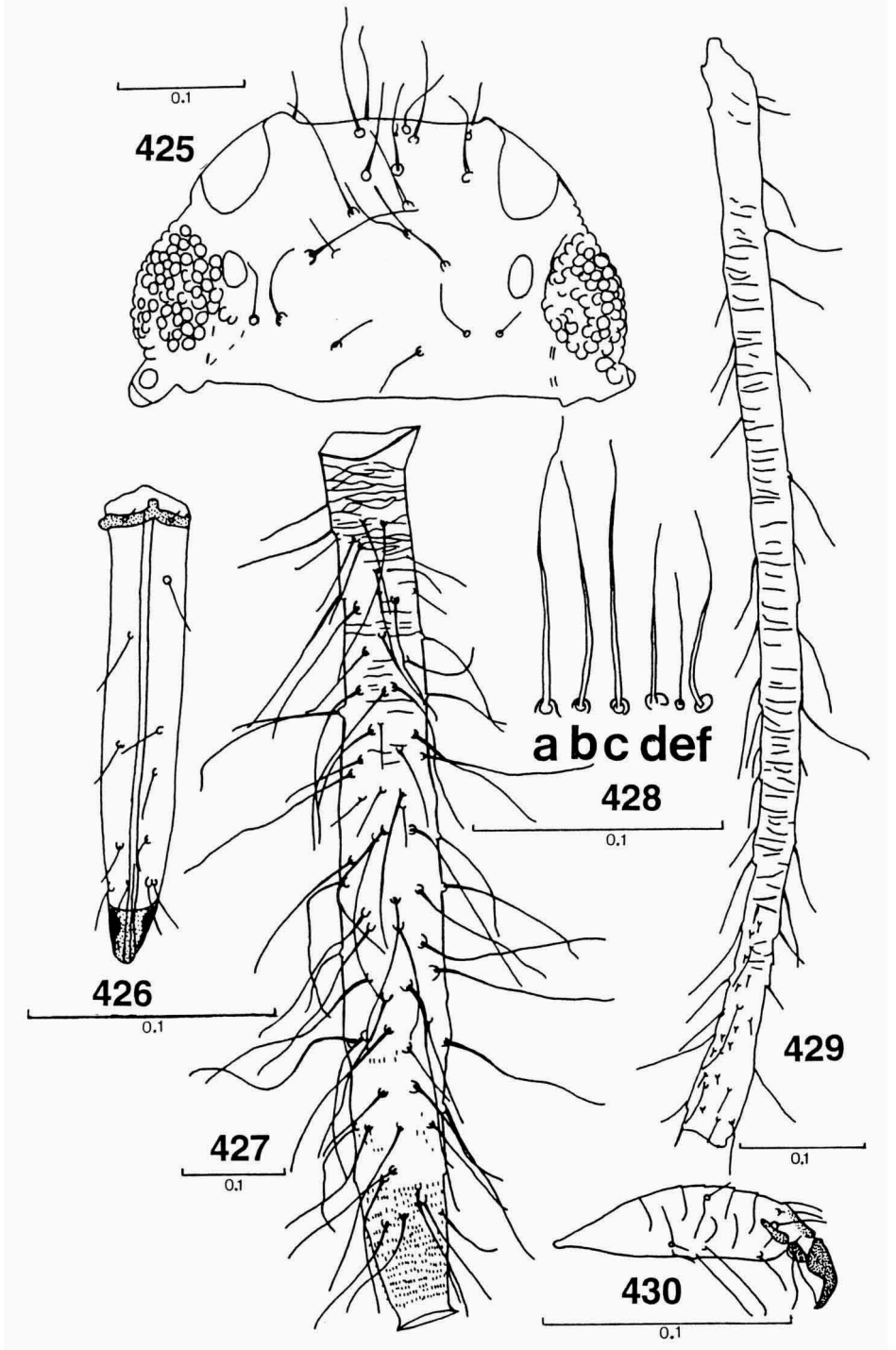
Figs. 409-410. *Mollitrichosiphum tenuicorpus* (Okajima), first stage larva. Fig. 409, dorsal side of the body. Fig. 410, ventral spinulae of the abdomen.



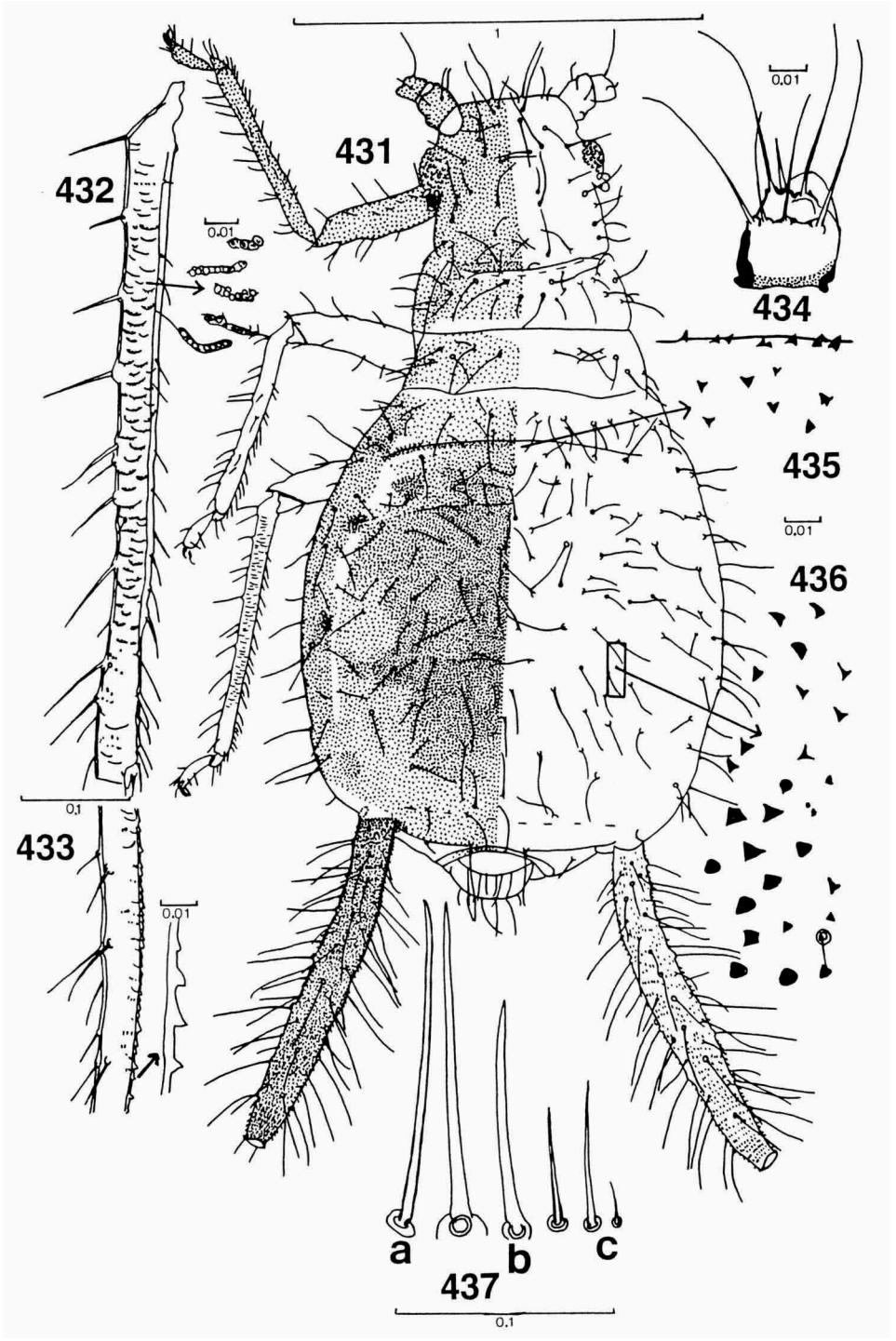
Figs. 411-417. *Mollitrichosiphum (Metatrichosiphon) elongatum* Takahashi, apterous viviparous ♀. Fig. 411, dorsal side of the body. Fig. 412, spinulae of tergite II. Fig. 413, ventral spinulae of the abdomen. Fig. 414, hind tibiae. Fig. 415, 416, part of the hind tibia. Fig. 417, tergites VII and VIII.



