Aphids of Java.
Part V: Aphidini (Homoptera: Aphididae)

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Key words: Aphididae; Aphidini; *Aphis; Brachysiphoniella; Hyalopterus; Hysteroneura; Melanaphis; Rhopalosiphum; Schizaphis; Toxoptera;* taxonomy; key; Java.
Examined material, host plants and etymology are given of 22 species, all viviparous and belonging to the genera *Aphis*, *Brachysiphoniella*, *Hyalopterus*, *Hysteroneura*, *Melanaphis*, *Rhopalosiphum*, *Schizaphis* and *Toxoptera*. Keys to the included species are given.

Contents

Introduction

This is the fifth part of the aphids of Java. The first part was published in 1985 (Noordam & Hille Ris Lambers, 1985), the second part in 1986 (Noordam, 1986), the third part in 1991 (Noordam, 1991) and the fourth part in 1994 (Noordam, 1994).

The aphids in this part are described in an alphabetical order of genera and species except for *Toxoptera* which is treated in the same key as *Aphis*. The names of the aphids are in accordance with Remaudière & Remaudière (1997). Furthermore the aphid's characters are mentioned and the plants on which the aphids have been found. Nevertheless the title of Part V promises to mention only Aphidini one species belonging to the Macrosiphini is mentioned and included in the key: *Brachysiphoniella montana* (van der Goot, 1917). This is due to the fact that after this fifth part was finished *B. montana* is placed into the Macrosiphini (Remaudière & Remaudière, 1997).

The names of host plants and/or localities are taken over directly from the original slides.

Measurements

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

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 are in mm.

Abbreviations

RMNH, Leiden: Nationaal Natuurhistorisch Museum, Leiden, The Netherlands; BMNH, London: Natural History Museum, London, U.K.; WU, Wageningen: Vakgroep Entomologie, Wageningen Universiteit, The Netherlands.

Key to genera of Aphidini

Note.— Data are taken from Millar (1990) and Stroyan (1984).

Tribes of *Aphidinae* apterae and alatae

1. Apterae usually without secondary rhinaria. Antennal tubercles poorly developed or absent. Alatae usually without a solid black dorsal abdominal patch ..... **Aphidini**
- Lateral abdominal tubercles usually absent from segments I and VII. Spiracles on abdominal segments I and II usually placed close to each other, with their pigmented areas sometimes touching. Apterae frequently having rhinaria on third antennal segment. Antennal tubercles often well developed. Alatae often having a solid black dorsal abdominal patch ..... **Macrosiphini**

Tribe Aphidini

1. Marginal tubercles on abdominal segment VII situated postero-ventral to spiracles 2
- Marginal tubercles on abdominal segment VII situated postero-dorsal to, or at about the same level as the spiracles 3
2. Apterae and alatae with a ventral area below the siphunculi adapted to a strigil by modification of a spinulose cuticular sculpture into a system of crenulate ridges. Tibia of hind leg with a series of short thick hairs. Alatae with median vein of fore wing forked once (only *T. aurantii*) ..... ***Toxoptera*** Koch
- Strigillose areas and comb hairs on hind tibiae not developed except in *Aphis eugeniae* and *A. nerii*. Alatae with median vein in fore wing usually forked twice ..... ***Aphis*** Linnaeus
3. Siphunculi club-shaped, their distal ends without a distinct flange or angular rim separating the operculum from the siphuncular wall (figs 77-78). Siphunculi 0.6-0.8 times as long as the cauda. Alatae antennal segment III with 3-23 and segment IV with 0-5 rhinaria ..... ***Hyalopterus*** Koch
- Siphunculi with a flange or angular rim separating the operculum from the siphuncular wall. Siphunculi 0.24-3.2 times as long as the cauda 4
4. Siphunculi 0.24-0.33 times as long as the cauda in apterae and alatae. The cauda with 14-19 hairs. Living on *Leersia hexandra* Swartz (Gramineae) ..... ***Brachysiphoniella*** Takahashi
- Siphunculi 0.8-3.2 times as long as the cauda 5
5. Siphunculi 0.8-1.3 times as long as the cauda. The cauda with 5 or 9-14 hairs ..... ***Melanaphis*** van der Goot
- Siphunculi 1.1-3.2 times as long as the cauda 6
6. Cauda pale with 4 or rarely 5 hairs. Apterae antennal segment IV pale with darkened apex. Alatae with the basal 0.7 of antennal segment IV pale, hind wing with only 1 oblique vein ..... ***Hysteroneura*** Davis
- Cauda brownish, similar in colour at least to the apices of the siphunculi; if cauda is pale, then siphunculi usually also pale, not uniformly brown. Antennal segments IV and V usually completely pigmented. Hind wing with 2 oblique veins 7
7. Dorsum of apterae with spinules which are arranged in polygons. Median vein of fore wing almost always branched twice ..... ***Rhopalosiphum*** Koch
- Dorsum of apterae without spinules which are arranged in polygons. Median vein of fore wing only forked once ..... ***Schizaphis*** Börner

Key based on apterae of *Aphis* Linnaeus and *Toxoptera* Koch

1. Tibiae of the hind leg dorsally along 0.7 of its length with 10-12 or less conical sturdy hairs (figs 15, 187, 188), which in *A. nerii* are sometimes lacking. Ventrolaterally on the abdomen near the bases of the siphunculi serrated lines (fig. 190) 2
- Tibiae of the hind leg without a row of conical sturdy hairs. Ventrally near the bases of the siphunculi at most small spinulae 6
2. First tarsal segment of the hind leg with 1 or 2 hairs 3
- First tarsal segment of the hind leg with 3 hairs 5
3. Siphunculi 0.4-0.6 times as long as the cauda. Tergite VIII with 4-9 hairs. Length of hairs of abdominal tergite V 48-78 µ. First tarsal segment of the hind leg with 2 hairs. In life blackish brown. On *Carmona*, *Hibiscus*, *Maesopsis*, *Mussaenda*, *Pitcairnea*, *Semecarpus*, *Toddalia*, *Viburnum* and *Zanthoxylum*. Figs 212-216 ..... ***Toxoptera odinae*** (van der Goot)
- Siphunculi 0.8-2.5 times as long as the cauda. Tergite VIII with 2 hairs. Length of the hairs of abdominal tergite V 5-25 µ. First tarsal segment of the hind leg with 1 or 2 hairs 4
4. First tarsal segment of the hind leg with 2 hairs. Length of hair of the hind tibia 25-65 µ, of antennal segment III 10-23 µ. Antennal segment VI 455-515 µ long. The cauda with 18-20 hairs. Antennal segments III, IV and V distally brown, the distal part of segment VI paler than the base. In life shiny or dull black or dark brown, antennal segments III, IV and V distally black. Polyphagous. Figs 185-190 ..... ***Toxoptera aurantii*** (Boyer de Fonscolombe)
- First tarsal segment of the hind leg with 1 hair. Length of hair of the hind tibia 82-101 µ, of antennal segment III 30-55 µ. Antennal segment VI 575-695 µ long. The cauda with 19-54 hairs. Antennal segment III distally colourless and the distal part of segment VI as brown as the base of the segment. In life shiny black, antennal segments III and IV white. On *Citrus* and one sample on *Pyrus communis*. Figs 198-203 ..... ***Toxoptera citricida*** (Kirkaldy)
5. Length of body 1.30-1.88 mm, of the antennae 780-1300 µ, of the last antennal segment 285-450 µ, and of the ultimate rostral segment 113-133 µ. Length of hair on abdominal tergite V 5-23 µ. Distal half of antennal segments III and IV as pale as base of the segments. In life green or yellow with orange head and black siphunculi and cauda. On *Glochidion*, *Phyllanthus*, *Sauropus*, *Eriobotrya*, *Malus*, *Ficus* and according to van der Goot (1917) *Eugenia.* Figs 9-12 ... ***Aphis eugeniae*** van der Goot
- Length of the body 2.17-2.57 mm, of the antennae 1.47-1.70 mm, of the last antennal segment 520-575 µ, and of the ultimate rostral segment 164-171 µ. Length of hair on abdominal tergite V 28-48 µ. Distal part of antennal segments III and IV darker than the bases. On *Asclepias*, *Calotropis*. Figs 39-43 ..... ***Aphis nerii*** Boyer de Fonscolombe
6. Second tarsal segments ventrally, the distal hairs not included, with 2 or more hairs in 94% of the tarsi, in 6% with 1 hair. Ultimate rostral segment 0.8-1.1 times as long as the second tarsal segment of the hind leg. Cauda with 4-6 hairs. The dorsum brown. In life black, shiny, but the anterior and posterior parts of the abdomen dull. On *Papilionaceae* and *Acalypha*, *Capsella*, *Cordyline*, *Drymaria*, *Oenanthe*. Figs 1-5 ..... ***Aphis craccivora*** Koch

- Second tarsal segments ventrally, the distal hairs not included, with 0-2 hairs. Ultimate rostral segment 1.0-1.5 times as long as the second tarsal segment of the hind leg. Cauda with 3-19 hairs. 7

7. Cauda black, with 8-19 hairs. Longest hair of the hind femur 29-78 μ, of the hind tibia 23-76 μ. Siphunculi dark brown. In life greenish yellow with brownish grey head, and black siphunculi and cauda. On *Compositae* and *Adina*, *Annona*, *Apium*, *Bridelia*, *Cestrum*, *Dendrophthoë*, *Foeniculum*, *Lannea*, *Malus*, *Mikania*, *Polyscias*, *Randia*, *Salix*, *Securinega*, *Timonius*, *Viburnum*. Figs 56-59 ..... ***Aphis spiraecola*** Patch
- Cauda colourless, pale brown, black or, rarely, blackish, with 3-10 hairs. Longest hair of the hind femur 15-53 μ, of the hind tibia 10-39 μ..... 8

8. The cauda 0.54-0.67 times the width of the head across the eyes. Cauda colourless, with 6-10 hairs. Second tarsal segment of the hind leg with 2, rarely with 1 hair, the distal hairs not included. Siphunculi brown, sometimes with a paler base. In life green, the cauda white or yellow, the siphunculi black or grey. On *Glycine soja* and *Tephrosia vogelii*. Figs 19-23 ..... ***Aphis glycines*** Matsumura
- The cauda 0.28-0.57 times the width of the head across the eyes. Cauda colourless or black with 3-7 or, exceptionally, up to 10 hairs. Second tarsal segment of the hind leg with 0-1 hair, the distal hairs not included. Siphunculi colourless or black 9

9. Siphunculi very pale brown, but towards the distal end pale brown or brown. Cauda very pale brown, with 5-7 hairs. In life pale green or yellow, siphunculi greenish white with grey rim. Cauda whitish. On *Punica granatum*. Figs 49-53 ..... ***Aphis punicae*** Passerini
- Siphunculi brown or pale brown, rarely specimens wholly colourless. Cauda pale brown or sometimes brown, with 3-10, but usually 4-6 hairs. In life yellow or bluish black with black siphunculi, with greyish or sometimes black cauda. On *Mimosa pigra* and on *Histiopteris incisa* orange coloured. A whitish dwarf type with whitish cauda. Polyphagous. Figs 26-35 ..... ***Aphis gossypii*** Glover

Key based on alatae of *Aphis* Linnaeus and *Toxoptera* Koch

1. Tibia of the hind leg dorsally along 0.7 of its length with 3-15 conical hairs (fig. 192) which in *A. eugeniae* and *A. nerii* are sometimes lacking. The abdomen ventro-laterally near the bases of the siphunculi with serrated lines in *Toxoptera*, but these are lacking in *A. eugeniae* and *A. nerii* 2
- Tibia of the hind leg without conical hairs dorsally along 0.7 of its length, and the abdomen ventro-laterally near the bases of the siphunculi without serrated lines 6

2. Siphunculi 95-125 μ long, 0.25-0.28 times as long as the width of the head, and 1.6-1.9 times as long as the cauda. Length of hairs on tergite V 50-68 μ. Figs 217-225 ..... ***Toxoptera odinae*** (van der Goot)
- Siphunculi 155-520 μ long, 0.48-1.05 times as long as the width of the head, and 1.2-2.0 times as long as the cauda. Length of hairs on tergite V 9-30 μ 3

3. First tarsal segment of the hind leg with 1 hair, rarely with 2. Antennal segment III black, with 8-23 rhinaria. Cauda with 25-29 hairs. Media of the fore wing usually branched twice. Figs 204-211 ..... ***Toxoptera citricida*** (Kirkaldy)
- First tarsal segment of the hind leg with 2-3 hairs, rarely with 1. Antennal segment III at least 0.1 basally pale, with 1-15 rhinaria. The cauda with 8-19 hairs. Media of the fore wing branched once or twice 4

4. Media of the fore wing usually branched once. Basal part of antennal segments III-V pale, but distal part black. First tarsal segment of the hind leg with 2 hairs. A row of short conical hairs on the hind tibiae, and a distinct area of serrated scales latero-ventrally on abdominal segments V and VI are always present. Figs 191-197 ... ***Toxoptera aurantii*** (Boyer de Fonscolombe)
- Media of the fore wing usually branched twice. Antennal segments IV-V about evenly coloured, the base of segment III paler than the rest of the segment. Antennal segment III with 4-10 rhinaria. First tarsal segment of the hind leg with 3 or 2 hairs. Usually a row of conical hairs is present on the hind tibiae, but an area of serrated scales latero-ventrally on abdominal segments V and VI is lacking 5
5. Second tarsal segment of the hind leg ventrally with 2 hairs, the distal hairs not included. Length of the body 1.90-2.47 mm. The processus terminalis 400-470 μ long, 4.0-4.9 times as long as the base of the segment. Cauda with 15-19 hairs. In life pronotum yellow, abdomen yellow with black siphuncular patches. Figs 44-48 ..... ***Aphis nerii*** Boyer de Fonscolombe
- Second tarsal segment of the hind leg ventrally with 0-1 hair, the distal hairs not included. Length of the body 1.23-2.00 mm. The processus terminalis 230-345 μ long, 3.0-4.1 times as long as the base of the segment. Cauda with 8-15 hairs. In life pronotum brown, abdomen green with grey siphuncular patches. Figs 13-18 ..... ***Aphis eugeniae*** van der Goot
6. Second tarsal segments ventrally in the middle with 2-4 hairs in 98% of the tarsi, in the rest with 1 or no hairs. Ultimate rostral segment 0.83-1.04 times as long as the second tarsal segment of the hind leg. Antennal segment III with 2-9, usually 4-7 rhinaria. Cauda black, with 5-7 hairs but in 1 out of 21 collections 3 specimens with 8, 9 and 9 hairs respectively. Abdomen with marginal and siphuncular brown spots and frequently also with additional brown spots. In life black, the abdomen greenish black. Figs 6-8 ..... ***Aphis craccivora*** Koch
- Second tarsal segments ventrally in the middle with 0-2 hairs. Ultimate rostral segment 1.0-1.4 times as long as the second tarsal segment of the hind leg. Other characteristics varying 7
7. Cauda with 9-14 hairs. Length of the longest hair of the hind femur 39-71 μ, of the hind tibia 30-58 μ. The cauda 0.39-0.55 times as long as the width of the head across the eyes. Antennal segment III with 6-11 and segment IV with 0-3 rhinaria. Siphunculi dark brown, the cauda more blackish. In life yellow or green, the head and thorax, legs and antennae brown. Figs 60-61 ..... ***Aphis spiraecola*** Patch
- Cauda with 4-10 hairs. Length of the longest hair of the hind femur 12-33 μ, of the hind tibiae 12-30 μ. Antennal segment III with 4-9 and segment IV with 0-1 rhinaria. Other characters varying 8
8. The cauda 0.42-0.55 times as long as the width of the head across the eyes. Second tarsal segment in the middle-basal part with 2 hairs but in 4% of the tarsi with 1 hair, the distal hairs not included. Longest hair of the femur 25-33 μ, of the basal half of the hind tibia 23-30 μ. Cauda with 7-10 hairs. Siphunculi brown, cauda colourless, abdomen with a brown siphuncular spot and pale brown marginal spots. In life head and thorax brown, abdomen green, siphunculi and the siphuncular spot on the abdomen black. Figs 24-25 ..... ***Aphis glycines*** Matsumura

- The cauda 0.24-0.44 times as long as the width of the head across the eyes. Second tarsal segment in the middle-basal part with 0-1 hair, but in 3% of the tarsi with 2 hairs, the distal hairs not included. Longest hair of the femur 12-33 μ, of the basal half of the hind tibia 20-30 μ. Cauda with 4-10 hairs 9

9. Cauda with 4-6, rarely with 7 hairs. The cauda 0.24-0.43 times as long as the width of the head across the eyes. Siphunculi brown, cauda grey, abdomen with marginal, siphuncular and frequently segmentally arranged brown spots. In life with yellowish white or greenish black abdomen. Figs 36-38 ..... ***Aphis gossypii*** Glover
- Cauda with 5-10 hairs. The cauda 0.35-0.44 times as long as the width of the head across the eyes. Colour as *A. gossypii*. In life with bright green abdomen. Figs 54-55 .. ***Aphis punicae*** Passerini

Aphis craccivora Koch, 1854
(figs 1-8)

Aphis medicaginis; van der Goot, 1917: 98.