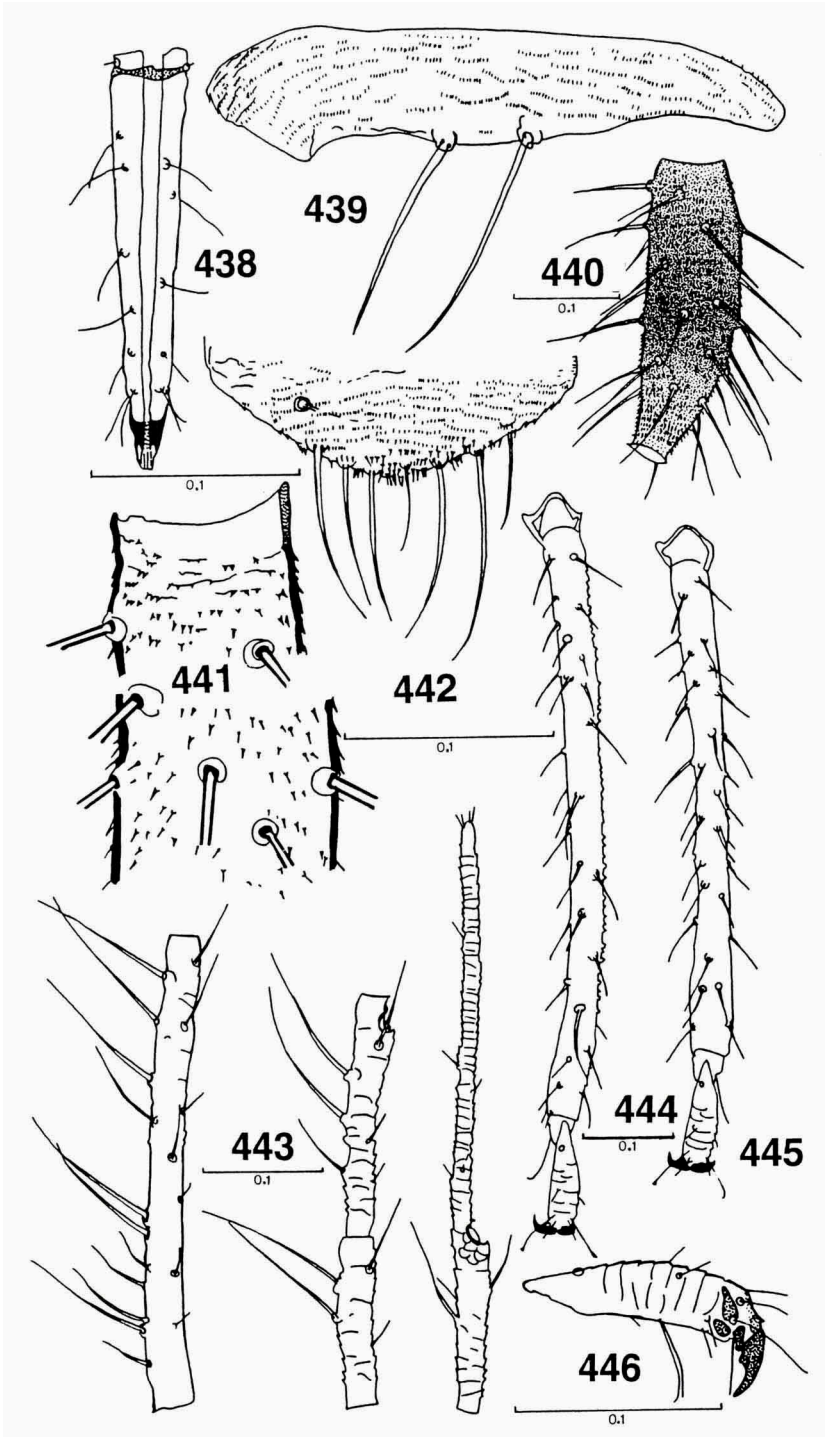
Figs. 418-424. *Mollitrichosiphum (Metatrichosiphon) elongatum* Takahashi, apterous viviparous ♀. Fig. 418, ultimate rostral segment. Fig. 419, antennal segments III, and IV plus V. Fig. 420, **a** hair of the middle of the head; **b** of tergite III; **c** of tergite IV; **d** of tergite VI; **e** ventral hairs of the middle of the abdomen. Fig. 421, parts of the siphunculus. Fig. 422, cauda. Fig. 423, first tarsal segment of the hind leg. Fig. 424, second tarsal segment of the hind leg.



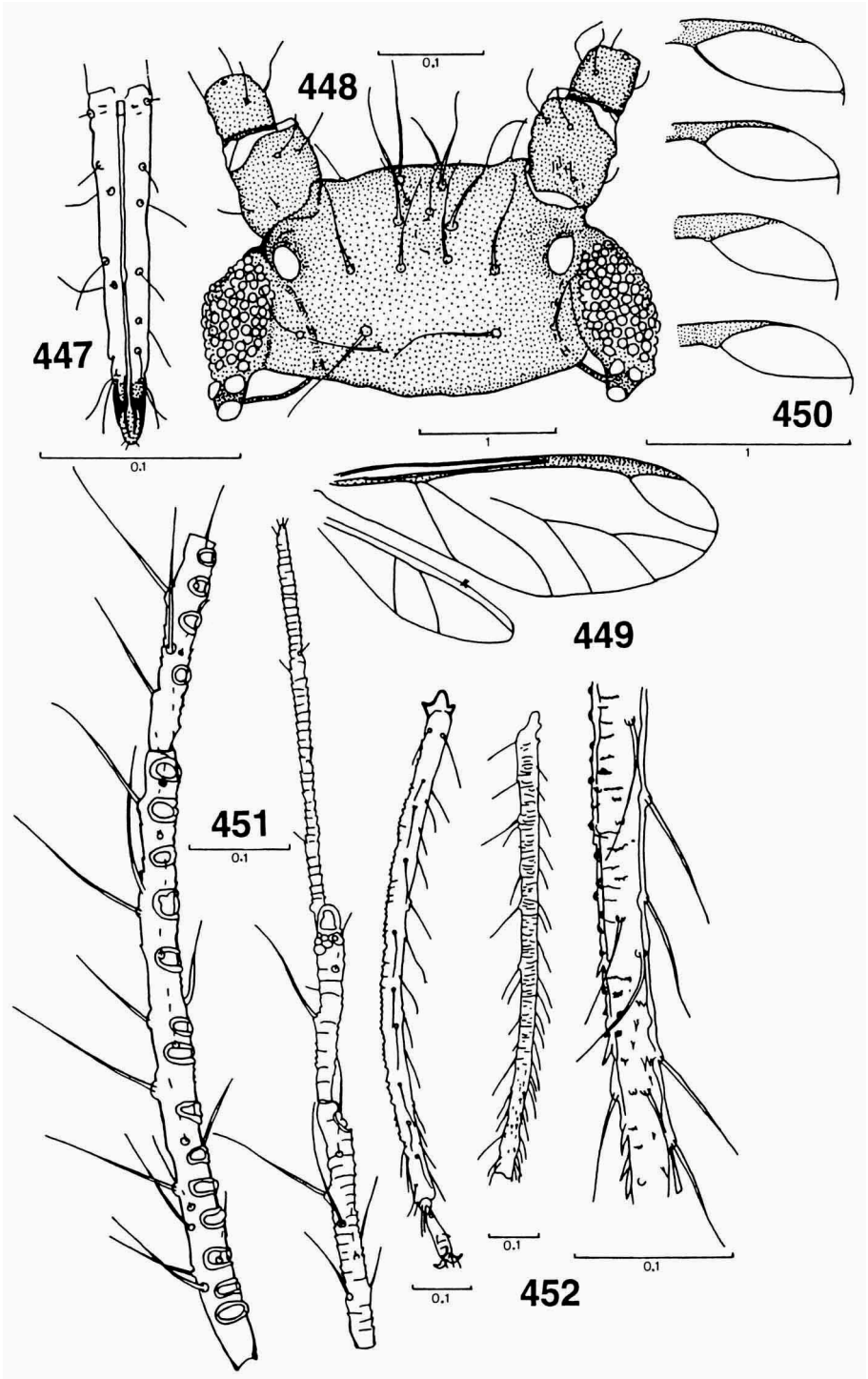
Figs. 425-430. *Mollitrichosiphum (Metatrichosiphon) elongatum* Takahashi, alate viviparous ♀, bleached and damaged specimen. Fig. 425, dorsal side of the head. Fig. 426, ultimate rostral segment. Fig. 427, siphunculus. Fig. 428, hairs of **a** the middle of the head; **b** the frons; **c** the mesonotum; **d** tergite IV; **e** the middle of the abdomen ventrally; **f** tergite VII. Fig. 429, hind tibia. Fig. 430, second tarsal segment of the hind leg.



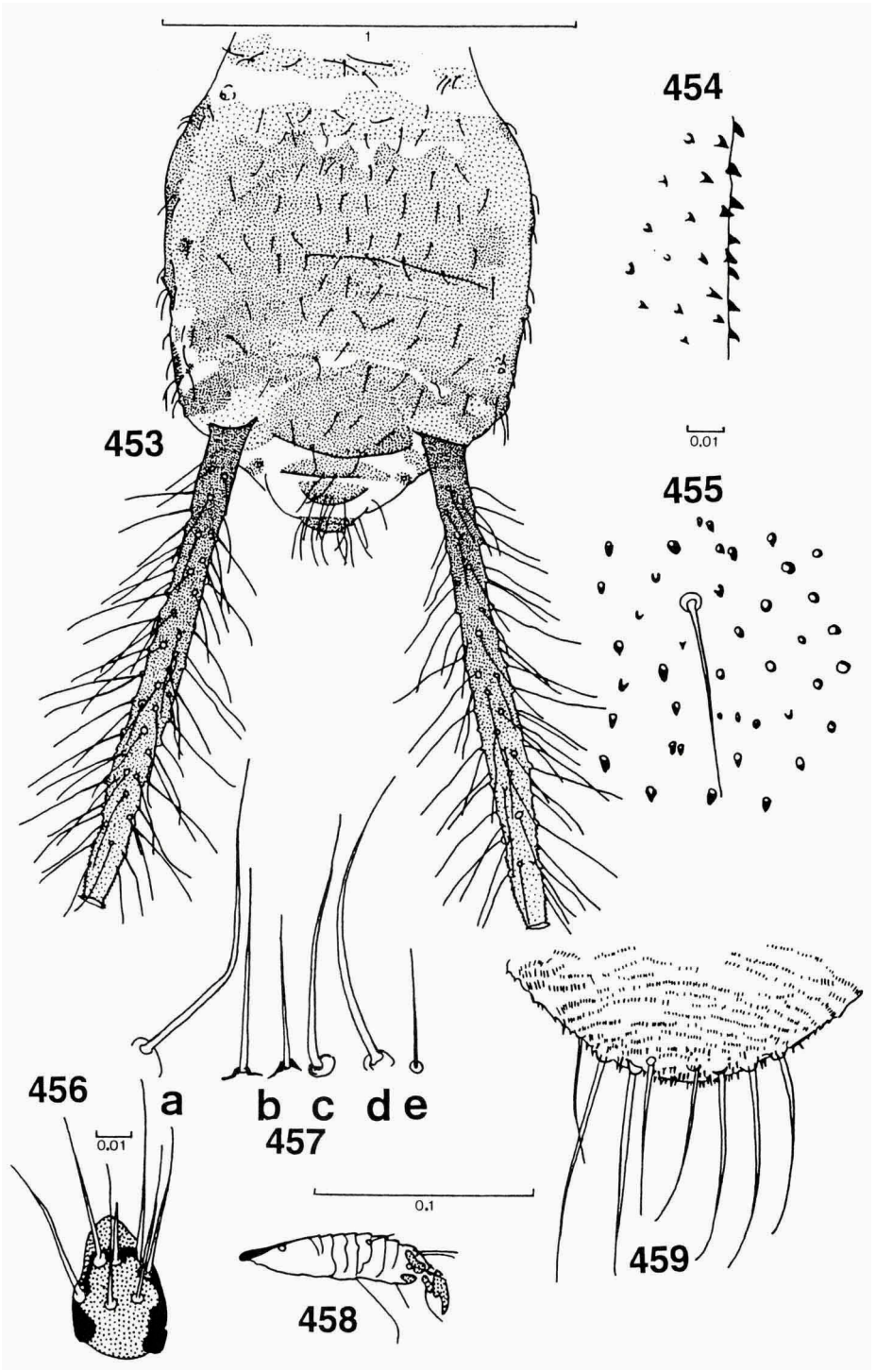
Figs 431-437. *Mollitrichosiphum (Metatrichosiphon) syzygii* spec. nov., apterous viviparous ♀. Fig. 431, dorsal side of the body. Fig. 432, 433, hind tibia. Fig. 434, first tarsal segment of the hind leg. Fig. 435, spinulae of tergite II. Fig. 436, ventral spinulae of the abdomen. Fig. 437, hairs of **a** the middle of the head; **b** the abdomen dorsally; **c** the middle of the abdomen ventrally.