Material.— Specimens all collected in **Indonesia**, **Java**, the collectors are indicated by numbers between parentheses: P. van der Goot, in WU, Wageningen (1); C. Franssen, in WU, Wageningen (2); F.W. Rappard, in BMNH, London (3); and D. Noordam, in RMNH, Leiden (4). *Desmodium* spec., Kepoeh, 1913 (1); Katjang spec., Oemboelan, 1913 (1); *Gliricidia sepium* (Jacq.) Kunth ex Walp., Bogor, 4.i.1932 (2); Papilionaceae, Bogor, 26.iv.1932 (2); *Vigna sinensis* Endl, Soember Wringin (800 m), Bondowoso, 13.v.1948 (3); Kelor, Bangsring, 10.ix.1948 (3); tuinboon, Ledekambo (2000 m), 7.xi.1951 (3); *Arachis hypogea* L., Buitenzorg (250 m), 10.v.1954 Ashadi; *Drymaria villosa* Cham. & Schlecht., Bogor Keb. R., 30.iii.1975 (4); *Gliricidia sepium* (Jacq.) Steud., Bogor, 8.iv.1975 (4); *Phaseolus lunatus* L., Sindanglaya (1100 m), 9.iv.1975 (4); *Crotalaria mucronata* Desv., Bogor, 11.iv.1975 (4); *Mimosa pigra* L., Bogor, 11.iv.1975 (4); *Aeschynomene aspera* L., Bogor, 13.iv.1975 (4); *Gliricidia sepium* (Jacq.) Steud., Bogor, 13.iv.1975 (4); *Centrosema pubescens* Bth., Bogor, 19.iv.1975 (4); *Aeschynomene americana* L., Bogor, 20.iv.1975 (4); *Murraya paniculata* (L.) Jack., Bogor, 27.iv.1975 (4); *Aeschynomene americana* L., Bogor, 27.iv.1975 (4); *Cordyline fruticosa* (L.) A. Chev., Bogor, 21.v.1975 (4); *Indigofera tinctoria* L., Bogor, 9.vi.1975 (4); *Phaseolus lunatus* L., Sindanglaya (1100 m), 9.vi.1975 (4); *Sesbania grandiflora* (L.) Pers., Bogor, 30.vi.1975 (4); *Centrosema pubescens* Bth., Krawang, 16.viii.1975 (4); *Drymaria cordata* (L.) Willd., Cibodas-Lembang, 11.xi.1975 (4); *Gliricidia sepium* (Jacq.) Steud., Sindanglaya (1100 m), 29.xii.1975 (4); *Desmodium heterophyllum* (Willd.) DC., Sindanglaya (1100 m), 2.iii.1976 (4); *Aeschynomene indica* L., Bogor, 13.iii.1976 (4); *Gliricidia sepium* (Jacq.) Steud., Sindanglaya (1100 m), 6.v.1976 (4); *Indigofera tinctoria* L., Bogor, 16.v.1976 (4); *Drymaria cordata* (L.) Willd., Malang Punten, 16.vi.1976 (4); *Acalypha hispida* Burm.f., Malang, 12.vi.1976 (4); *Oenanthe javanica* DC., Malang-Selekta, 13.vi.1976 (4); *Vicia faba* L., Tosari (1800 m), 14.vi.1976 (4); *Capsella bursa-pastoris* (L.) Medik, Tosari (1800 m), 14.vi.1976 (4); *Drymaria cordata* (L.) Willd., Malang-Punten, 16.vi.1976 (4); *Desmodium heterocarpon* (L.) DC., Bogor, 2.vii.1976 (4); *Caesalpinia pulcherrima* (L.) Swartz, Bogor, 2.vii.1976 (4); *Drymaria cordata* (L.) Willd., Bogor, 24.xii.1976 (4); *Indigofera tinctoria* L., Bogor, 6.ii.1977 (4); *Gliricidia sepium* (Jacq.) Steud., Jakarta, 10.vii.1977 (4); *Phaseolus vulgaris* L., Sindanglaya (1100 m), 25.vii.1977 (4); *Phaseolus lunatus* L., Sindanglaya, 6.ix.1977 (4); *Centrosema pubescens* Bth., Sindanglaya, 13.ix.1977 (4); *Gliricidia sepium* (Jacq.) Kunth ex Walp., Sindanglaya (1100 m), 2.xi.1977 (4).

Biology.— The aphids live on stems, leaves, fruits and flowers, usually on younger parts. Alatae are frequently present in the samples.

Etymology.— "*craccivora*", feeding upon pulses.

Aphis eugeniae van der Goot, 1917
(figs 9-18)

Aphis eugeniae van der Goot, 1917: 91.

Material.— Specimens all collected in **Indonesia**, **Java**, the collectors are indicated by numbers between parentheses: P. van der Goot, in BMNH, London (1); F.W. Rappard, in BMNH, London (2); and D. Noordam, in RMNH, Leiden (3). *Eugenia* spec. (1), Pasoeroean, VI-1913 (1); *Phyllanthus urinaria* L., Djember, 28.ix.1949 (2); appel (Rosaceae), Rembangan (650 m), 19.xi.1950 (2); *Phyllanthus urinaria* L., Bogor, 13.iv.1975 (3); *Malus sylvestris* (L.) Mill., Sindanglaya, (1100 m), 3.v.1976 (3); *Pyrus communis* L., Tjibodas, 17.x.1976 (3); *Eriobotrya japonica* (Thunb.) Lindl., Sindanglaya (1100 m), 24.i.1977 (3); *Sauropus androgynus* (L.) Merr., Sindanglaya, 29.iii.1977 (3); *Malus sylvestris* (L.) Mill., Sindanglaya, 29.viii.1977 (3); *Glochidion capitatum* J.J.S., Sindanglaya (1100 m), 1.xi.1977 (3); *Eriobotrya japonica* (Thunb.) Lindl., Sindanglaya (1100 m) 10.xi.1977 (3); *Sauropus androgynus* (L.) Merr., Cipanas (1100 m), 14.xi.1977 (3); *Sauropus androgynus* (L.) Merr., Bogor, 18.xi.1977 (3).

Biology.— The aphids live on the lower side of leaves, and on developing shoots. Alatae were present in most of the samples.

Etymology.— "eugeniae", of *Eugenia*, a genus of the Myrtaceae.

Aphis glycines Matsumura, 1917
(figs 19-25)

Aphis glycines Matsumura, 1917: 387.

Material.— Specimens all collected in **Indonesia**, **Java**, the collectors are indicated by numbers between parentheses: P. van der Goot, in WU, Wageningen and in BMNH, London (1); and D. Noordam, in RMNH, Leiden (2). Katjang spec., Oemboelan, 26.i.1913 (1); Kedelee, Buitenzorg, 11.viii.1928 (1); *Glycine soja* (L.) Sieb. et Zucc., Bogor, 9.iii.1976 (2); 7.vi.1976 (3); *Glycine soja* (L.) Sieb. et Zucc., Kediri, 9.vi.1976 (2); *Tephrosia vogelii* Hook., Sindanglaya (1100 m), 20.i.1977 (2); *Glycine soja* (L.) Sieb. et Zucc., Leles, 6.ii.1978 (2).

Biology.— The aphids live on the lower side of leaves, on pods and stems. Alatae were present in some of the samples.

Etymology.— "*glycines*", of *Glycine*, a genus of the Papilionaceae.

Aphis gossypii Glover, 1877
(figs 26-38)

Aphis gossypii Glover, (1876) 1877: 36.
Aphis tectonae van der Goot, 1917: 111; Eastop & Hille Ris Lambers, 1976: 60 (synonymy).

Material.— Specimens all collected in **Indonesia**, **Java**, the collectors are indicated by numbers between parentheses: P. van der Goot, in WU, Wageningen (1); Kalshoven, in WU, Wageningen and BMNH, London (2); Sijpkens, in BMNH, London (3); F.W. Rappard, in BMNH, London (4); and D. Noordam, in RMNH, Leiden (5); the specimens of which are divided into two groups: **A** normal, **B** dwarf type. *Citrus* spec., Pasoeroean, 1913 (1); *Cammelina diffusa (Tradescantia)* Burm.f., Pasoeroean, 1912 (1); *Abelmoschus angulosus* Wight en Arn., Bogor, 26.iv.1912 (1); *Schefflera* spec. *(Heptapleurum),* Semarang, 1912 (1); Pasoeroean, 1913 (1); *Tectona* spec., Kedongdjatis, 4.v.1915 (1); *Tectona* spec., Bandjar (50 m), .vii.1930 (2); *Borreria laevis* Griseb., Tjikopo B29, 8.vi.1947 (3); *Hibiscus rosachinensis* L., Tjin-

jiroean (1600 m), 4.viii.1949 (3); *Strobilanthes* spec., Tjikope B+Zg, 4.vi.1949, *Tagetes erectus* L., Tjinjiroean (1600 m), 4.viii.1949 (3); *Borreria laevis* Griseb., Tjikopo-Zuid, 5.xii.1949 (3); *Lantana camara* L., Tjinji rolan (1000 m), 1.viii.1949 (3); *Melastoma malabathricum* L., Tjikopa B+Zg, 6.vi.1947 (3); *Lantana camara* L., Montaja, 14.ix.1950 (3); *Cyphomandra betacea* (Cav.) Sendtn., Tjinjiroean (1600 m), 2.viii.1949 (3); *Capsicum annuum* L., Tjikanere, 17.iv.1950 (3); *Capsicum frutescens* L., Tjiokopo B+zg, 25.vi.1947 (3); *Solanum* spec., Bondowoso (200 m), 1.iii.1948 (4); *Solanum* spec., Bondowoso (300 m), 2.iii.1948 (4); *Achillea* spec., Soember-Wringin, 29.ii.1948 (4); *Pluchea indica* Less., Kali Bendo, Banjoewangi, 16.v.1948 (4); *Cosmos sulphureus* Cav., Bondowoso (300 m), 16.iv.1948 (4); *Ceiba pentandra* (L.) Gaertn., Bangsring, Banjoewangi, 16.v.1948 (4); *Gigantochloa apus* Kurz., Banjoewangi, 5.ix.1948 (4); *Streblus asper* Lour., Tjepoe, 5.i.1949 (4); *Polygonum* spec., Bondowoso, 7.iii.1949 (4); *Citrus* spec., Bondowoso, 7.iii.1949 (4); *Bixa orellana* L., Ambullu, vii.1950 (4); *Stephania forsteri* A. Gray, Bondowoso, 18.x.1950 (4); *Ruellia tuberosa* L., Banjoewangi, 6.v.1948 (4); *Tectona grandis* L., Blambangan, Banjoewangi, 8.v.1948 (4); *Tectona grandis* L., Betakol, 18.v.1948 (4); *Lantana camara* L., Djember, viii.1948 (4); *Calophyllum inophyllum* L., Bondowoso, 14.viii.1950 (4); *Lagerstroemia speciosa* (L.) Pers., Malang (450), 24.xi.1951 (4); *Cereus* spec., Klanbang Bondowoso, 3.iii.1948 (4); *Euphorbia hirta* L., Banjoewangi, 11.iii.1948 (4); *Crepis* spec., Kali Bendo, 20.ii.1948 (4); *Averrhoa bilimbi* L., Banjoewangi, 21.xi.1948 (4); *Spondias*? appelmoesboom, Banjoewangi, 29.ii.1949 (4); *Gynura sarmentosa* (Bl.) DC., Rembangan, 2.x.1950 (4); *Emilia sonchifolia* (L.) DC., Malang, 2.vi.1951 (4); *Sesamum orientale* L., Banjar (50 m) 19.vii.1950, Kalshoven; *Limnocharis flava* (L.) Buch., Thung; **A** *Helianthus annuus* L., Bogor, 27.iii.1975 (5); *Antigonon leptopus* Hook & Arn., Bogor, 31.iii.1975 (5); *Borreria ocymoides* (Burm.f.) DC. + *Perileta dyeriana* (Mast.) Bremek., Bogor, 3.iv.1975 (5); Bogor, 4.iv.1975 (5); *Psidium guajava* L., Bogor, 5.iv.1975 (5); *Hyptis rhomboidea* Mart. & Gal., Bogor, 5.iv.1975; *Pseudelephantopus spicatus* (B. Juss) C.F. Baker, Bogor, 5.iv.1975 (5); *Pitcairnia hybrida* Hort., Bogor Keb. R., 6.iv.1975 (5); *Cordyline fruticosa* (L.) A. Chev., Sindanglaya (1100 m), 8.iv.1975 (5); *Dieffenbachia picta* (Lodd.) Schott, Sindanglaya (1100 m), 10.iv.1975 (5); *Turnera subulata* J.E. Smith, Bogor, 13.iv.1975 (5); *Tridax procumbens* L., Bogor, 13.iv.1975 (5); *Cassia multijuga* Rich, Bogor Keb. R., 18.iv.1975 (5); *Psidium guajava* L., Bogor, 23.iv.1975 (5); *Citrus* spec., Bogor Keb. R., 24.iv.1975 (5); *Ficus* spec., Bogor Keb. R., 2.v.1975 (5); *Psidium guajava* L., Bogor Keb. R., 11.v.1975 (5); *Cajanus Cajan* (L.) Huth, Sindanglaya (1100 m), 14.v.1975 (5); *Psidium guajava* L., Sindanglaya (1100 m), 14.v.1975 (5); *Emilia sonchifolia* (L.) DC., Sindanglaya, 2.vi.1975 (5); *Blumea balsamiflora* (L.) DC., Bogor, 3.vi.1975 (5); *Crassocephalum crepidioides* (Bendh.) S. Moore, Cigmbang-Salak, 14.vi.1975 (5); *Ixora coccinea* L., Bogor, 25.x.1975 (5); Bogor Keb. R., 26.x.1975 (5); *Ageratum houstonianum* Mill., Sindanglaya (1100 m), 27.x.1975 (5); *Tephrosia vogelii* Hook.f., Sindanglaya (1100 m), 3.ix.1975 (5); as former (5); *Mimosa pigra* L., Mimosa type, Bandung, 11.xi.1975 (5); *Meosopsis emilii* Engl., Cibodas-Lembang, 11.xi.1975 (5); *Lantana camara* L., Ciawi, 22.xi.1975 (5); *Celosia esculenta* (L.) Schott, Sindanglaya (1100 m), 31.xii.1975 (5); *Rhus succedanea* L., Bogor Keb. R., 18.ii.1976 (5); *Solanum indicum* L., Bogor Keb. R., 14.v.1976 (5); *Lantana camara* L., Sindanglaya (1100 m), 15.v.1976 (5); *Widdringtonia dracomontana* Stapf., Cibodas (1400 m), 23.v.1976 (5); *Psidium guajava* L., Bogor, 27.v.1976 (5); *Vernonia patula* (Dryand) Merr., Bogor, 30.v.1976, two samples (5); *Lawsonia inermis* L., 8.vi.1976 (5); Malang-S. Brantas, 10.vi.1976 (5); *Plantago major* L., Malang Pujon, 11.vi.1976 (5); *Marsypianthus chamaedrys* (Vahl) O.K., Malang-Pujon, 11.vi.1976 (5); *Marsypianthus chamaedrys* (Vahl) O.K., Nongkajajar, 12.vi.1976 (5); *Acalypha hispida* Burm.f., Malang, 12.vi.1976 (5); *Cuphea procumbens* Cav., Malang-Punten, 16.vi.1976 (5); *Capsicum* spec., Purwakerta, 18.vi.1976 (5); *Peperomia pellucida* (L.), H.B.K., Bandung, 19.vi.1976 (5); *Melaleuca bracteata* F. v. Muell., Cibodas, 27.vi.1976 (5); *Cyphomandra betacea* (Cav.) Sendtn, Sindanglaya (1100 m), 28.vi.1976 (5); *Wadelia* spec., Bogor, 29.vi.1976 (5); *Hibiscus rosa-sinensis* L., 8.vii.1976 (5); *Vaccinium varingiaefolium* (Bl.) Miq., Tangkuban Prahu (1800 m), 19.vii.1976 (5); *Dahlia rosea* Cav., Pangalengan (1500 m), 15.viii.1976 (5); *Helichrysum bracteatum* (Vent.) Andr., Pangalengan (1500 m), 15.viii.1976 (5); *Mimosa pigra* L., Cigudeg, 20.viii.1976 (5); *Salix japonica* Thb., Rangkasbitung, 20.viii.1976 (5); *Ambrosia artemisiifolia* L., Pangalengan (1300 m), 17.ix.1976 (5); *Memecylon myrcidoides* Bl., Bogor Keb. R., 3.x.1976 (5); *Melaleuca leucadendra* (L.) L., Tjibodas, 17.x.1976 (5); *Lafoensia punicaefolia* DC., Bogor Keb. R., 21.xi.1976 (5); *Dichrocephala bicolor* (Both) Schlechtend., Malang (1400 m), 10.xii.1976 (5); *Gnaphalium indicum* L., Malang, 10.xii.1976 (5); *Solanum superficiens* Adelb., Bogor Keb. R., 17.xii.1976 (5); *Petrea volubilis* L., Bogor Keb. R., 12.xii.1976 (5); *Histopteris incisa* J.Sm., Dieng (2000 m), 31.xii.1976 (5); *Vaccinium* spec., Dieng, 31.xii.1976 (5); *Melastoma* spec., Dieng (2000 m), 31.xii.1976