Figs. 438-446. *Mollitrichosiphum (Metatrichosiphon) syzygii* spec. nov., apterous viviparous ♀. Fig. 438, antennal segments III, IV plus V, and VI. Fig. 439, ultimate rostral segment. Fig. 440, tibia of the middle leg. Fig. 441, tibia of the hind leg. Fig. 442, cauda. Fig. 443, second tarsal segment of the hind leg. Fig. 444, tergite VIII. Fig. 445, siphunculus of a small specimen. Fig. 446, basal and middle part of the siphunculus.



Figs. 447-452. *Mollitrichosiphum (Metatrichosiphon) syzygii* spec. nov., alate viviparous ♀. Fig. 447, ultimate rostral segment. Fig. 448, dorsal side of the head. Fig. 449, fore wing and hind wing. Fig. 450, radial sector of four fore wings. Fig. 451, antennal segments III plus IV, and V plus VI. Fig. 452, hind tibiae, and part of it.



Figs. 453-459. *Mollitrichosiphum (Metatrichosiphon) syzygii* spec. nov., alate viviparous ♀. Fig. 453, dorsal side of the abdomen. Fig. 454, marginal denticles of the abdomen. Fig. 455, ventral denticles of the abdomen. Fig. 456, first tarsal segment of the hind leg. Fig. 457, hairs of **a** the mesonotum; **b** tergite IV; **c** tergite VII; **d** tergite VIII; **e** the abdomen ventrally. Fig. 458, second tarsal segment of the hind leg. Fig. 459, cauda.

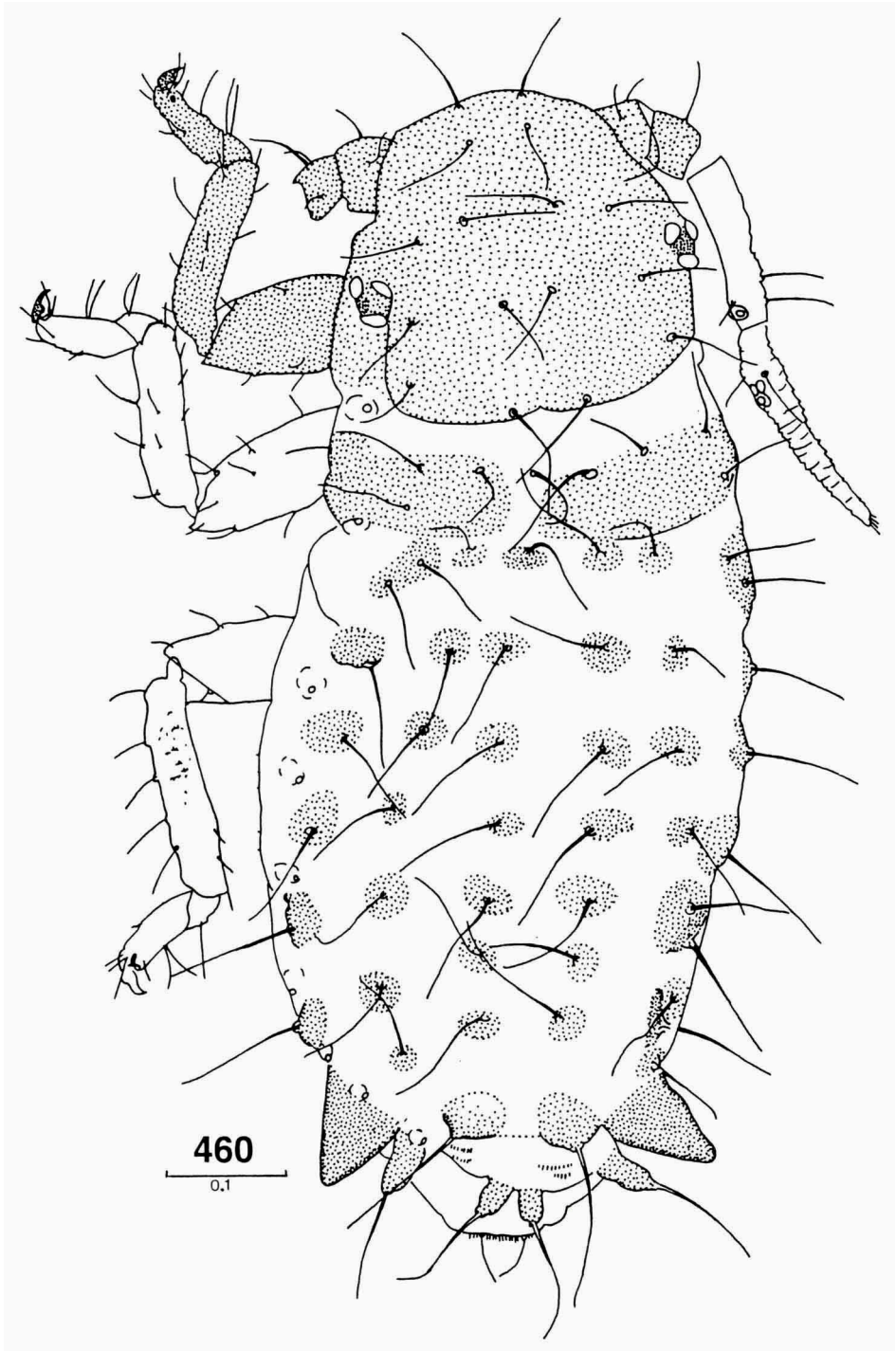
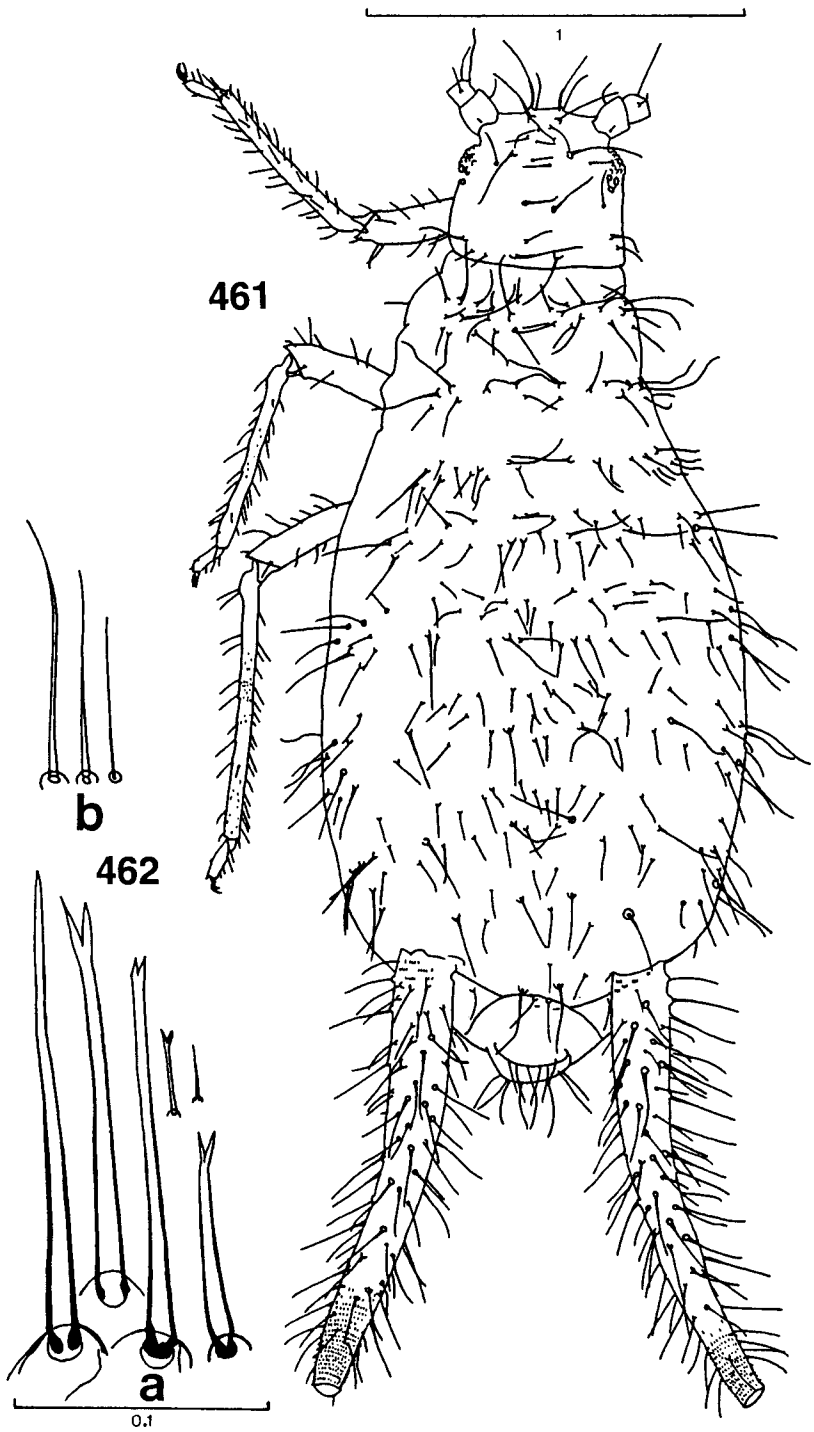
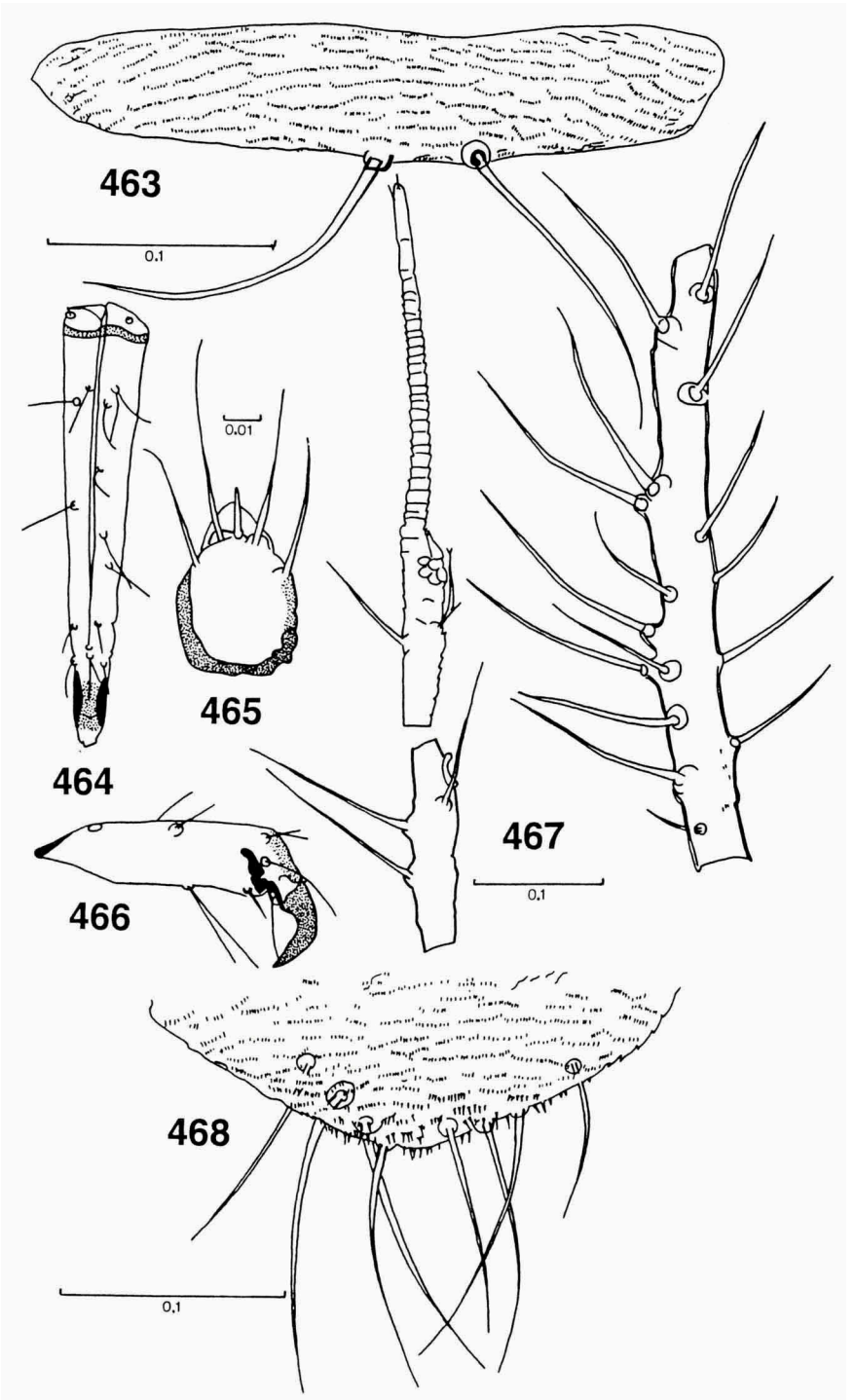


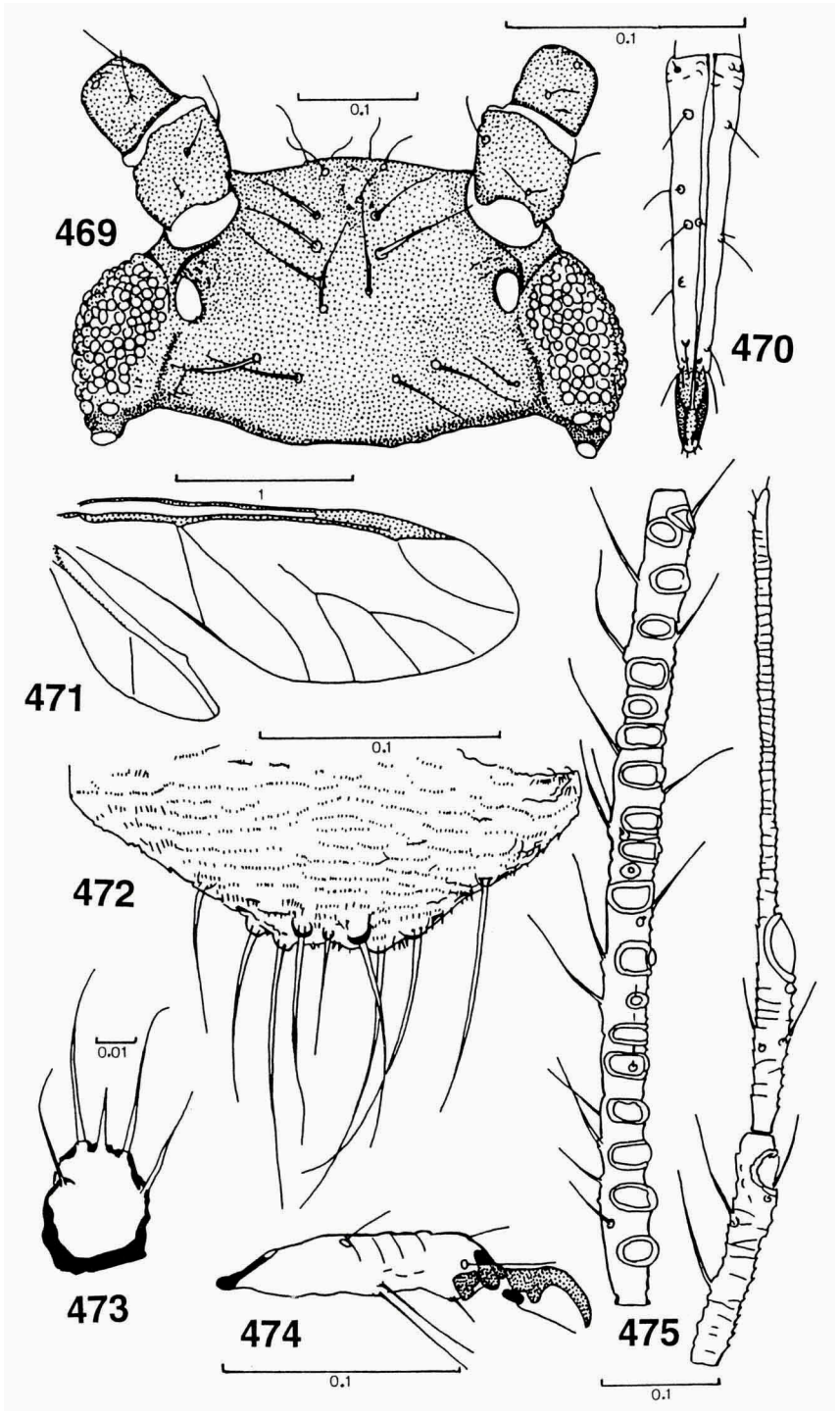
Fig. 460. *Mollitrichosiphum (Metatrichosiphon) syzygii* spec. nov.,first stage larva of apterous viviparous ♀, dorsal side, but marginal hair of tergite IV and V at the right side located ventrally.



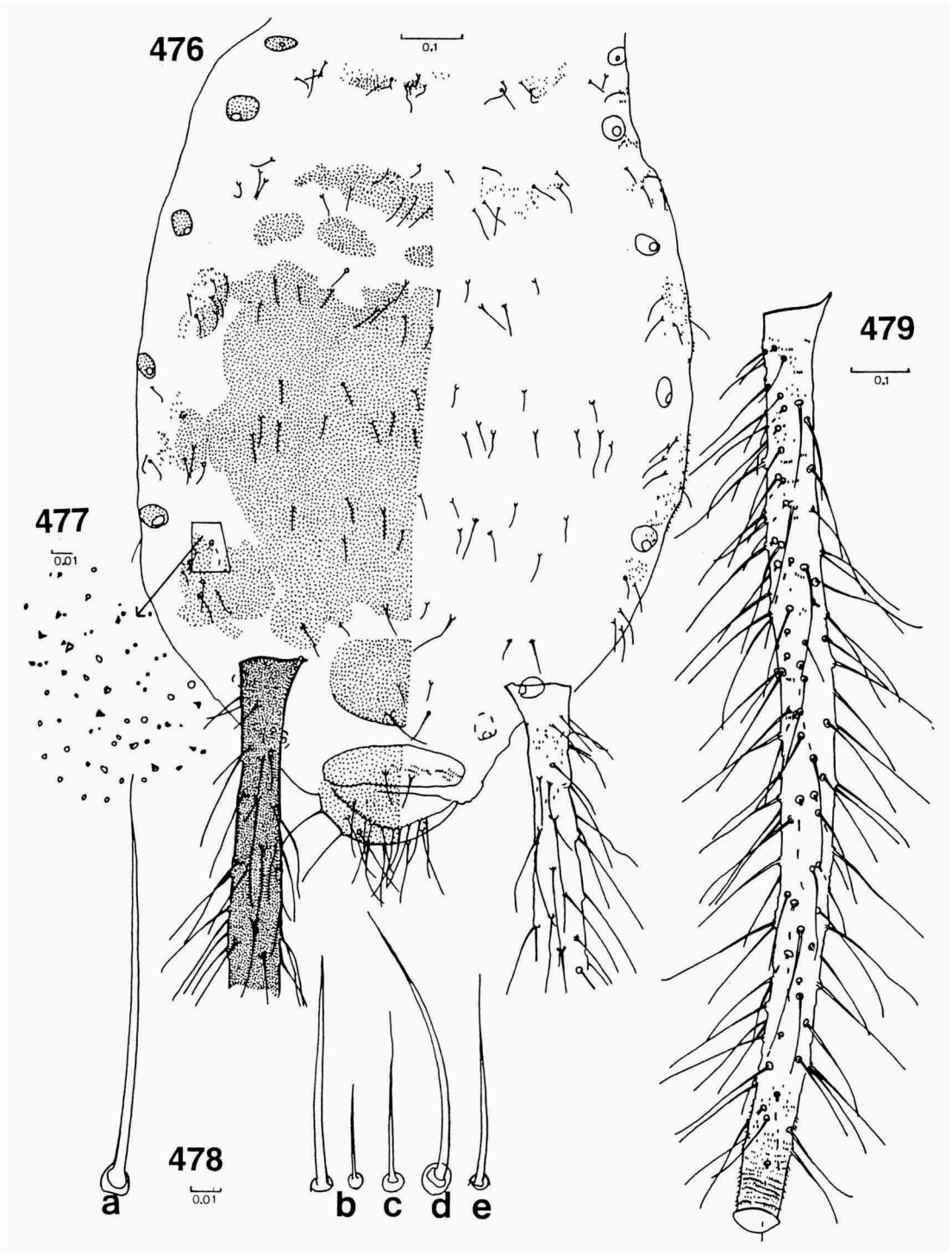
Figs. 461-462. *Pentatrichosiphum luteum* Basu, apterous viviparous ♀. Fig. 461, dorsal side of the body. Fig. 462, a dorsal abdominal hairs; b ventral hairs of the middle of the abdomen.