(5); *Althaea rosea* (L.) Cav., Dieng (2000 m), 1.i.1977 (5); *Solanum superficiens* Adelb., Bogor Keb. R., 27.i.1977 (5); *Gerbera jamesonii* Bolus, Bogor, 8.ii.1977 (5); *Jacaranda filicifolia* (Anders) D. Con., Bogor, 3.vii.1977 (5); *Lagerstroemia flos-reginae* Retz., Bogor, 8.vii.1977 (5); *Calotropis gigantea* (Willd.) Dryand, Pelabuan Ratu, 31.vii.1977 (5); *Musa* spec., Sindanglaya, 10.viii.1977 (5); *Foeniculum vulgare* Mill., Sindanglaya, 6.ix.1977 (5); *Glochidion* spec., Sindanglaya (1100 m), 31.x.1977 (5); *Clerodendron serratum* (L.) Moon, 18.xi.1977 (5); **B**. *Hyptis capitata* Jacq., Bogor, 28.iii.1975 (5); *Tithonia diversifolia* (Hemsley) A. Gray, Bogor, 28.iii.1975 (5); *Sida rhombifolia* L., Bogor, 29.iii.1975 (5); *Pilea microphylla* (L.) Liebm., Bogor, 3.iv.1975 (5); *Solanum torvum* Swartz, Bogor, 5.iv.1975 (5); *Ocimum gratissimum* L., Bogor, 5.iv.1975 (5); *Clidemia hirta* (L.) D. Don, Bogor, 5.iv.1975 (5); *Pluchea indica* (L.) Less., Bogor, 6.iv.1975 (5); *Solanum torvum* Swartz, Bogor, 6.iv.1975 (5); *Hyptis capitata* Jacq., Bogor, 11.iv.1975 (5); *Ludwigia peruviana* (L.) Hara, Bogor, 11.iv.1975 (5); *Amorphophallus titanum* Becc., Bogor Keb. R., 1.v.1975 (5); *Euphorbia hirta* L., Bogor Keb. R., 3.v.1975 (5); *Piper hispidum* Schwartz, Bogor, 4.v.1975 (5); *Acalypha capillipes* F. v. Muell., Garut, 1.vi.1975 (5); *Emilia sonchifolia* (L.) DC., Sindanglaya (1100 m), 31.xii.1975 (5); *Psidium guajava* L., Bogor Keb. R., 18.ii.1976 (5); Semplak, 9.v.1976 (5); *Capsicum annuum* L., Semplak, 9.v.1976 (5); *Cyphomandra betacea* (Cav.) Sendtn, Sindanglaya (1100 m), 28.vi.1976 (5); *Ocimum gratissimum* L., Bogor, 2.vii.1976 (5); *Melastoma affine* D. Don, Bogor, 5.ix.1976; *Hibiscus rosa-sinensis* L., Sindangdlaya, 18.xii.1976 (5); *Ageratum conyzoides* L., Bogor, 24.xii.1976 (5); *Psidium guajava* L., Bogor, 27.xii.1976 (5); *Pothomorphe peltata* (L.) Miq., Bogor, 6.viii.1977 (5); *Ocimum basilicum* L., Bogor, 10.ix.1977 and 18.xi.1977 (5).

Biology.— The aphids live on leaves, stems, flower buds and fruits. Leaves and fruits sometimes curl together. Aphids may be hidden between hairs. Alatae are frequently present in the samples.

Etymology.— "*gossypii*", of *Gossypium*, a genus of Malvaceae.

Aphis nerii Boyer de Fonscolombe, 1841
(figs 39-48)

Aphis nerii Boyer de Fonscolombe, 1841: 179.

Material.— Specimens all collected in **Indonesia**, **Java**, the collectors are indicated by numbers between parentheses: P. van der Goot, in WU, Wageningen (1); R.W. v.d. Goot and F.W Rappard, in BMNH, London (2); and D. Noordam, in RMNH, Leiden (3). *Asclepias* spec., Pasoeroean, 9.viii.1913 (1); *Asclepias curassavica* L., Punten Malang (1250 m), 2.xii.1951 (2); *Emilia sonchifolia* (L.) DC., Malang (450 m), 1.vi.1951 (2); *Emilia sonchifolia* (L.) DC., Malang, 1.v.1951 (2); *Asclepias curassavica* L., Sindanglaya (1100 m), 12.v.1975 (3); *Calotropis gigantea* (Willd.) Dryand, Pelabuan Ratu, 31.vii.1977 (3).

Biology.— The aphids live on the upper and lower sides of leaves and on flower stalks. Alatae occur from June to September (van der Goot, 1917: 103), and were collected by D. Noordam 31.vii.1977.

Etymology.— "*nerii*", of *Nerium*, a genus of the Apocynaceae.

Aphis punicae Passerini, 1863
(figs 49-55)

Aphis punicae Passerini, 1863: 161.

Material.— Specimens all collected in **Indonesia**, **Java**, the collectors are indicated by numbers between parentheses: F.W. Rappard, in BMNH, London (1); and D. Noordam, in RMNH, Leiden (2). granaatappel, Malang, III-1951 (1); *Punica granatum* L., Sindanglaya (1100 m), 20.i.1977 and 30.viii.1977 (2).

Biology.— The aphids live on developing shoots or fully-grown leaves. An alata was collected 30.viii.1977.

Etymology.— "*punicae*", of *Punica*, the only genus of the Punicaceae.

Aphis spiraecola Patch, 1914
(figs 56-61)

Aphis spiraecola Patch, 1914: 270.
Aphis citricola auctt., not van der Goot, 1912; Eastop & Blackman, 1988: 157 (synonymy).
Aphis malvoides van der Goot, 1917: 96; Eastop & Hille Ris Lambers, 1976: 49 (synonymy).
Aphis nigricauda van der Goot, 1917: 106; Eastop & Hille Ris Lambers, 1976: 70 (synonymy).

Material.— Specimens all collected in **Indonesia**, **Java**, the collectors are indicated by numbers between parentheses: P. van der Goot, in WU, Wageningen (1); J. Sijpkens (2) and F.W. Rappard (3), both in BMNH, London; and D. Noordam, in RMNH, Leiden (4). *Senecio* spec., Oemboelan, 2.xii.1912 (1); *Senecio* spec., Poespo, 5.v.1913 (1); *Gardenia augusta* (L.) Merr., Tjisaroean (1600) 4.viii.1949 (2); *Cinchona succirubra* Pav. ex Klotzsch, Tjinjiroean (1600 m), 3.viii.1949 (2); *Cinchona bergeniana* A. Braun ex Mart., Tjinjiroean (1600 m), 20.viii.1949 (2); *Bidens pilosa* L., Tjikopo-Zuid, 5.xii.1949 (2); *Eupatorium odoratum* L., Holimoen emplacement, 16.iii.1950 (2); *Eupatorium pallescens* DC., Siantar (300-600 m), 1.xi.1950 (2); *Lannea grandis* Engl., Bangszing 2.v.1948 (3); Zuid Banjoewangi, 29.vii.1949 (3); *Emilia sonchifolia* (L.) DC., Malang (450 m), 1.vi.1951 (3); *Emilia sonchifolia* (L.) DC., Malang, 1.v.1951, R.W. v.d. Goot; *Podocarpus neriifolia* Don., Bogor, VI-1968, Tjoa Tjien Mo; *Eupatorium odoratum* L., Bogor, 28.iii.1975 (4); *Ageratum conyzoides* L., Bogor, 3.iv.1975 (4); *Securinega virosa* (Willd.) Pax & Hoffm., Bogor, 11.iv.1975 (4); *Bidens* spec., Bogor, 13.iv.1975 (4); *Erigeron sumatrensis* Retz., Bogor, 23.iv.1975 (4); *Apium graveolens* L., Sindanglaya (1100 m), 14.v.1975 and 19.v.1975 (4); *Crassocephalum crepidioides* (Benth.) S. Moore, Salak, 14.vi.1975 (4); *Apium graveolens* L., Sindanglaya (1100 m), 14.x.1975 (4); *Erigeron sumatrensis* Retz., Sindanglaya (1100 m), 3.xi.1975 (4); *Salix japonica* Thb., Cibodas-Lembang, 11.xi.1975 (4); *Erigeron sumatrensis* Retz., Bandung, 12.xi.1975 (4); *Cestrum aurantiacum* Lindl., Pangelengan, 13.xi.1975 (4); *Polyscias Balfouriana* Bailey, Bogor Keb. R., 5.xii.1975 (4); *Emilia sonchifolia* (L.) DC., Sindanglaya (1100 m), 31.xii.1975 (4); *Erigeron sumatrensis* Retz., Sindanglaya (1100 m), 10.v.1976 (4); *Eupatorium odoratum* L., Bogor, 14.v.1976 (4); *Bidens* spec., Sindanglaya (1100 m), 15.v.1976 (4); *Lannea coromandelica* (Houtt.) Merr., Bogor, 16.v.1976 (4); shrub, Bogor, 30.v.1976 (4); *Blumea lacera* (Burm.f.) DC., Kebumen, 6.viii.1976 (4); *Melaleuca leucadendra* (L.) L., Pengalengan, 15.viii.1976 (4); *Dendrophthoë pentandra* (L.) Miq., Bandung-Cisarua (1300 m), 16.ix.1976 (4); *Ambrosia artemisiifolia* L., Pengalengan (1300 m), 17.ix.1976 (4); *Callistephus chinensis* (L.) Ness, Sindanglaya (1100 m), 4.xi.1976 (4); *Eupatorium odoratum* L., Bogor, Keb. R., 21.xi.1976 (4); *Adina* spec., Bogor Keb. R., 5.xii.1976 (4); *Randia dasycarpa* (Kurz.) Bakh., Bogor Keb. R., 5.xii.1976 (4); *Cestrum auriantiacum* Lindl., Lembang, 10.i.1977 (4); *Bridelia monoica* (Lour.) Merr., Bogor Keb. R., 27.i.1977 (4); *Erechtites valerianifolia* (Wolf) DC., Sindanglaya (1100 m), 29.i.1977 (4); *Foeniculum vulgare* Mill., Sindanglaya, 6.ix.1977 (4); *Timonius amboinicus* Boerl., Bogor Keb. R., 23.x.1977 (4); *Timonius compressicaulis* Boerl., Bogor Keb. R., 23.x.1977 (4); *Bidens pilosa* L., Sindanglaya (1100 m), 15.xi.1977 (4); *Apium graveolens* L., Sindanglaya (1100 m), 28.xi.1977 (4); *Annona muricata* L., Cipanas-Garut, 5.ii.1978 (4); *Viburnum photinioides* Tashiro, Bogor Keb. R., 5.iii.1978 (4).

Biology.— The aphids live on leaves, stems of top leaves, lower sides of curled inner leaves, stems of flowers, young and old flowers, between fruits and on stems of fruits.

Etymology.— "*spiraecola*", living on *Spiraea*.

Toxoptera aurantii (Boyer de Fonscolombe, 1841) (figs 185-197)

Aphis aurantii Boyer de Fonscolombe, 1841: 178.
Toxoptera aphoides van der Goot, 1917: 73.
Toxoptera aurantii van der Goot, 1917: 76.
Toxoptera djarani van der Goot, 1917: 84.