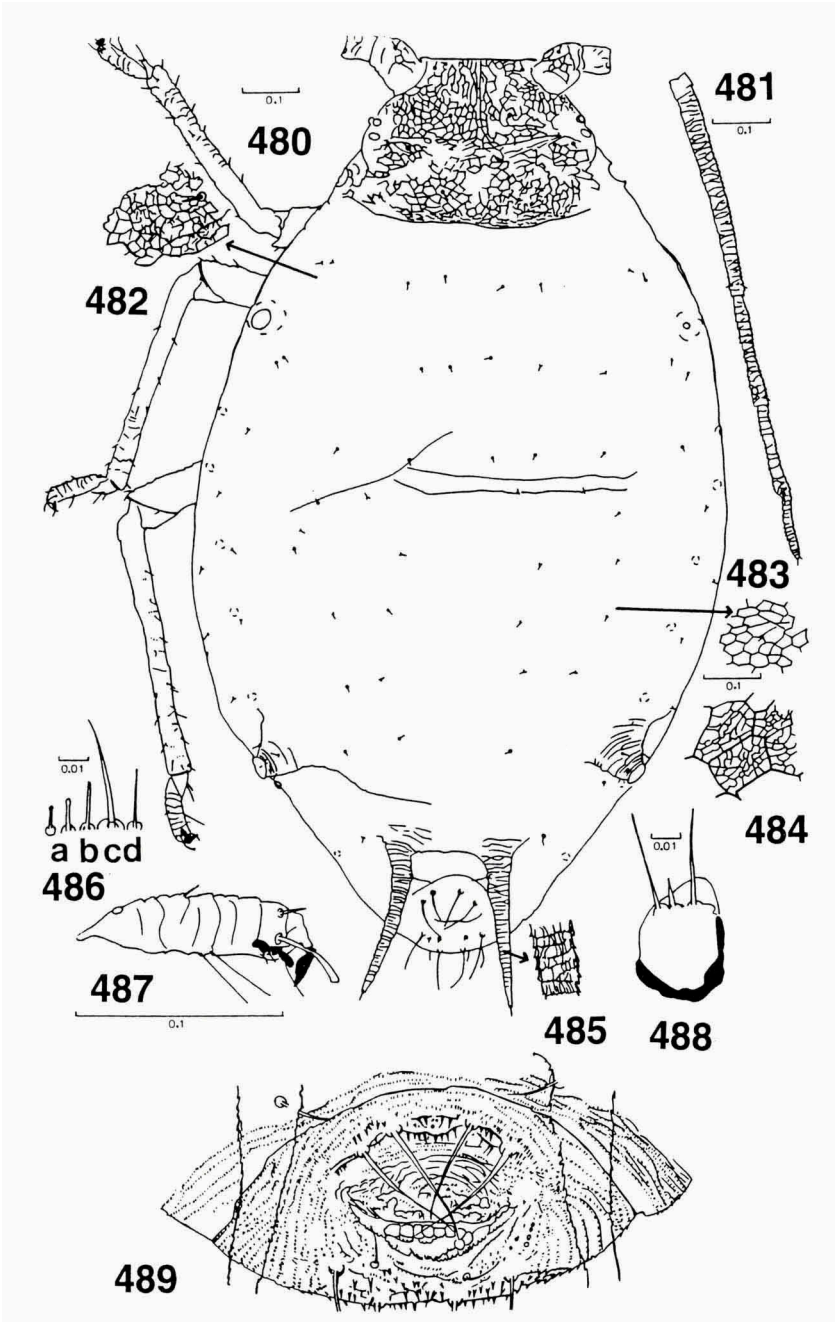
Figs. 463-468. *Pentatrichosiphum luteum* Basu, apterous viviparous ♀. Fig. 463, tergite VIII. Fig. 464, ultimate rostral segment. Fig. 465, first tarsal segment of the hind leg. Fig. 466, second tarsal segment of the hind leg. Fig. 467, antennal segments III, IV, and V. Fig. 468, cauda.



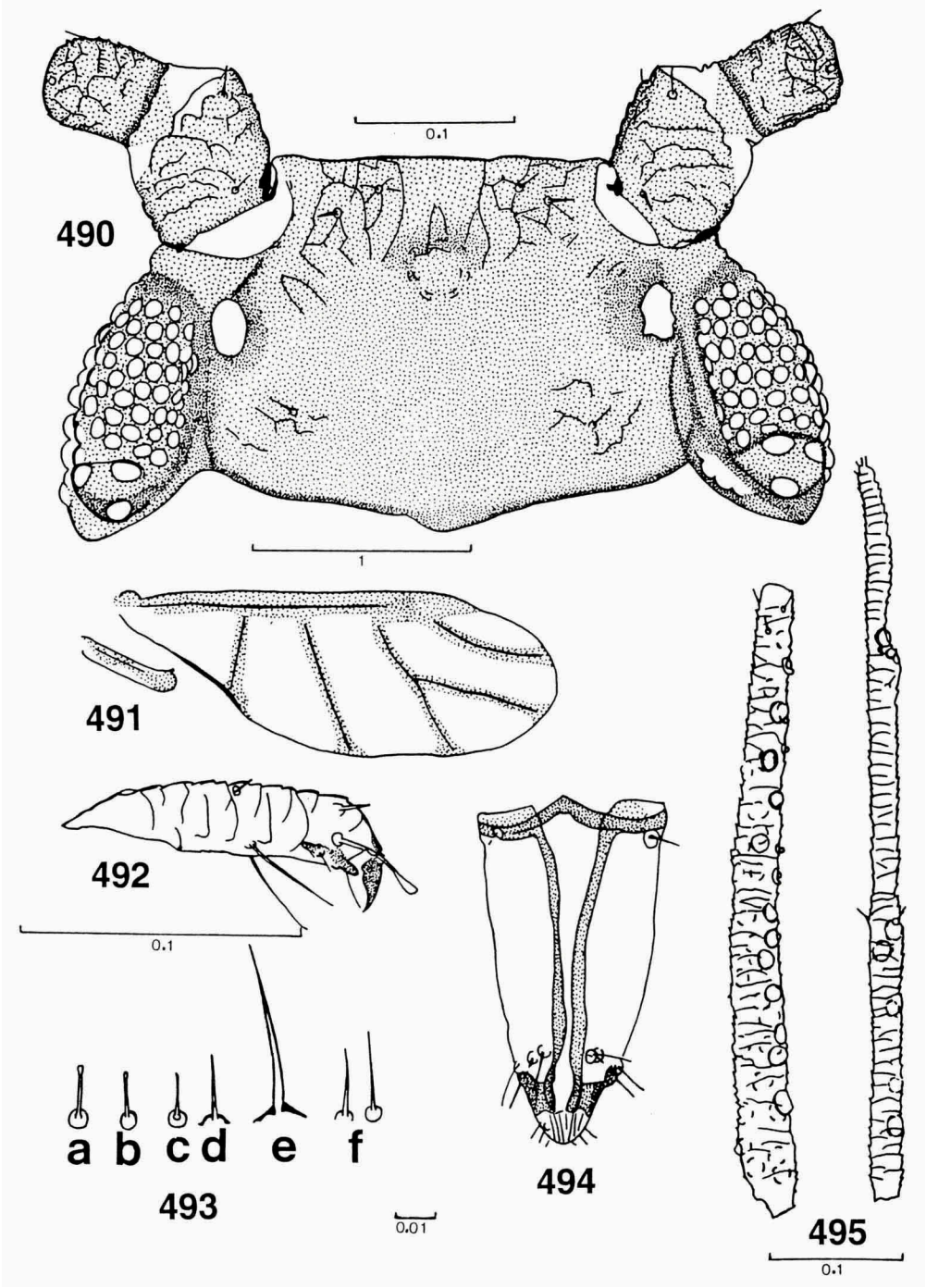
Figs 469-475. *Pentatrichosiphum luteum* Basu, alate viviparous ♀. Fig. 469, dorsal side of the head. Fig. 470, ultimate rostral segment. Fig. 471, fore wing and hind wing. Fig. 472, cauda. Fig. 473, first tarsal segment of the hind leg. Fig. 474, second tarsal segment of the hind leg. Fig. 475, antennal segments III, and IV plus V.