Material.— Specimens all collected in **Indonesia**, **Java**, the collectors are indicated by numbers between parentheses: P. van der Goot (1), C. Franssen (2), H. Muller (3), W.C. van Heurn (4) in WU, Wageningen or mentioned in van der Goot (1917); J. Sijpkens (5), Kalshoven (6), Prof. P. Buchner (7), Tjoa (8), F.W. Rappard (9), in BMNH, London; and D. Noordam, in RMNH, Leiden (10). *Annona muricata* L. (1); *A. squamosa* L. (1); *Antigonon leptopus* Hook et Arn. (1); *Apocynea* spec. (1); *Artocarpus integrifolius* L.f. (1); *Camellia thea* Link. (1); *Citrus aurantium* L. (1); *Coffea arabica* L. (1); *Erythrina ovalifolia* Roxb. (1); *Eugenia* spec. (1); *Evodia aromatica* Bl. (1); *Euonymus japonicus* Thunb. (1); *Hibiscus tiliaceus* L. (1); *Mangifera* spec. (1); *Pyrus malus* L. (1); *Spathodea* spec. (1); *Theobroma cacao* L. (1); *Trema amboinensis* Bl. (1); *Kikadoe* spec. (1); *Roemput andoera* (1); *Schima wallichii* (DC.) Korth., Sindanglaya, 16.iii.1932 (2); *Camellia sinensis* (L.) O.K., Tapos (800 m), VIII-1932 (2); *Coffea* spec., Malang, VII-1932 (3); *Camellia sinensis* (L.) O.K., Poentjak, 3.iv.1932 (4); *Oncidium sphacelatum* Lindl., Bandoeng, 31.viii.1950 (5); *Schima noronhae* (Rein W. ex Bl.), Poetjak (1500 m), 5.x.1950 (6); *Loranthus* spec., Tjibodas, 1.vi-30.vii.1956 (7); *Callistemon lanceolatum* (Sm.) DC., Tjibodas, 1-VI - 30.vii.1956 (7); tea, W. Java, 28.i.1937 (8); *Bauhinia* spec., Bondowoso, 3.viii.1948 (9); *Lannea grandis* Engl., Bangsring, 18.vii.1948 (9); *Anona* spec., Bondowoso, 25.viii.1949 (9); *Pittosporum monticolum* Miq., Soember (300 m), 8.vii.1950 (9); cacao, Banjoewangi, VIII-1950 (9); *Scurrula fusca* G. Don., Rembangan, 8.x.1950 (9); *Lannea grandis* Engl. (*Odina wodier* Roxb.), Banjoewangi, 25.i.1950 (9); *Theobroma* spec., Lowok waroe, Malang (450 m), 25.v.1951 (9); *Lagerstroemia floribunda* Jack, Bogor, 29.iii.1975 (10); *Murraya paniculata* (L.) Jack, Bogor, 31.iii.1975 (10); *Carmona retusa* (Vahl) Mas., Bogor Keb. R., 1.iv.1975 (10); *Saraca indica* L., Bogor Keb. R., 6.iv.1975 (10); *Acalypha hispida* Burm.f., Sindanglaya (1100 m), 8.iv.1975 (10); *Calliandra guildingii* Benth., Bogor Keb. R., 8.iv.1975 (10); *Albizia chinensis* (Osb.) Merr., Bogor Keb. R., 12.v.1975 (10); *Citrus* spec., Bogor, 13.iv.1975 (10); *Petrea volubilis* L., Bogor Keb. R., 18.iv.1975 (10); *Euodia quercifolia* Ridley, Bogor, 20.iv.1975 (10); *Citrus* spec., Bogor Keb. R., 24.iv.1975 (10); *Murraya paniculata* (L.) Jack, Bogor, 24.iv.1975 (10); *Citrus* spec., Bogor Keb. R., 24.iv.1975 (10); *Sterculia laevis* Wall., Bogor Keb. R., 24.iv.1975 (10); *Carmona retusa* (Vahl) Masamune, Bogor Keb. R., 8.v.1975 (10); *Artocarpus heterophylla* Lmk., Bogor, 10.v.1975 (10); *Litsea noronhae* Bl., Sindanglaya (1100 m), 14.v.1975 (10); *Coffea* spec., Sindanglaya (1100 m), 15.v.1975 (10); *Melaleuca leucadendra* (L.) L., Sindanglaya (1100 m), 19.v.1975 (10); *Maesopsis eminii* Engl., Salak, 25.v.1975 (10); *Coffea* spec., Sindanglaya (1100 m), 2.vi.1975 (10); *Theobroma cacao* L., Bogor Keb. R., 11.vi.1975 (10); *Colletia cruciata* Gill & Hook, Cibodas (1400 m), 6.vii.1975 (10); *Schima wallichii* (CD.) Korth., Cibodas (1600 m), 27.vii.1975 (10); *Salix japonica* Thb., Jokjakarta, 7.viii.1975 (10); *Psidium guajava* L., Bandung, 27.ix.1975 (10); plant ?, Bandung, 27.ix.1975 (10); *Maesopsis eminii* Engl., Sindanglaya (1100 m), 14.x.1975 (10); *Saintpaulia ionantha* Hook., Bogor, 27.x.1975 (10); *Polyalthia* spec., Bogor, 28.x.1975 (10); *Macrosolen* spec., Bogor, 28.x.1975 (10); *Salix japonica* Thb., Cibodas-Lembang, 11.xi.1975 (10); *Magnolia grandiflora* L., Cibodas (1400 m), 15.ii.1976 (10); *Aphloia theiformis* (Willd.) Benn., Bogor, 20.ii.1976 (10); *Ficus tinctoria* L.f., Bogor Keb. R., 7.iii.1976 (10); *Oroxylon* spec. Bogor Keb. R., 7.iii.1976 (10); *Agathis dammara* (Lamb.) L.C. Rich, Bogor, 9.iii.1976 (10); *Eleusine indica* (L.) Gaertn., Bogor, 9.iii.1976 (10); *Clausena anisata* Hook.f., Bogor. 15.iii.1976 (10); plant ?, Bogor, 15.iii.1976 (10); *Zanthoxylum nitidum* (Roxb.) DC., Bogor, 15.iii.1976 (10); *Aporosa frutescens* Bl., Bogor Keb. R., 28.iii.1976 (10); *Ficus ampelas* Burm.f., Bogor, 28.iii.1976 (10); *Malus sylvestris* Mill., Sindanglaya (1100 m), 3.v.1976 (10; *Thea sinensis* (L.) O.K., Sindanglaya (1100 m), 6.v.1976 (10); *Lagerstroemia indica* L., Bogor Keb. R., 14.v.1976 (10); *Cestrum parqui* L'Hérit., Cibodas (1400 m), 23.v.1976 (10); *Strongylodon macrobotrys* A. Gray, Malang, 11.vi.1976 (10); plant ?, Bogor Keb. R., 20.vi.1976 (10); *Clausena anisata* Hook.f., Bogor, 2.vii.1976 (10); *Streblus asper* Lour., Bogor Keb. R., 2.vii.1976 (10); *Wigandia caracasana* H.B. et K., Cibodas (1400 m), 11.vii.1976 (10); *Annona muricata* L., Ciandjur, 19.vii.1976 (10); plant ?, Wonosobo (1750 m), 21.vii.1976 (10); *Camellia sinensis* (L.) O.K., Dieng (1850 m), 21.vii.1976 (10); *Agathis dammara* (Lamb.) L.C. Rich., Bogor Keb. R., 8.ix.1976 (10); *Scurrula philippensis* (Cham. & Schlecht.) G. Don, Cisarua-Bandung

(1300 m), 16.ix.1976 (10); *Coffea* spec., Pangalengan (1300 m), 17.ix.1976 (10); *Cotylelobium malayensis* v. Sl., Bogor Keb. R., 25.ix.1976 (10); *Antidesma montanum* Bl., Bogor Keb. R., 25.ix.1976 (10); *Litsea amara* Bl., Bogor Keb. R., 29.ix.1976 (10); *Landolphia gentilii* De Wilden., Bogor Keb. R., 3.x.1976 (10); *Pitcairnia hybrida* Hort., Bogor Keb. R., 21.xi.1976 (10); *Cissus sicyoides* L., Bogor Keb. R., 23.xii.1976 (10); *Schima wallichii* (DC.) Korth., Dieng (2000 m), 3.i.1977 (10); *Syzygium aqueum* (Burm.f.) Alst., Sindanglaya (1100 m), 20.i.1977 (10); *Annona muricata* L., Sindanglaya (1100 m), 20.i.1977 (10); *Coffea* spec., Sindanglaya (1100 m), 24.i.1977 (10); *Ceiba pentandra* (L.) Gaertn., Bogor, 24.i.1977 (10); *Lagerstroemia flos-reginae* Retz., Bogor, 8.vii.1977 (10); *Annona muricata* L., Jakarta, 10.vii.1977 (10); *Macrosolen cochinchinensis* (Lour.) Tiegh., Bogor, 18.vii.1977 (10); *Hibiscus tiliaceus* L., Lembang, 1.viii.1977 (10); *Annona squamosa* L., Bandung, 3.viii.1977 (10); *Averrhoa cerambola* L., Bandung, 3.viii.1977 (10); *Punica granatum* L., Sindanglaya, 30.viii.1977 (10); *Stelechocarpus burahol* (Bl.) Hook.f & Th., Sindanglaya, 6.ix.1977 (10); *Tetracera indica* (Houtt.) Merr., Bogor, 8.ix.1977 (10); *Harpullia arborea* (Blanco) Radlk., Bogor Keb. R., 12.ix.1977 (10); *Styrax benzoin* Dryand., Bogor Keb. R., 12.ix.1977 (10); plant ?, Bogor Keb. R., 23.x.1977 (10); *Annona muricata* L., Sindanglaya (1100 m), 2.xi.1977 (10); *Litsea amara* Bl., Bogor Keb. R., 12.xi.1977 (10); *Litsea amara* Bl., Sindanglaya (1100 m), 15.xi.1977 (10); *Averrhoa carambola* L., Bogor, 17.xi.1977 (10); *Eurya japonica* Thunb., Bogor Keb. R., 18.xi.1977 (10); plant ?, Bogor Keb. R., 18.xi.1977 (10); *Flacourtia inermis* Roxb., Sindanglaya (1100 m), 28.xi.1977 (10); *Syzygium aqueum* (Burm.f.) Alst., Sindanglaya (1100 m), 1.xii.1977 (10); *Scolopia spinosa* (Roxb.) Warb., Lawang (500 m), 27.xii.1977 (10); *Annona muricata* L., Cipanas-Garut (800 m), 5.ii.1978 (10); *Syzygium aromaticum* (L.) Merr. et Perry, Garut, 5.ii.1978 (10); *Caesalpina coriaria* Willd., Bogor Keb. R., 10.ii.1978 (10); *Dendrophthoe pentandra* (L.) Miq., Cibodas (1400 m), 26.ii.1978 (10); *Myrsine avenis* (Bl.) DC., Cibodas (1400 m), 26.ii.1978 (10); *Aeschynanthus radicans* Jack., Cibodas (1400 m), 27.ii.1978 (10).

Biology.— The aphids live on the lower side of leaves, on young stems of leaves, flowers and fruits, on calyx and corolla, even on the inner side of the calyx.

Etymology.— "*aurantii*", of aurantium, orange, *Citrus auranticum.*

Toxoptera citricida (Kirkaldy, 1907)
(figs 198-211)

Myzus citricidus Kirkaldy, 1907: 100.
Aphis nigricans van der Goot, 1917: 103.
Aphis tavaresi; van der Goot, 1917: 108.

Material.— Specimens all collected in **Indonesia**, **Java**, the collectors are indicated by numbers between parentheses: P. van der Goot (1), in WU, Wageningen or mentioned in van der Goot (1917); H. Muller, in WU, Wageningen (2); F.W. Rappard, in BMNH, London (3); Sijpkens, in BMNH, London (4); and D. Noordam, in RMNH, Leiden (5). *Cudrania javanensis* Trecul., Salatiga, viii.1913 (1); *Citrus* spec., Pasoeroean, vi.1913, Nongkodadjar, Mt. Tenger (1200 m), Batoe, Mt. Kawi (1000 m), Salatiga (570 m), Genting-Selokaton (1200 m), Bandoeng (710 m) (1); *Citrus* spec., Malang, vii.1932 (2); *Citrus* spec., Bondowoso (300 m), 2.iii.1948 (3); navel *Citrus* spec., Tjikanere, 17.iv.1950 (4); *Citrus* spec., Sindanglaya (1100 m), 24.iv.1975 (5); *Citrus aurantium* L. Bogor Keb. R., 14.v.1976 (5); *Pyrus communis* L., Cibodas, 17.x.1976 (5); *Citrus* spec., Sindanglaya (1100 m), 1.xi.1977 (5).

Biology.— The aphids live on the lower side of young leaves, and on young stems.

Etymology.— "*citricida*", killing *Citrus*.

Toxoptera odinae (van der Goot, 1917)
(figs 212-225)

Longiunguis odinae van der Goot, 1917: 113.
Longiunguis spathodeae van der Goot, 1918: 73.

Material.— Specimens all collected in **Indonesia**, **Java**, the collectors are indicated by numbers between parentheses: P. van der Goot, (1), in WU, Wageningen or mentioned in van der Goot (1917 and 1918); C. Franssen, in WU, Wageningen (2); F.W. Rappard, in BMNH, London (3); and D. Noordam, in RMNH, Leiden (4). *Lannea coromandelica* (Houtt.) Merr. (*Odina wodier* Roxb.), *Senecio tenuifolius* Sieber ex DC., *Gardenia florida* L., *Cinchona ledgerana* Moens ex Trim., *Viburnum coriaceum* Blume, *Dysoxylum amooroides* Miq., *Panax* spec., *Viburnum lutescens* Bl. (1); *Eupatorium* spec. (2); *Senecio tenuifolius* Sieber ex DC., Prigen-Ardjuno (700 m), 21.iii.1913 (1); *Lannea grandis* Engl. (*Odina wodier* Roxb.), Banjoewangi, 25.i.1950 (3); *Stephania forteri* A. Gray, Banjoewangi, 24.v.1949 (3); *Tagetes erectus* L., Banjoewangi, 27.vii.1948 (3); mangoboom, Banjoewangi, 3.xii.1948 (3); *Kaju djaran,* Rayap (500), 16.iv.1950 (3); *Mussaenda* spec., Gondang (600 m), 24.ix.1950 (3); *Zizyphus* spec., Z. Djember (50 m), 1.ix.1950 (3); *Cinchona succisubra* Pav. ex Klotzsch, Tjinjiroean, 3.viii.1949 Sijpkens; *Cinchona succirubra* Pav. ex Klotzsch, Tjinjiroean, 17.iv.1950 Sijpkens; plant ?, Tjibodas B23, 1-VI - 30.vii.1956 Prof. P. Buchner; *Mussaenda philippica* A. Rich., Bogor, 27.iii.1975 (4); *Carmona retusa* (Vahl) Mas., Bogor Keb. R., 1.iv.1975 (4); *Mussaenda philippica* A. Rich., Bogor, 18.iv.1975 (4); *Piper aduncum* L., Salak, 14.vi.1975 (4); *Maesopsis eminii* Engl., Sindanglaya (1100 m), 14.x.1975 (4); *Stephania japonica* (Thunb.) Miers, Bogor Keb. R., 31.i.1976 (4); *Rhus succedanea* L., Bogor Keb. R., 18.ii.1976 (4); *Viburnum lutescens* Bl., Bogor Keb. R., 14.iii.1976 (4); *Zanthoxylum nitidum* (Roxb.) DC., Bogor, 15.iii.1976 (4); *Hibiscus rosa-sinensis* L., Cibodas (1400 m), 27.vi.1976, in life sample (1) reddish brown, sample (2) black (4); *Mussaenda frondosa* L., Cibodas (1400 m), 27.vi.1976 (4); *Zanthoxylum nitidum* (Roxb.) DC., Bogor, 2.vii.1976 (4); *Toddalia asiatica* (L.) Lamk, Pacet-Arjuno, 25.vii.1976 (4); *Pitcairnia hybrida* Hort., Bogor Keb. R., 21.xi.1976 (4); *Semecarpus* spec., Bogor Keb. R., 24.i.1977 (4); *Viburnum photinioides* Tashiro, 4.ii.1977 (4); *Mussaenda philippica* A. Rich, Cibodas, 8.iv.1977 (4); *Pittosporum ferrugineum* W. Ait, Bandung, 3.iii.1978 (4); *Viburnum photinioides* Tashiro, Bogor Keb. R., 5.iii.1978 (4).

Biology.— The aphids live on the lower side of the leaf near the main vein, on flower stalks, on the stem at the nodes, between flower buds and on young stems.

Etymology— "*odinae*", of *Odina*, a tree, (= *Lannea)*, grown on Java.

Brachysiphoniella montana (van der Goot, 1917)
(figs 62-76)

Semiaphis montana van der Goot, 1917: 119.

Material.— Specimens all collected in **Indonesia**, **Java**: P. van der Goot, 1917: 119; grass, Poespoh (Tenger Mt. 700 m), II-1913; F.W. Rappard in BMNH, London: *Panicum paludosum* Hochst ex Steud., Kedoeng N. Kawi (1200 m), 28.xi.1951; and D. Noordam, in RMNH, Leiden; *Leersia hexandra* Swartz, Bogor Keb. R., 30.iii.1975; *Leersia hexandra* Swartz, Sindanglaya (1100 m), 1.x.1975; *Leersia hexandra* Swartz, Bogor Keb. R., 3.x.1975; *Leersia hexandra* Swartz, Malang-Pujon, 11.vi.1976; *Leersia hexandra* Swartz, 8.x.1976; *Leersia hexandra* Swartz, Bogor Keb. R., 25.xii.1976.

Biology.— The aphids live on the upper side, and sometimes also on the lower side of leaves.

Etymology— "*montana*", pertaining to mountains.

Hyalopterus amygdali (E. Blanchard, 1840)
(figs 77-84)

Aphis amygdali E. Blanchard, 1840: 206.
Hyalopterus pruni; van der Goot, 1917: 125.

Material.— Specimens all collected in **Indonesia**, **Java**: P. van der Goot, (1), see van der Goot 1917, 126; F.W. Rappard, in BMNH, London (2); and D. Noordam, in RMNH, Leiden (3). *Phragmites karka* Trin.

ex Steud., Limburg, Malang, (400 m), Ranoe Regoeloe - Mt. Tenger (2100 m), Lebaksarie – Mt. Kawi (1200 m) (1); *Phragmites karka* Trin. ex Steud., Idjen plateau, Tjeding 25.vi.1948 (2); *Arundo donax* L., Bogor Keb. R., 12.xi.1976 (3); *Arundo donax* L., Bogor Keb. R., 4.ii.1977 (3); *Phragmites karka* Trin. ex Steud., Cibodas (1600 m), 29.v.1977 (3).

Biology.— The aphids live on the upper side of leaves.
Etymology.— "*amygdali*", of *Amygdalus* (*Prunus*).

Hysteroneura setariae (Thomas, 1878)
(figs 85-96)

Siphorophora setariae Thomas, 1878: 5.

Material.— Specimens all collected in **Indonesia**, **Java** by D. Noordam, in RMNH, Leiden. *Paspalum commersonii* Lamk, Bogor Keb. R., 30.iii.1975; *Setaria plicata* (Lamk T. Cooke), Bogor Keb. R., 30.iii.1975; *Cyperus rotundus* L., Bogor Keb. R., 18.iv.1975; *Sporobolus berteroanus* Trin., Sindanglaya (1100 m), 23.iv.1975; *Paspalum conjugatum* Berg., Sindanglaya (1100 m), 24.iv.1975; *Setaria geniculatum* (Lam.) Beauv., Sindanglaya (1100 m), 24.iv.1975; *Eragrostis chariis* (Schult.) Hitchc., Bogor Keb. R., 30.iv.1975; *Digitaria radiosa* Miq., Bogor Keb. R., 3.v.1975; *Botriochloa glabra* (Roxb.) A. Camus, Bogor Keb. R., 3.v.1975; *Eragrostis unioloides* (Retz.) Nees, Bogor Keb. R., 11.v.1975; grass, Bogor Keb. R., 11.v.1975; *Cyperus Kyllingia* Endl., Bogor Keb. R., 15.ix.1975; *Eleusine indica* (L.) Gaertn., Sindanglaya (1100 m), 30.x.1975; *Setaria geniculata* (Lam) Beauv., Sindanglaya (1100 m), 30.x.1975; *Rhynchelytrum repens* (Willd.) C.E. Hubb., Cibodas-Lembang, 11.xi.1975; plant ?, Sindanglaya (1100 m), 2.iii.1976; *Cyperus compressus* L., Bogor, 9.iii.1976; *Eleusine indica* (L.) Gaertn., Bogor, 9.iii.1976; *Bothriochloa glabra* (Roxb.) A. Camus, Bogor, 20.iii.1976; *Setaria plicata* (Lamk) T. Cooke, Jakarta, 25.iii.1976; *Cyperus kyllingia* Endl., Sindanglaya, 10.v.1976; *Brachiaria paspaloides* (Presl) C.E. Hubb., Bogor, 30.v.1976; *Themeda arguens* (L.) Hack., Purwodadi, 13.vi.1976; grass, Malang, 14.vi.1976; *Eulalia amaura* (Buese) Ohwi, Malang, 16.vi.1976; *Digitaria microbachne* (Presl) Henr., Bogor Keb. R., 19.ix.1976; *Dyckia breviflora* Hort., Tjibodas (1400 m), 17.x.1976; *Ischaemum timorense* Kunth, Bogor Keb. R., 14.xi.1976; *Thalia geniculata* L., Bogor Keb. R., 19.xii.1976; *Gomphrena celosioides* Mart., Bogor Keb. R., 23.xii.1976; *Botriochloa glabra* (Roxb.) A. Camus, Bogor, 26.xii.1976; *Pennisetum purpureum* Schumach., Bogor Keb. R., 18.iii.1977; *Panicum repens* L., Sindanglaya (1100 m), 7.vii.1977; *Setaria geniculata* (Lam.) Beauv., Sindanglaya, 13.ix.1977; *Setaria geniculata* (Lam.) Beauv., Sindanglaya, 7.xi.1977; *Eleusine indica* (L.) Gaertn., Sindanglaya (1100 m), 8.xi.1977; *Paspalum conjugatum* Berg., Sindanglaya (1100 m), 9.xi.1977.

Biology.— The aphids live on the upper side of the leaves, on internodes, on the outside of inflorescences, on flowers and flower stalks, and sometimes on the border the yellowing and green parts of leaves.

Etymology.— "*setariae*", of *Setaria*, a genus of the Gramineae.

Key based on apterae of *Melanaphis* van der Goot

1. Cauda with 5 hairs. Processus terminalis 380-480 µ long, 4.2-5.9 times as long as the base of the segment, and 3.0-4.3 times as long as the siphunculi. Longest hair dorsally on head between the eyes 20-32 µ. Stylets 180-225 µ long. In life black with wax patches. On *Bambusa glaucescens*, *Arundinaria japonica* ..... ***Melanaphis bambusae*** (Fullaway)
- Cauda with 10-14 hairs. Processus terminalis 280-300 µ long, 3.3-4.0 times as long as the base of the segment, and 2.1-2.4 times as long as the siphunculi. Longest hair dorsally on head between the eyes 12-15 µ. Stylets 280-295 µ long. In life yellowish

somewhat dusty with wax. On *Saccharum officinarum* ..... ***Melanaphis sacchari*** (Zehntner)

Key based on alatae of *Melanaphis* van der Goot

1. Cauda with 5 hairs. Antennal segment IV with 10-13 and antennal segment V with 2-9 rhinaria. Processus terminalis 5.0-5.3 times as long as the base of the segment, and 3.0-3.8 times as long as siphunculi. Length of the body 1.0-1.1 times as long as the antennae. The abdomen dorsally without transversal bands, but marginal patches are present ..... ***Melanaphis bambusae*** (Fullaway)
- Cauda with 9-10 hairs. Antennal IV with 0, antennal V with 1 rhinaria. Processus terminalis 3.4-4.4 times as long as the base of the segment, and 2.5-2.8 times as long as the siphunculi. Length of the body 1.3-1.5 times as long as the antennae. The abdomen dorsally with brown transversal bands, and also marginal patches ... ***Melanaphis sacchari*** (Zehntner)

Melanaphis bambusae (Fullaway, 1910)
(figs 97-107)

Aphis bambusae Fullaway, (1909) 1910: 35.

Material.— Specimens all collected in **Indonesia**, **Java**, the collectors are indicated by numbers between parentheses: P. van der Goot, in WU, Wageningen (1); Prof. P. Buchner, in BMNH, London (2); and D. Noordam, in RMNH, Leiden (3). *Bambusa glaucescens* (Lamk), Salatiga (± 570 m), 4.viii.1913 (1); Mt. Telemojo (1400 m) (1) in van der Goot, 1917: 64; bamboo, Tjibodas B20, 30.vii.1956 (2); *Bambusa glaucescens* (Lamk) Munro, Cibodas-Lembang, 11.xi.1975 (3); *Bambusa glaucescens* (Lamk) Munro, Sindanglaya (1100 m), 2.iii.1976 (3); *Arundinaria japonica* Sieb. & Zucc., Bogor Keb. R., 12.ix.1976 (3); *Bambusa glaucescens* (Lamk) Munro, Bogor, 15.v.1977 (3); *Bambusa glaucescens* (Lamk) Munro, Cipanas (1100 m), 14.xi.1977 (3).

Biology.— The aphids live on the lower side of leaves or on inwardly rolled leaves.

Etymology.— "*bambusae*", of *Bambusa*, a genus of the Gramineae.

Melanaphis sacchari (Zehntner, 1897)
(figs 108-118)

Aphis sacchari Zehntner, 1897: 27.
Longiunguis van der Goot, 1917: 116.

Material.— Specimens all collected in **Indonesia, Java**, the collectors are indicated by numbers between parentheses: P. van der Goot, in WU, Wageningen (1); F.W. Rappard, in BMNH, London (2); and D. Noordam, in RMNH, Leiden (3). *Saccharum officinarum* L., Pasoeroean, 16.xi.1912 (1); *Saccharum* spec., Bogor, 18.viii.1918 and 20.viii.1918 (1); *Saccharum* sp, Banjoewangi, 8.xi.1949 (2); *Sorghum* sp, Banjoewangi, 21.vii.1949 (2); *Saccharum officinarum* L., Mi. Java, 18.vi.1976 (3).

Biology.— The aphids live on the lower side of, preferably, young shoots, or shoots about to sprout.

Etymology.— "*sacchari*", of *Saccharum*, sugar, a genus of the Gramineae.

Key based on apterae of *Rhopalosiphum* Koch

1. Abdominal tergite VIII with 5-6 hairs. Longest hair of antennal segment III 3-4 times the diameter of the articulate of the segment. Last rostral segment 1.4-1.5 times as long as tarsus 2 of the hind leg. Antennae usually 5-segmented. Processus terminalis 5.6-6.9 times as long as the base of the segment. In life abdomen greyish green, near the siphunculi red. On *Solanum tuberosum* on subterranean parts. Figs 143-145 ..... ***Rhopalosiphum rufiabdominale*** (Sasaki)
- Abdominal tergite VIII with 2 hairs. Longest hair of antennal segment III 0.5-2.0 times the diameter of the articulate of the segment. Last rostral segment 0.8-1.3 times as long as tarsus 2 of the hind leg. Antennae usually 6-segmented. Processus terminalis 2.1-5.7 times as long as the base of the segment 2
2. Length of the antennae 0.30-0.42 times as long as the body, and 1.5-2.2 times the distance between the outer margins of the eyes. Processus terminalis 2.1-2.8 times as long as the base of the segment, and 0.4-0.6 times the distance between the outer margins of the eyes. Siphunculi 0.37-0.5 times the distance between the outer margins of the head. Last rostral segment 0.8-0.9 times as long as tarsus 2 of the hind leg. In life black with green abdomen, blackish around the siphunculi. On *Coix, Echinochloa*, *Oryza*, *Setaria*, *Zea*. Figs 119-120 ..... ***Rhopalosiphum maidis*** (Fitch)
- Length of the antennae 0.5-0.8 times as long as the body. Length of the antennae 2.6-3.2 times the distance between the outer margins of the eyes. Processus terminalis 3.5-5.7 times as long as the base of the segment, and 0.8-1.1 times the distance between the outer margins of the eyes, and 1.1-1.8 times as long as the siphunculi. Last rostral segment 1.0-1.3 times as long as tarsus 2 of the hind leg 3
3. Length of antennal segment III 0.7-0.8 times as long as the siphunculi. The siphunculi 2.3-2.9 times as long as the cauda. As long as the siphunculi 0.8-0.9 times the distance between the outer margins of the eyes. Antennal segment III 1.2-1.3 times the length of antennal segment IV. In life olive-green with reddish brown, white wax on the cauda and dorsal part of leg 1 and 2. On *Echinidorus, Nymphaea, Victoria*. Figs 127-128..... ***Rhopalosiphum nymphaeae*** (Linnaeus)
- Length of antennal segment III 1.1-1.4 times as long as the siphunculi, and the siphunculi 1.5-1.7 times as long as the cauda. Siphunculi 0.5-0.6 times as long as the distance between the outer margins of the eyes. Antennal segment III 1.6-2.0 times as long as of antennal segment IV. In life greenish brown, near the siphunculi reddish, cauda occasionally with some wax. On bamboo, *Capsella, Zea*. Figs 135-136 ..... ***Rhopalosiphum padi*** (Linnaeus)

Key based on alatae of *Rhopalosiphum* Koch

1. Abdominal tergite VIII with 6-7 hairs. Last segment 1.3-1.4 times as long as tarsus 2 of the hind leg. Cauda 0.24-0.27 times the distance between the outer margins of the eyes. Media of the fore wing branched once or twice. Siphunculi 2.2-2.3 times as long as the cauda. In life black with dark green abdomen and brown near to the siphunculi. Figs 146-151 ..... ***Rhopalosiphum rufiabdominale*** (Sasaki)
- Abdominal tergite VIII with 2 hairs. Last rostral segment 0.8-1.2 times as long as tarsus 2 of the hind leg. Length of the cauda 0.26-0.43 times the distance between

the outer margins of the eyes. Siphunculi 1.1-1.9 times as long as the cauda. Media of the fore wing usually branched twice 2

2. Last rostral segment 169-186 μ long, 1.2-1.3 times as long as the second tarsal segment. The siphunculi 0.67-0.83 times the distance between the outer margins of the eyes. The siphunculi 0.15-0.19 times as long as the body. Processus terminalis 1.3-1.6 times as long as antennal segment III. Siphunculi 1.0-1.1 times as long as antennal segment III, and 1.9-2.5 times as long as the cauda. Widest distal diameter of the siphunculi 1.3-1.5 times the smallest diameter more basally. In life colour similar to *R. rufiabdominale*. Figs 129-134 .... ***Rhopalosiphum nymphaeae*** (Linnaeus)
- Last rostral segment 0.8-1.0 times as long as the second tarsal segment of the hind leg. The siphunculi 0.29-0.55 times as long as the distance between the outer margins of the eyes, and 2.2-1.3 times as long as the body. Processus terminalis 0.6-1.2 times as long as antennal segment III. Siphunculi 0.6-1.2 times as long as antennal segment III, and 1.1-1.8 times as long as the cauda. Widest distal diameter of siphunculi 0.9-1.1 times the smallest diameter more basally 3

3. Processus terminalis 1.8-2.6 times as long as the base of the segment, and 0.6-1.0 times the length of antennal segment III. The length of the processus terminalis 0.5-0.7 times, and the siphunculi 0.3-0.5 times the distance between the outer margins of the eyes. Antennae 0.45-0.62 times as long as the body, and 2.2-2.9 times as long as the distance between the outer margins of the eyes. Genital plate with 8-13 hairs. In life black with green abdomen. Figs 121-126 ..... ***Rhopalosiphum maidis*** (Fitch)
- Processus terminalis 4.9-5.6 times as long as the base of the segment and 1.1-1.2 times as long as antennal segment III. The length of the processus terminalis 1.0-1.2 times the distance between the outer margins of the eyes, and the siphunculi 0.5 times the distance between the outer margins of the eyes. The antennae 0.7-0.8 times as long as the body, and 3.2-4.1 times the distance between the outer margins of the eyes. Genital plate with 14-24 hairs. In life black with green abdomen, and sometimes reddish near the siphunculi. Figs 137-142 ..... ***Rhopalosiphum padi*** (Linnaeus)

Rhopalosiphum maidis (Fitch, 1856)
(figs 119-126)

Aphis maidis Fitch, 1856: 531.
Rhopalosiphum Koch, 1854: 23.
Siphonaphis van der Goot, 1915: 238; 1917: 67.