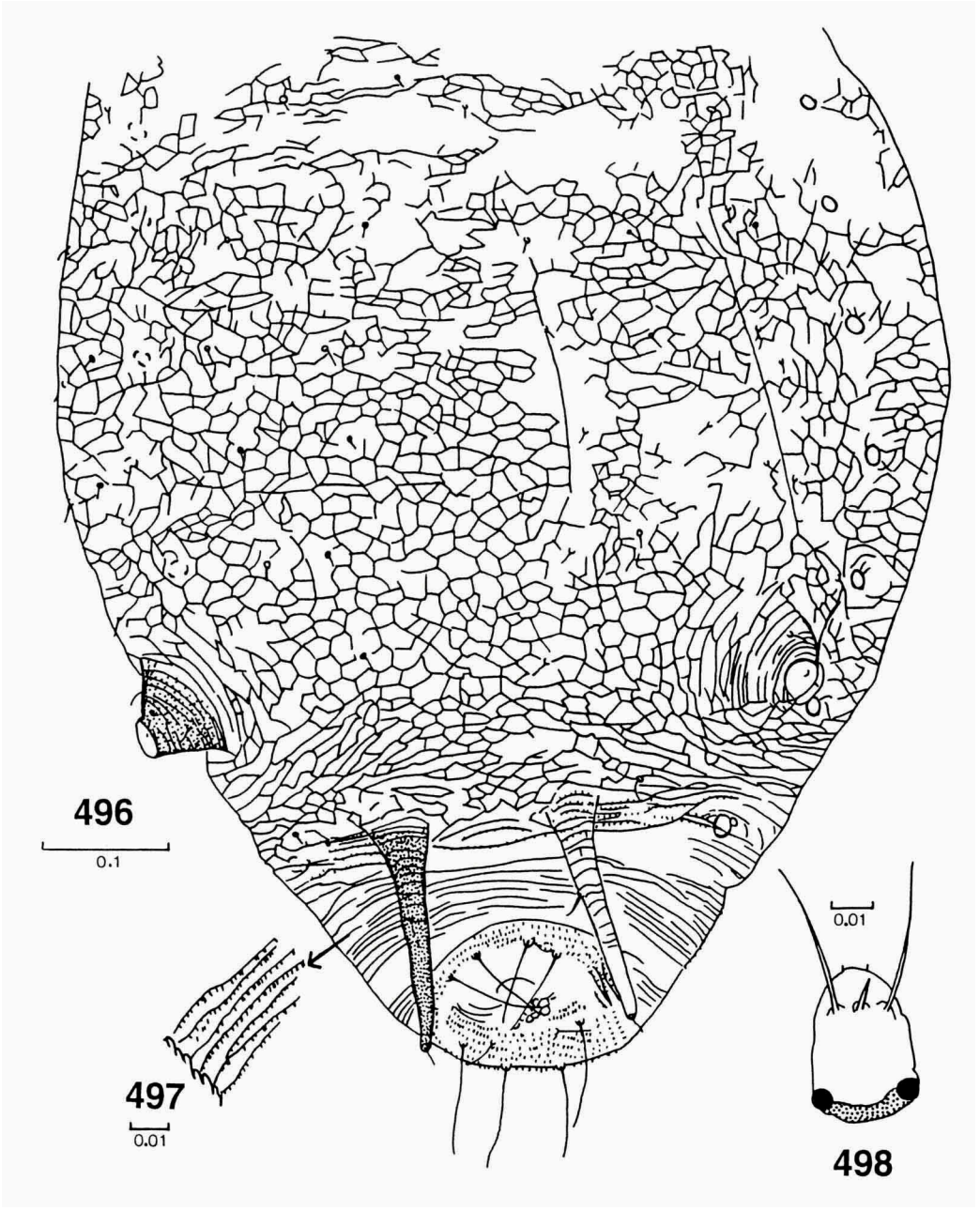
Figs. 476-479. *Pentatrichosiphum luteum* Basu, alate viviparous ♀. Fig. 476, dorsal side of the abdomen. Fig. 477, ventral spinulae of the abdomen. Fig. 478, hairs of **a** the mesonotum; **b** tergite IV; **c** tergite VII; **d** tergite VIII; **e** the middle of the abdomen ventrally. Fig. 479, siphunculus.



Figs. 480-489. *Schoutedenia lutea* (van der Goot), apterous viviparous ♀. Fig. 480, dorsal side of the body, reticulation only on the head drawn. Fig. 481, antennal segments III-V. Fig. 482, part of the lateral side of the mesothorax. Fig. 483, 484, part of reticulum of abdominal segment IV. Fig. 485, part of processus. Fig. 486, hairs of **a** tergite IV; **b** tergite VII; **c** tergite VIII; **d** the middle of the abdomen ventrally. Fig. 487, second tarsal segment of the hind leg. Fig. 488, first tarsal segment of the hind leg. Fig. 489, cauda, anus, subanal plate, of overlaying processi only borders drawn.



Figs. 490-495. *Schoutedenia lutea* (van der Goot), alate viviparous ♀. Fig. 490, dorsal side of the head. Fig. 491, fore wing and hind wing. Fig. 492, second tarsal segment of the hind leg. Fig. 493, hairs of **a** the head anteriorly; **b** the mesonotum; **c** tergite IV; **d** abdomen segment VII laterally; **e** tergite VIII; **f** the middle of the abdomen ventrally. Fig. 494, ultimate rostral segment. Fig. 495, antennal segments III, and IV plus V.



Figs. 496-498. *Schoutedenia lutea* (van der Goot), alate viviparous ♀. Fig. 496, dorsal side of the abdomen. Fig. 497, lateral side of tergite VIII. Fig. 498, first tarsal segment.