Material.— Specimens all collected in **Indonesia**, **Java**, the collectors are indicated by numbers between parentheses: P. van der Goot (1917: 69) *Zea mays* L., *Panicum collare* Schum., *Polytrias diversiflora* Baill., *Sorghum* spec., Pasoeroean, Kepoeh, Mt. Tenger, Kraton, Salatiga (570 m). Soemartono, in BMNH, London (2); and D. Noordam, in RMNH, Leiden (3). *Zea mays* L., Buitenzorg (250 m), 11.xii.1954 (2); *Setaria geniculata* (Lam.) Beauv., Sindanglaya (1100 m), 22.iv.1975 (3); *Oryza sativa* L., Bogor, 18.vii.1975, (3); *Setaria plicata* (Lamk) T. Cooke, Sindanglaya (1100 m), 6.iii.1976 (3); *Zea mays* L., Sindanglaya (1100 m), 23.iii.1976 (3); grass, Bogor, 30.v.1976 (3); *Echinochloa colonum* (L.) Link, Purwakarta, 18.vi.1976 (3); trapped in light, Malang, 10.xii.1976 (3); *Oryza sativa* L., Bogor, 26.i.1977, leg. Ati Duriat (3); *Coix lacryma-jobi* L., Jakarta, 10.vii.1977 (3).

Biology.— The aphids live on developing leaves, on the lower side of leaves, on male inflorescence.

Etymology.— "*maidis*", of *Mays*, a genus of the Gramineae.

Rhopalosiphum nymphaeae (Linnaeus, 1761)
(figs 127-134)

Rhopalosiphum Koch, 1854: 23.
Aphis nymphaeae Linnaeus, 1761: 260.
Siphonaphis nympheae; van der Goot, 1917: 69.

Material.— Specimens all collected in **Indonesia**, **Java**, the collectors are indicated by numbers between parentheses: P. van der Goot, 1917: 70. *Cryptocoryne ciliata* (Roxb.) Bl., Pasoeroean, v.1913 (1); and D. Noordam, in RMNH, Leiden (2). *Echinodorus* spec., Bogor Keb. R., 19.xii.1976 (2); *Nymphaea pubescens* Willd., Bogor Keb. R., 11.ii.1978 (2); *Victoria amazonica* (Poepp.) Sowerby, Bogor Keb. R., 11.ii.1978 (2).

Biology.— The aphids live on the lower side of leaves.
Etymology.— "*nymphaeae*", of *Nymphaea*, a genus of the Nymphaeaceae.

Rhopalosiphum padi (Linnaeus, 1758)
(figs 135-142)

Aphis padi Linnaeus, 1758: 451.

Material.— Specimens all collected in **Indonesia**, **Java**, the collectors are indicated by numbers between parentheses: P. van der Goot 1917: 72, in WU, Wageningen (1); F.W. Rappard, in BMNH, London (2); and D. Noordam, in RMNH, Leiden (3). *Zea mays* L., Pasoeroean, 1913 (1); *Briza minor* L., Pundaklembu (2200 m), 7.xi.1951 (2); *Capsella bursa-pastoris* (L.) Medik., Tosari (1800 m), 14.vi.1976 (3); bamboo, Dieng (2000 m), 2.i.1977 (3); *Zea mays* L., Sindanglaya (1100 m), 9.viii.1977 (3).

Biology.— The aphids live on the lower side of leaves and on the floral envelopes of maize, on developing shoots of bamboo.
Etymology.— "*padi*", of *padus*, probably a cherry tree.

Rhopalosiphum rufiabdominale (Sasaki, 1899)
(figs 143-151)

Toxoptera rufiabdominalis Sasaki, 1899: 202.

Material.— Specimens all collected in **Indonesia**, **Java** by R.W. van der Goot, in BMNH, London; *Calendula officinalis* L., Malang, 1.v.1951; and by D. Noordam, in RMNH, Leiden; *Solanum tuberosum* L., roots, Malang-Pujan, 11.vi.1976, and leg. Masdiar Bustaman 5.ix.1975. *Solanum tuberosum* L., Lembang, 1.viii.1977.

Biology.— The aphids live on roots of the plants.
Etymology.— "*rufiabdominalis*", with reddish abdomen.

Key based on apterae of *Schizaphis* Börner

1. Processus terminalis 5.6-7.1 times as long as the base of the segment. Length of

hair of tergite VIII 39-57 μ long. Siphunculi 2.4-3.2 times as long as the cauda. On *Lapironia mucronata*. Fig. 176 ..... ***Schizaphis rotundiventris*** (Signoret)

- Processus terminalis 3.1-4.8 times as long as the base of the segment. Length of hair on tergite VIII 16-25 μ. Siphunculi 1.1-1.9 times as long as the cauda 2

2. Siphunculi 1.6-1.9 times as long as the cauda, and 0.66-0.78 times as long as the width of the head across the eyes. Antennal segment III 200-263 μ long. On *Eulalia amaura*, *Panicum repens*. Figs 152-153 ..... ***Schizaphis hypersiphonata*** A.N. Basu

- Siphunculi 1.1-1.5 times as long as the cauda, and 0.34-0.35 times as long as the width of the head across the eyes. Antennal segment III 163-167 μ long. Thorax and abdomen dorsally with flat pustules. On *Fimbrystylis diphylla*. Figs 165-166 .... ***Schizaphis minuta*** (van der Goot)

Key based on alatae of *Schizaphis* Börner

1. Processus terminalis 5.9-6.5 times as long as the base of the segment. Length of hair on tergite VIII 33-42 μ. Siphunculi 2.3-3.1 times as long as the cauda. Ultimate rostral segment 1.10-1.19 times as long as the second tarsal segment of the hind leg. Figs 177-184 ..... ***Schizaphis rotundiventris*** (Signoret)

- Processus terminalis 3.7-4.9 times as long as the base of the segment. Length of hair on tergite VIII 14-23 μ. Siphunculi 1.0-1.7 times as long as the cauda. Ultimate rostral segment 0.74-0.94 times as long as the second tarsal segment of the hind leg 2

2. Siphunculi 1.4-1.7 times as long as the cauda, and 0.55-0.71 times as long as the width of the head across the eyes. Antennal segment III 212-219 μ long. Antennal segment IV without rhinaria. Figs 154-164 ..... ***Schizaphis hypersiphonata*** A.N. Basu

- Siphunculi 1.0-1.45 times as long as the cauda, and 0.43 times as long as the width of the head across the eyes. Antennal segment III 153-182 μ long. Antennal segment IV with 2 or sometimes 1 rhinaria. Fig. 167-175 ..... ***Schizaphis minuta*** (van der Goot)

Schizaphis hypersiphonata A.N. Basu, 1970
(figs 152-164)

Schizaphis hypersiphonata A.N. Basu, (1969) 1970: 364-366.

Material.— Specimens all collected in **Indonesia**, **Java** by D. Noordam, in RMNH, Leiden. *Eulalia amaura* (Buese) Dhwi, Malang, 16.vi.1976; *Panicum repens* L., Sindanglaya, 7.vii.1977.

Biology.— The aphids live on the upper and lower sides of leaves, also on the border of green and yellow parts of leaves.

Etymology.— "*hypersiphonata*", with much longer siphunculi.

Schizaphis minuta (van der Goot, 1917)
(figs 165-175)

Toxoptera minuta van der Goot, 1917: 86.

Material.— Specimens all collected in **Indonesia**, **Java** by P. van der Goot 1917: 88, Pasoeroean, *Fimbristylis diphylla* Vahl, Pasoeroean, vi.1913.

Schizaphis rotundiventris (Signoret, 1860)
(figs 176-184)

Schizaphis rotundiventris Signoret, 1860: 178.
Toxoptera cyperi van der Goot, 1917: 81.

Material.— Specimens all collected in **Indonesia**, **Java**, the collectors are indicated by numbers between parentheses: P. van der Goot (1917: 83), *Cyperus* spec., Pasoeroean, XII-1912; mentioned in P. van der Goot (1917) (1); F.W. Rappard (2) and J.P. Sijpkens, (3), in BMNH, London; and D. Noordam, in RMNH, Leiden (4). *Cyperus* spec., Pasoeroean, XII-1912 (1); three collections, Banjoewangi, 20.x.1949 (2); *Cyperus* spec., Bangil, 20.ii.1949 (2); *Cyperus elatus* L., Bondowoso (250 m), 4.i.1950 (2); *Cyperus rotundus* L., Malang, 19.i.1952 (2); Perdagangan (100-200 m), 1.xi.1951 (3); olie palm, Perdagangan (100-200 m), 1.xi.1951 (3); olie palm, Loeboekpakan (0-25 m), 1.xi.1951 (3); *Lepironia mucronata* Rich., Bogor Keb. R., 7.iii.1976 (4).

Biology.— The aphids live on flower stalks and on the leaves, frequently on the lower side.

Etymology.— "*rotundiventris*", with round belly.

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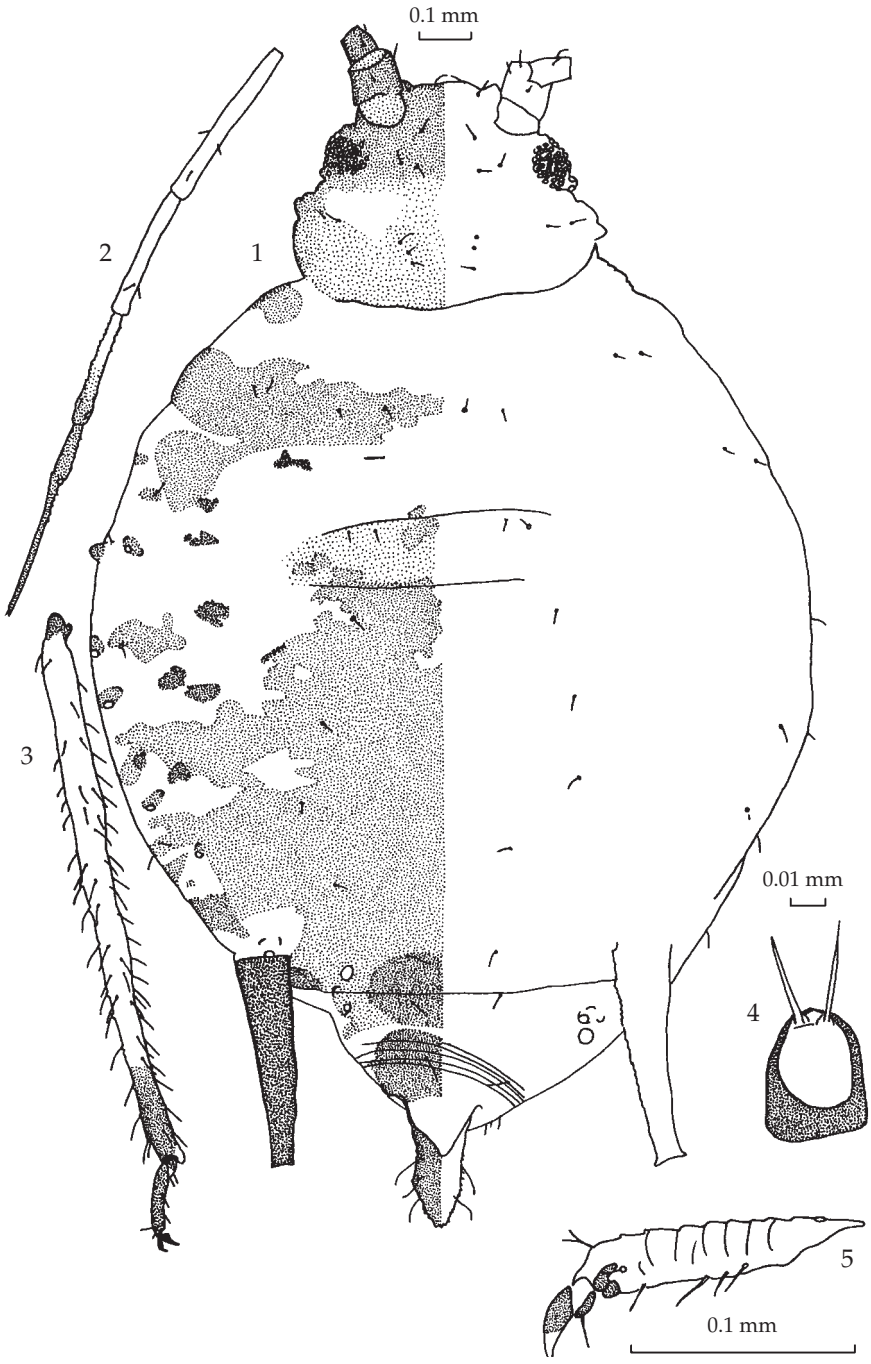
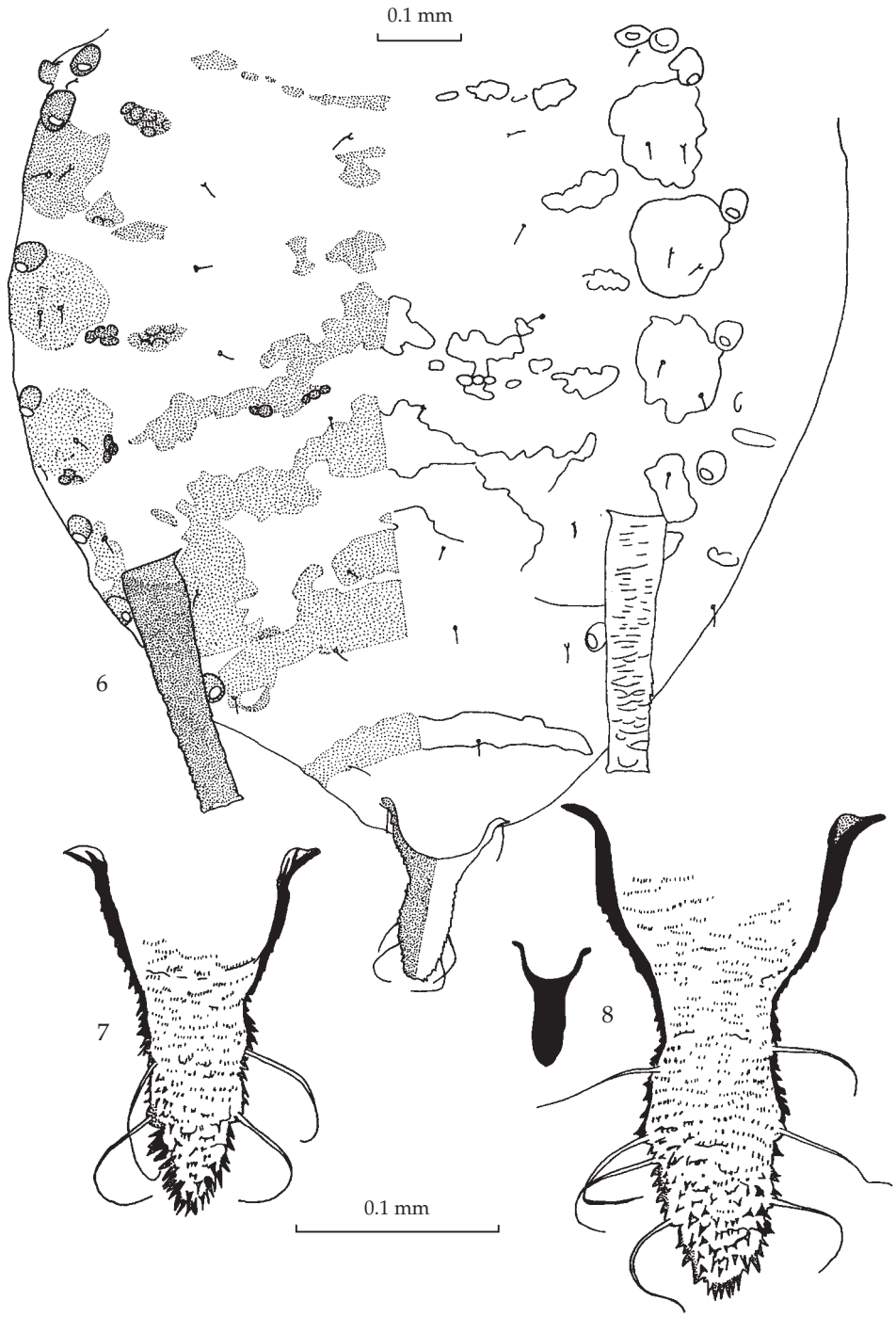
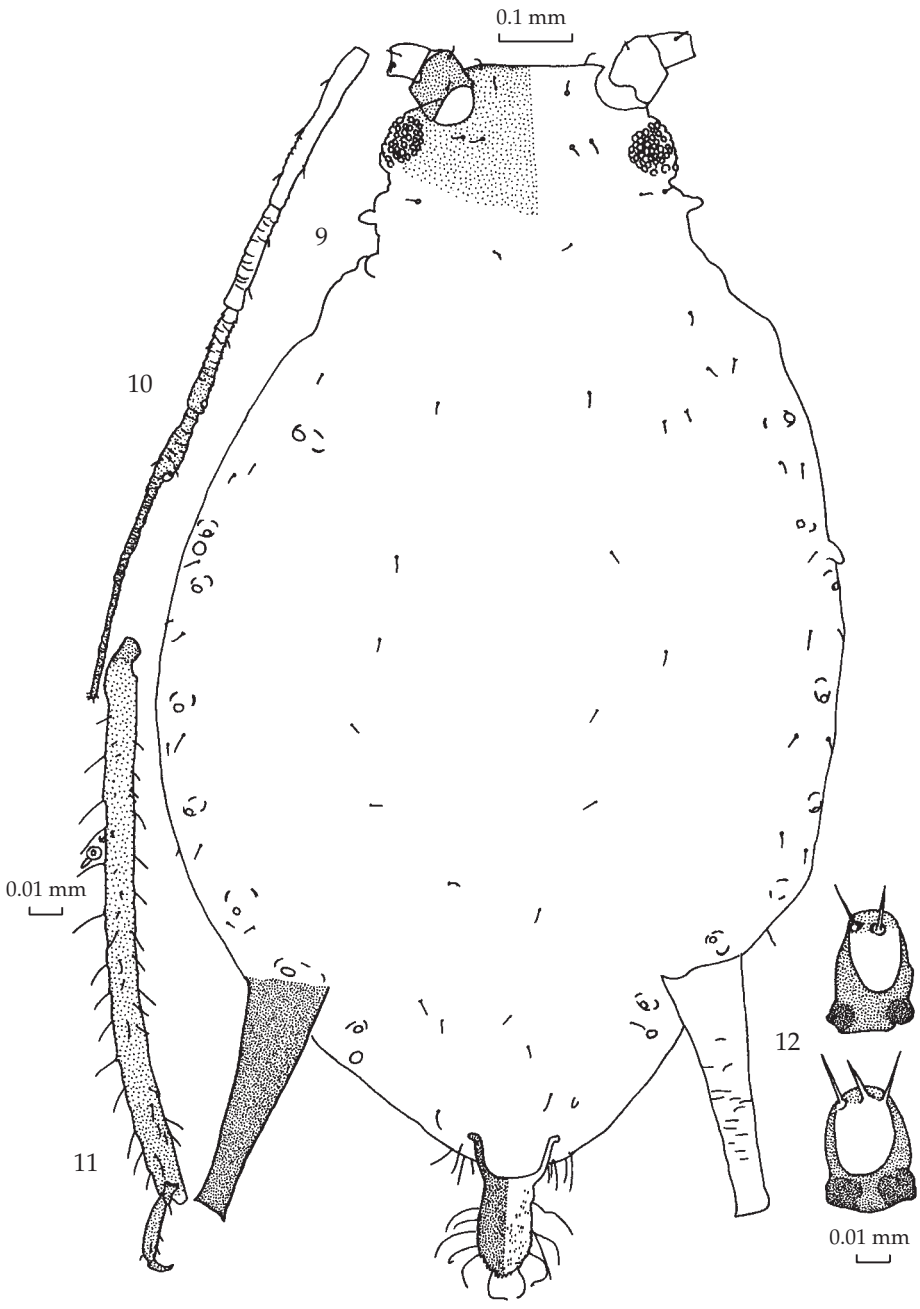


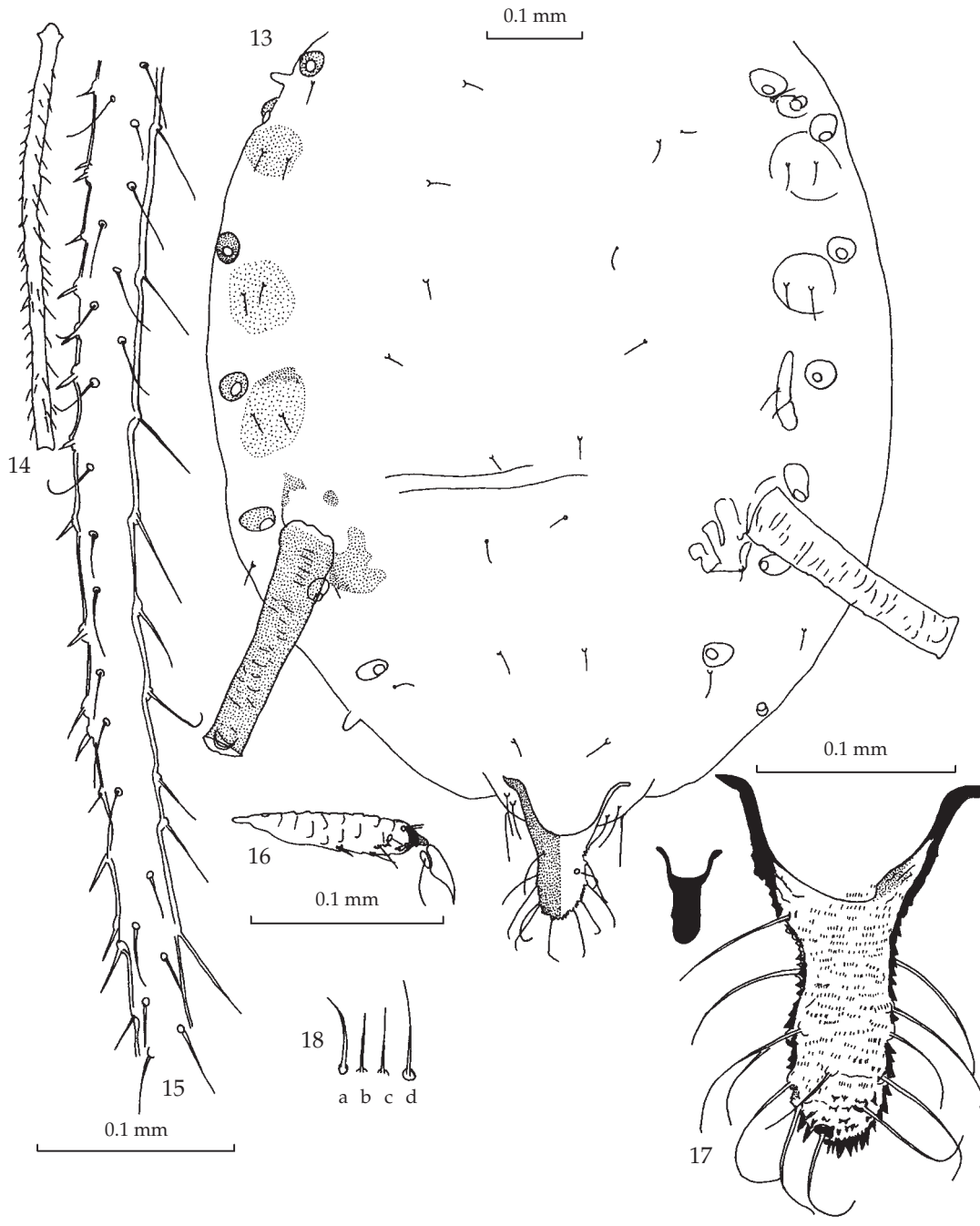
Figs 1-5. *Aphis craccivora* Koch, apterous viviparous ♀. Fig. 1, dorsal side of the body and ventrally spiracles. Fig. 2, antennal segments III-VI. Fig. 3, hind tibia and tarsi. Fig. 4, first tarsal segment of the hind leg. Fig. 5, second tarsal segment of the hind leg.



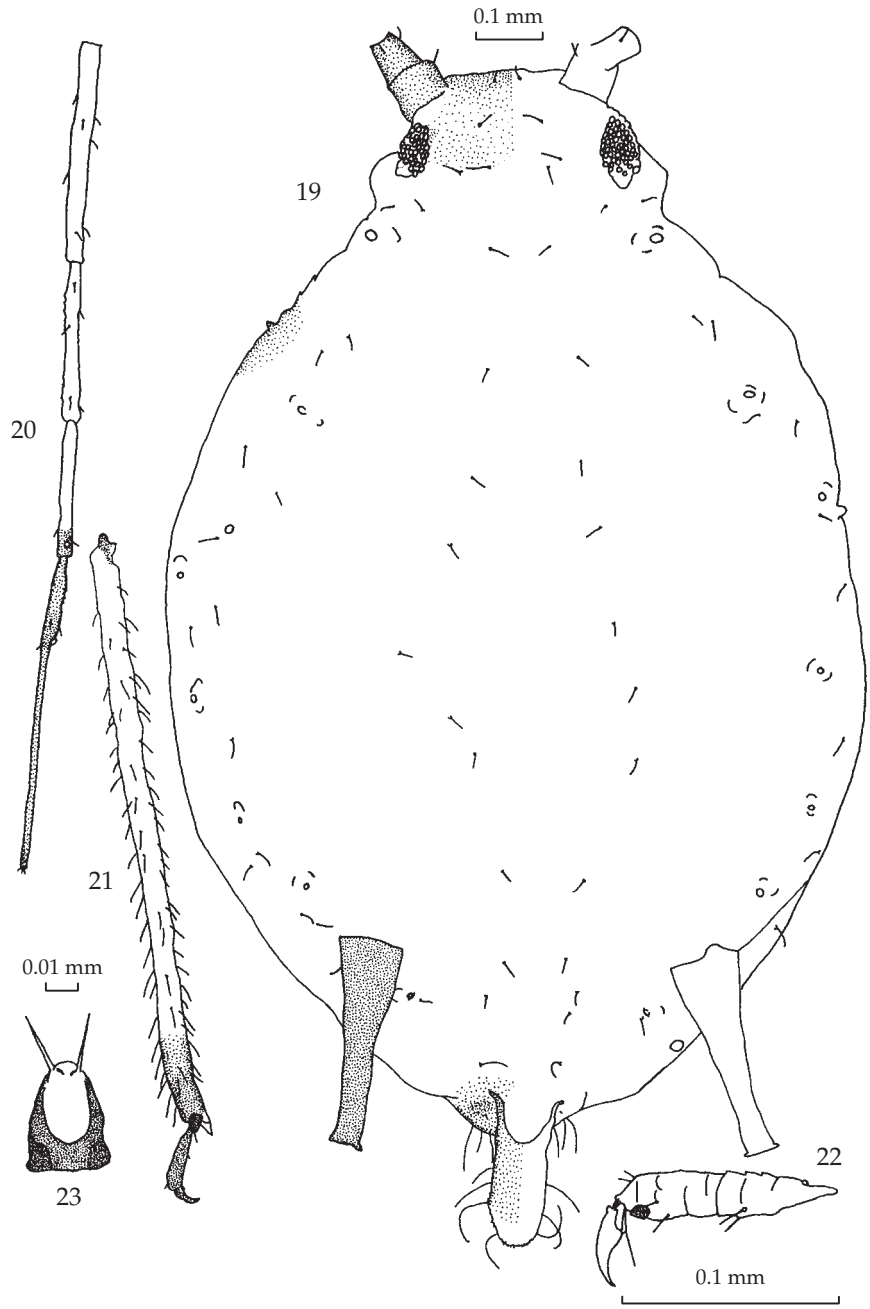
Figs 6-8. *Aphis craccivora* Koch, alate viviparous ♀. Fig. 6, dorsal side of abdomen and ventrally spiracles. Figs 7 and 8, cauda and figure with colour indication.