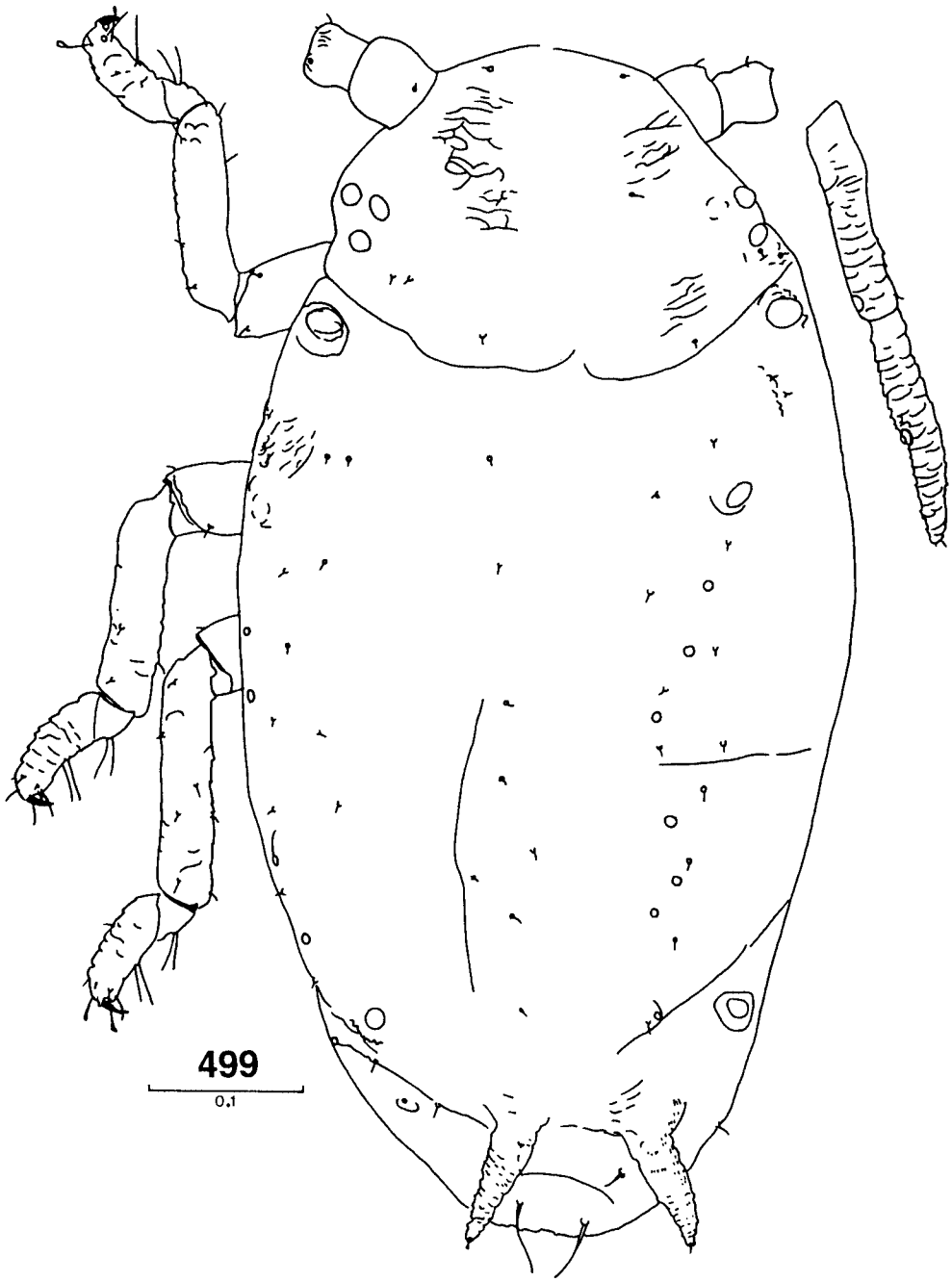
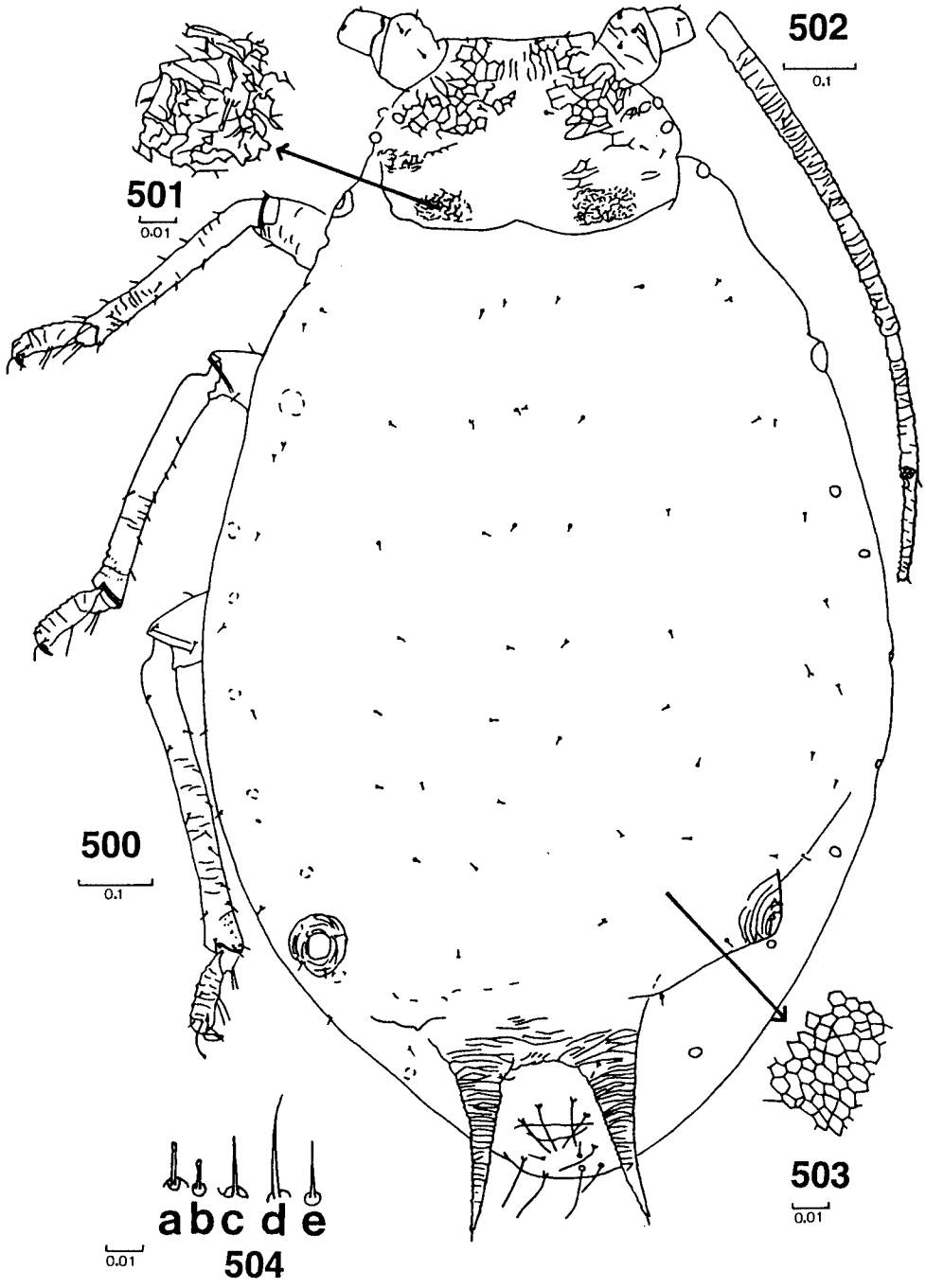
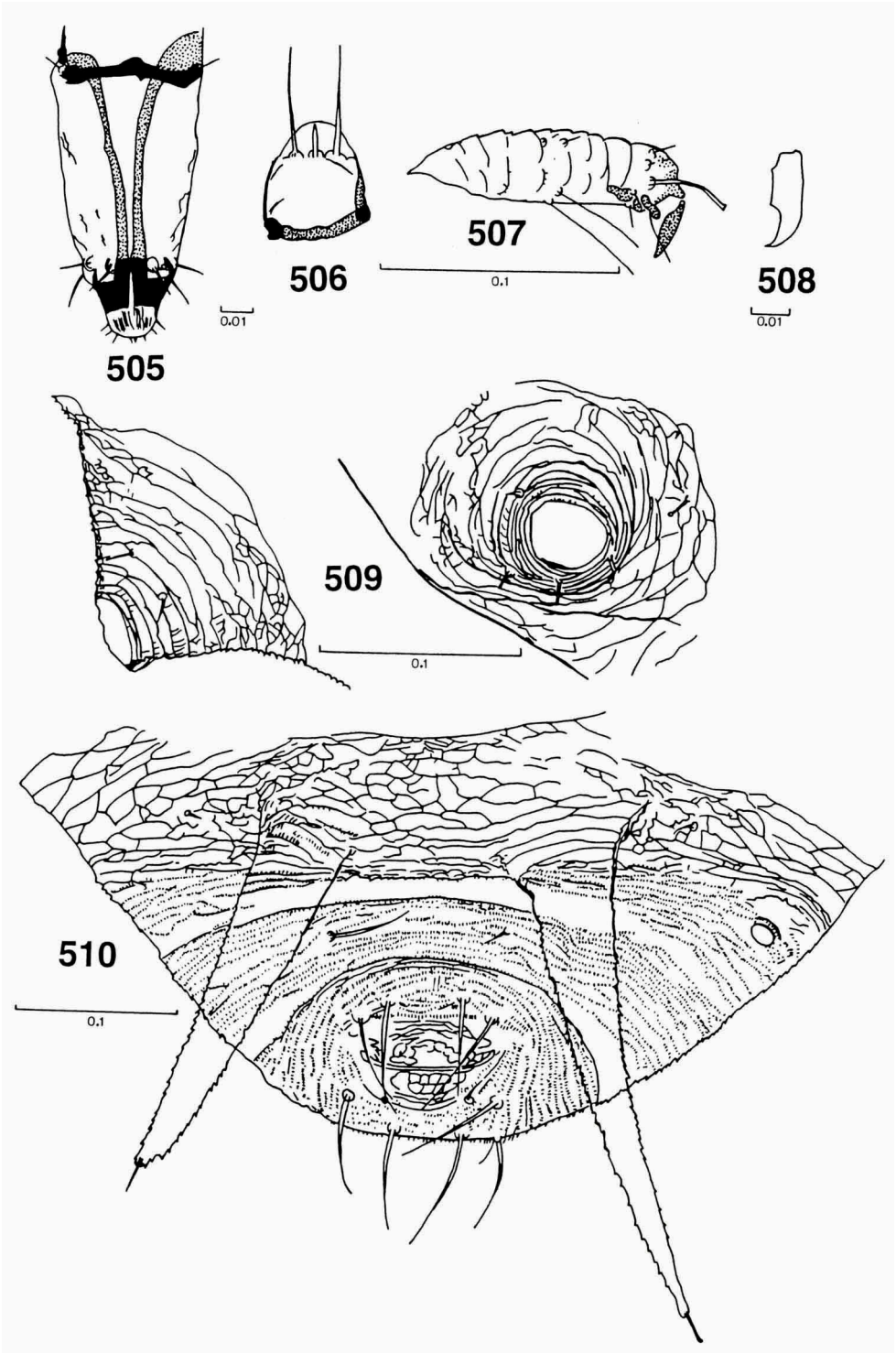


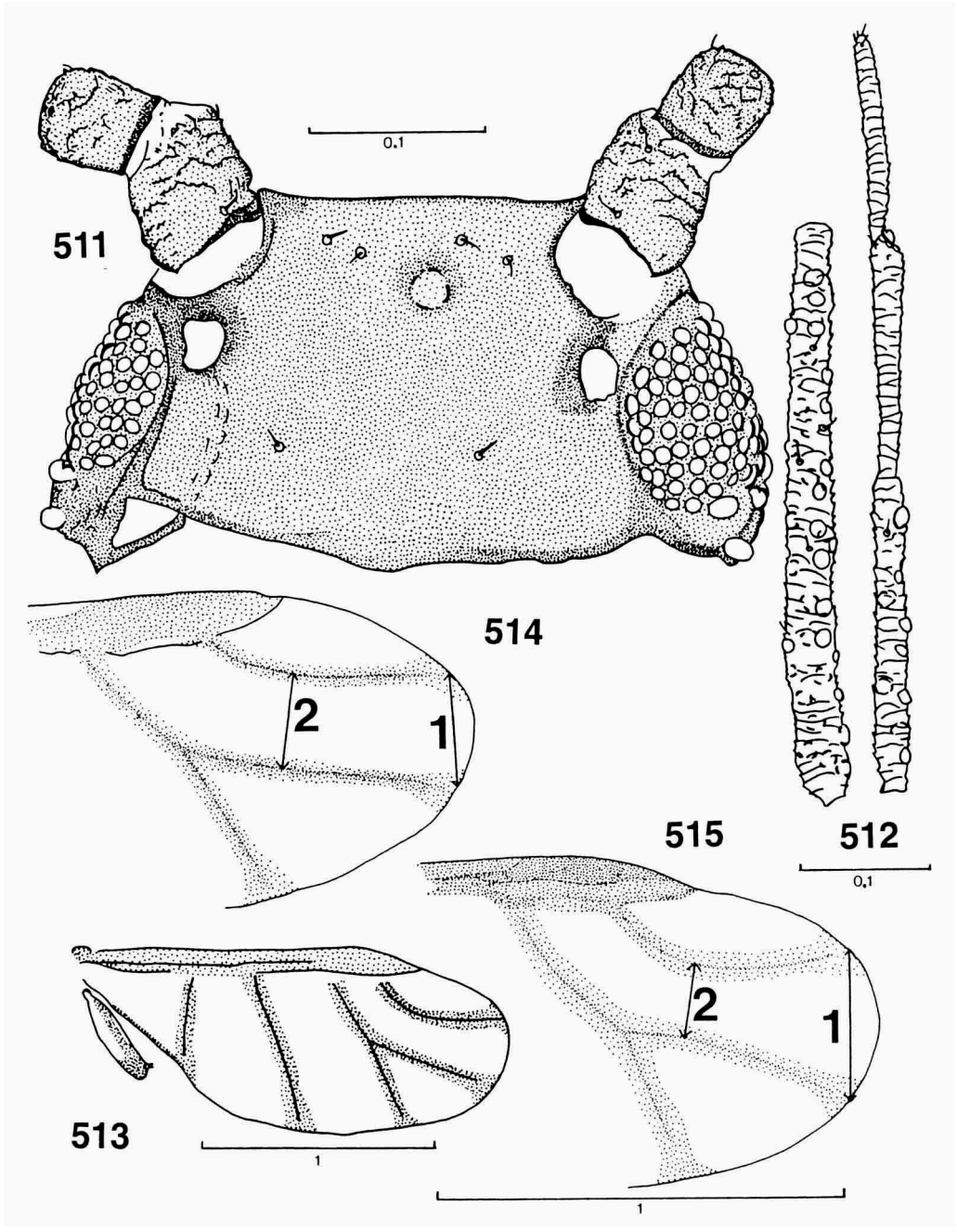
Fig. 499. *Schoutedenia lutea* (van der Goot), first stage larva of apterous viviparous ♀.



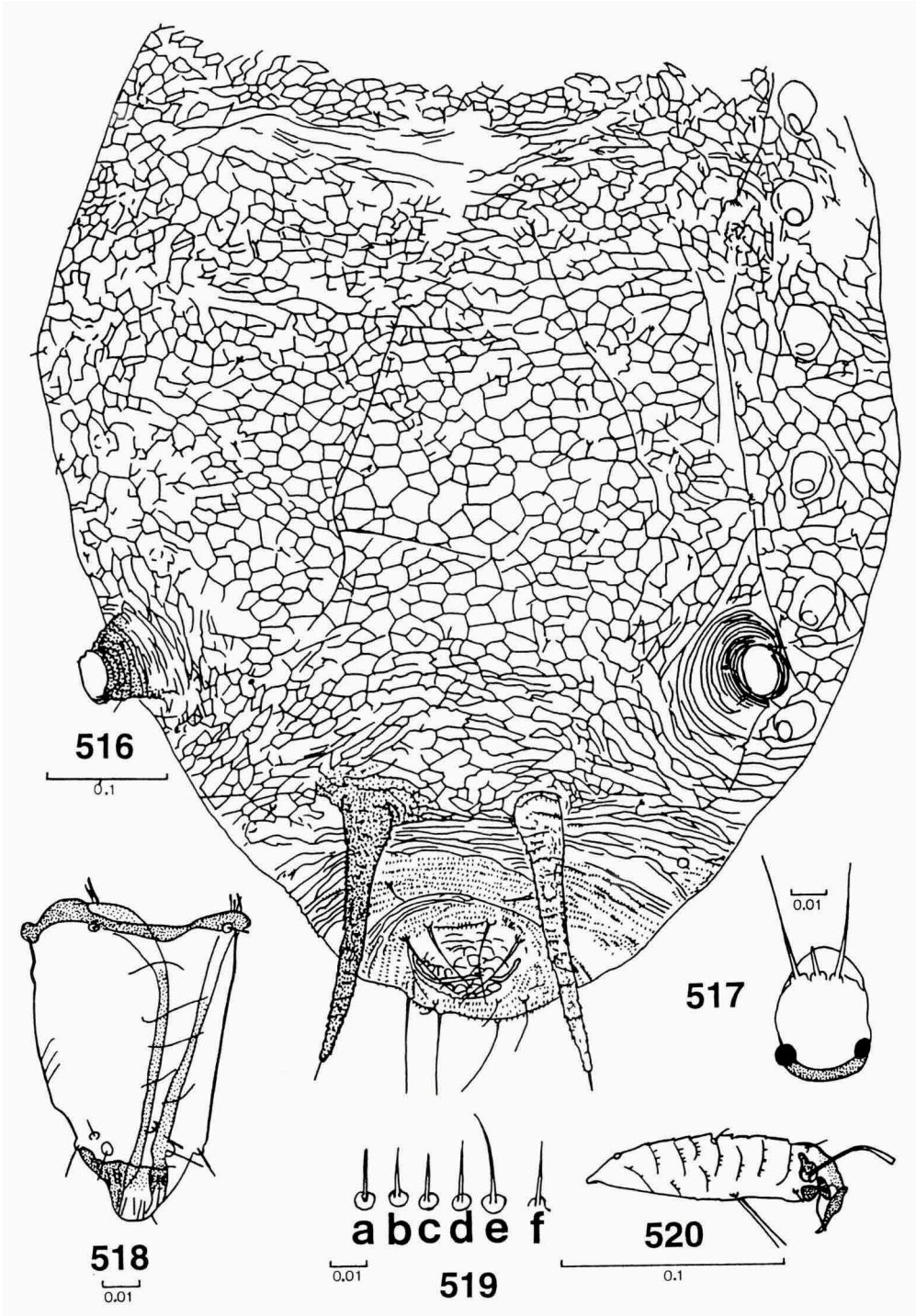
Figs 500-504. *Schoutedenia viridis* (van der Goot), apterous viviparous ♀. Fig. 500, dorsal side of the body. Fig. 501, part of the prothorax. Fig. 502, antennal segments III-V. Fig. 503, part of the dorsal side of the abdomen. Fig. 504, hairs of **a** the head; **b** tergite IV; **c** lateral side of tergite VII; **d** tergite VIII; **e** the middle of the abdomen ventrally.



Figs. 505-510. *Schoutedenia viridis* (van der Goot), apterous viviparous ♀. Fig. 505, ultimate rostral segment. Fig. 506, first tarsal segment of the hind leg. Fig. 507, second tarsal segment of the hind leg. Fig. 508, claw of fig 507. Fig. 509, siphunculus from the side and from above. Fig. 510, tergite VII, of the processi only the sides drawn; tergite VIII, cauda, anal plate.



Figs. 511-515. *Schoutedenia viridis* (van der Goot), alate viviparous ♀. Fig. 511, dorsal side of the head. Fig. 512, antennal segments III, and IV plus V. Fig. 513, fore wing and hind wing. Fig. 515, fore wing with the distances 1 and 2 indicated. Fig. 514, fore wing of *S. lutea* with the distances 1 and 2 indicated.



Figs. 516-520. *Schoutedenia viridis* (van der Goot), alate viviparous ♀. Fig. 516, dorsal side of the abdomen. Fig. 517, first tarsal segment of the hind leg. Fig. 518, ultimate rostral segment. Fig. 519, hairs of **a** the head; **b** the mesonotum; **c** tergite IV; **d** abdominal tergite VII, lateral; **e** tergite VIII; **f** the middle of the abdomen ventrally. Fig. 520, second tarsal segment of the hind leg.

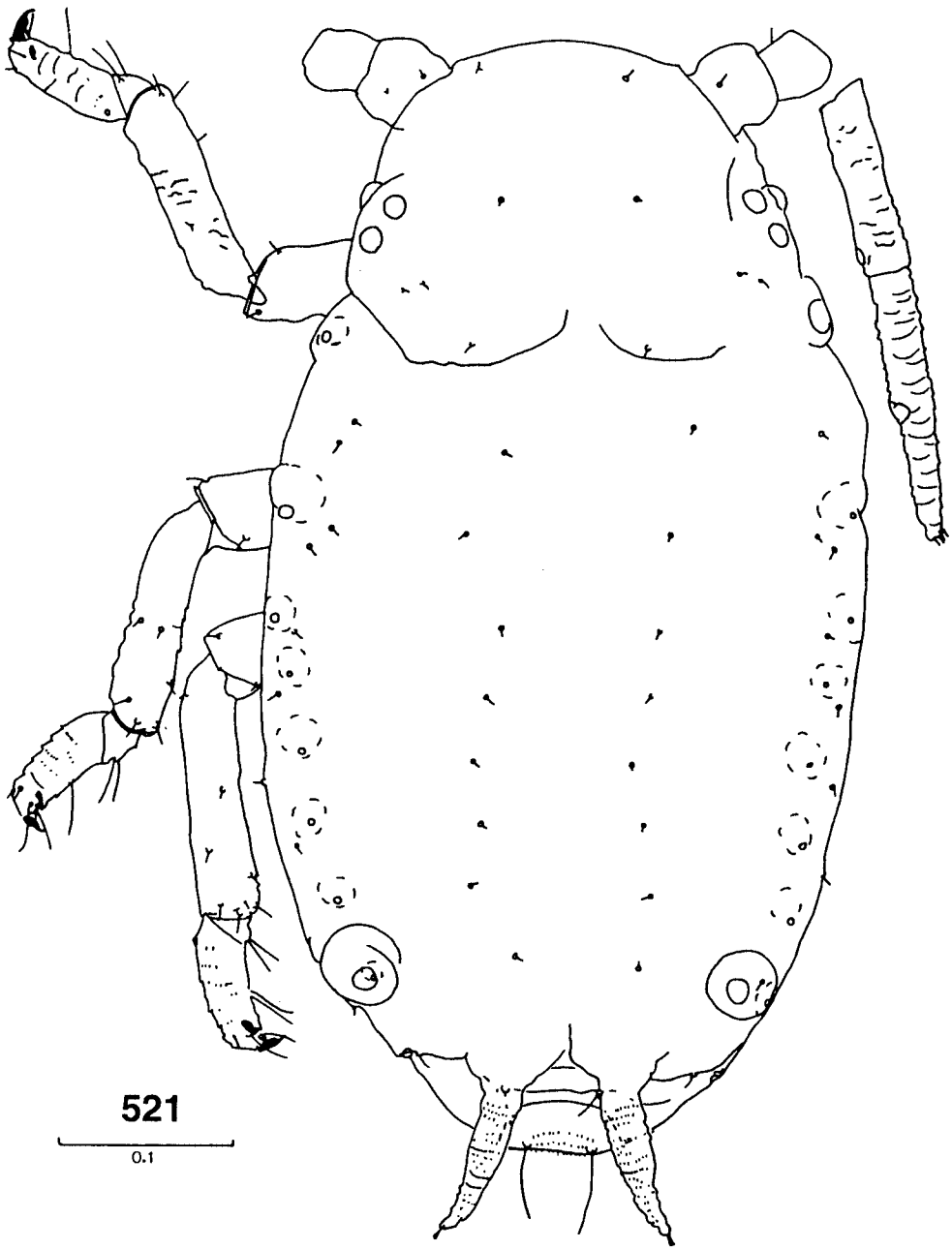


Fig. 521. *Schoutedenia viridis* (van der Goot), first stage larva of apterous viviparous ♀, dorsal side of the body.

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