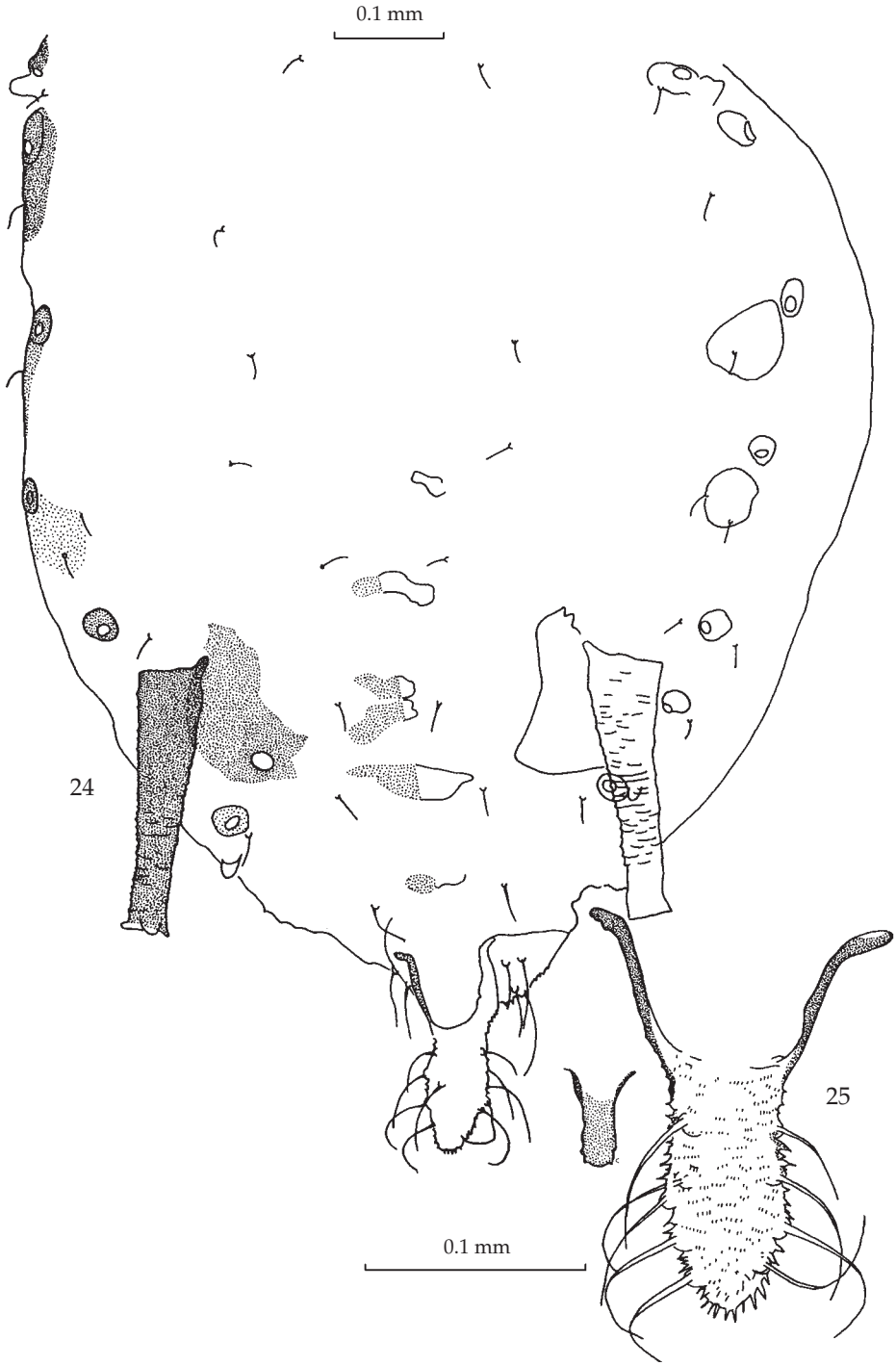
Figs 9-12. *Aphis eugeniae* van der Goot, apterous viviparous ♀. Fig. 9, dorsal side of the body and ventrally spiracles. Fig. 10, antennal segments III-VI. Fig. 11, hind tibia and tarsi, one of the conical sturdy hairs separately enlarged. Fig. 12, first tarsal segment of the hind leg.



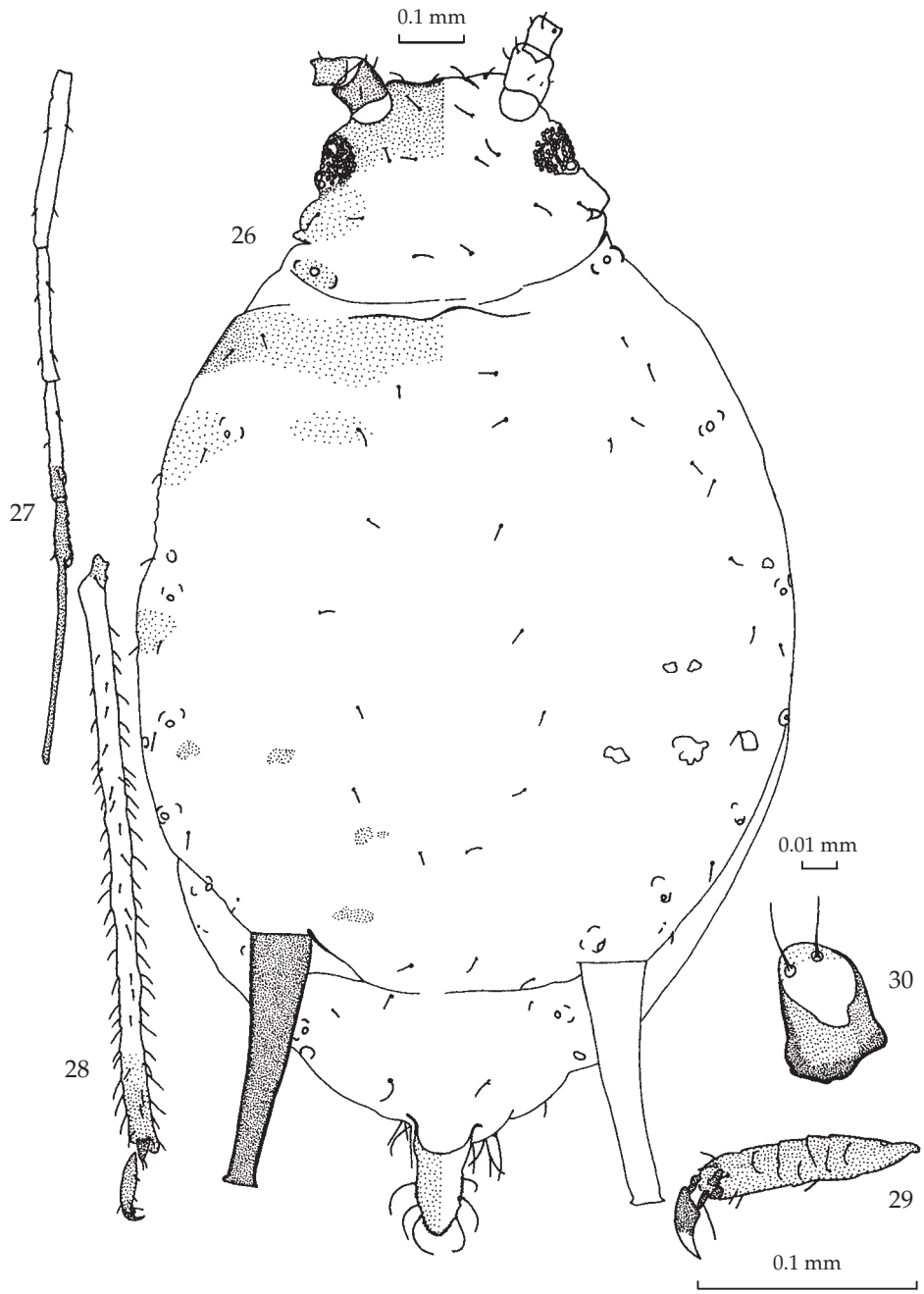
Figs 13-18. *Aphis eugeniae* van der Goot, alate viviparous ♀. Fig. 13, dorsal side of the body and ventrally spiracles. Figs 14 and 15, hind tibia with conical sturdy hairs. Fig. 16, second tarsal segment of the hind leg. Fig. 17, cauda and figure with colour indication. Fig. 18, hairs of: **a** the head; **b** tergite V; **c** tergite VII; **d** tergite VIII.



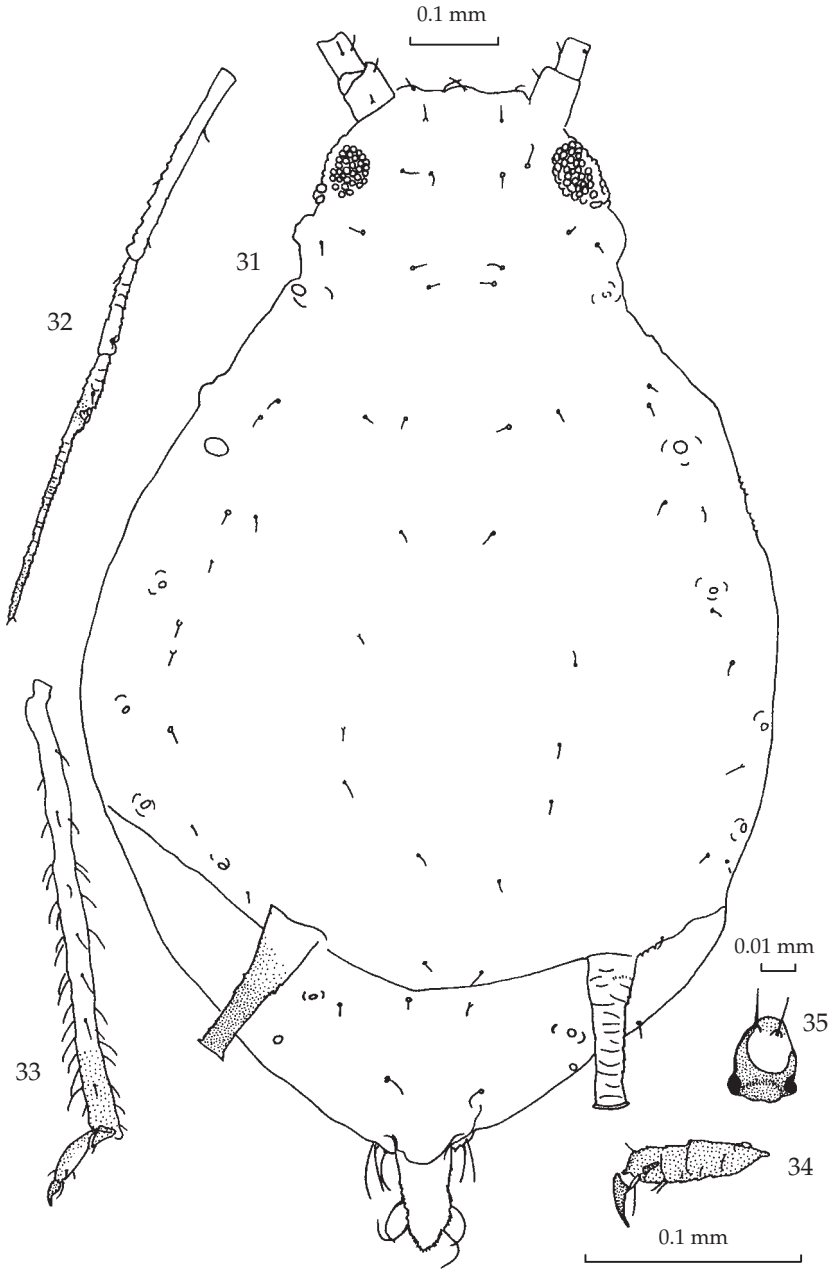
Figs 19-23. *Aphis glycines* Matsumura, apterous viviparous ♀. Fig. 19, dorsal side of the body and ventrally spiracles. Fig. 20, antennal segments III-VI. Fig. 21, hind tibia and tarsi. Fig. 22, second tarsal segment of the hind leg. Fig. 23, first tarsal segment of the hind leg.



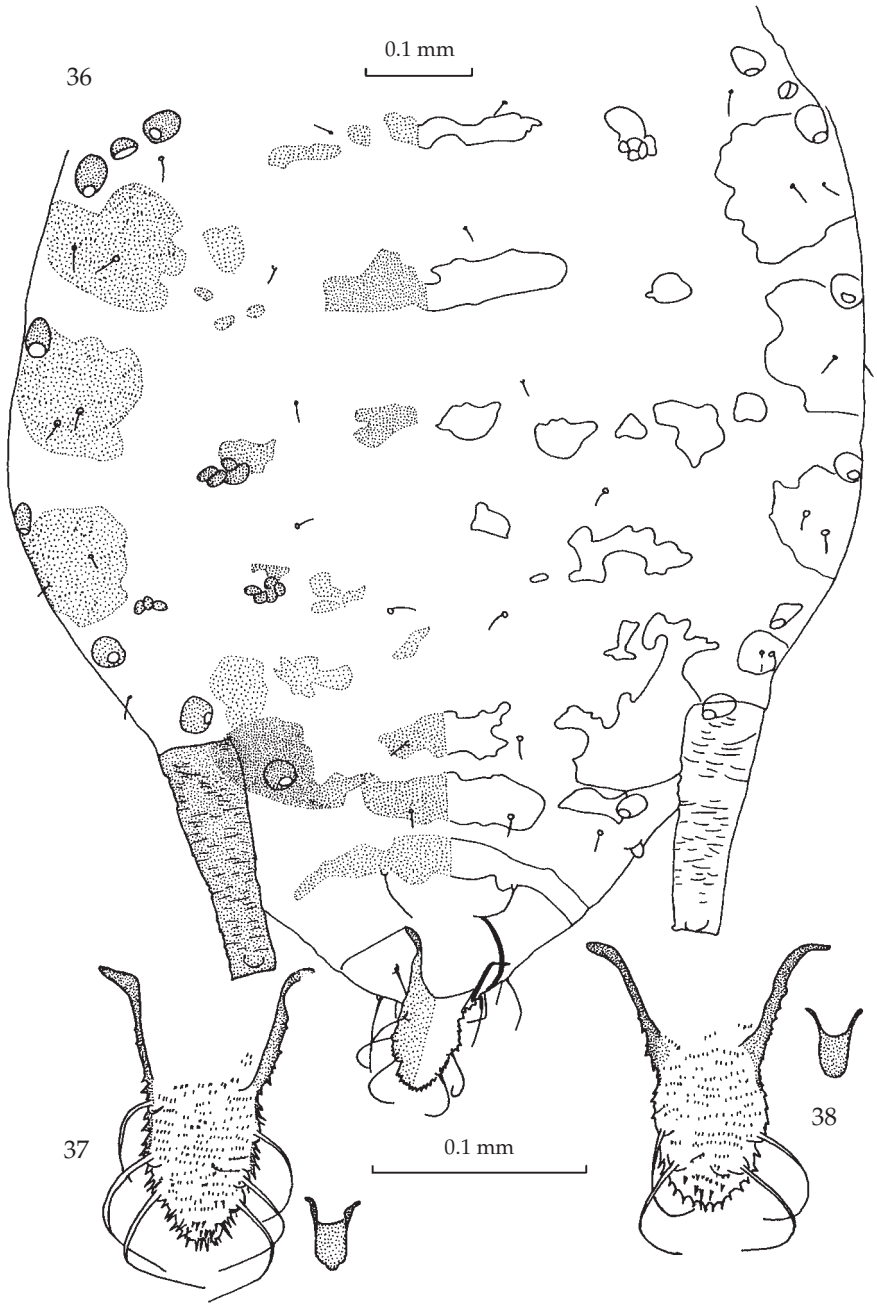
Figs 24-25. *Aphis glycines* Matsumura. Fig. 24, abdomen of alate viviparous ♀ and ventrally spiracles. Fig. 25, cauda and figure with colour indication.



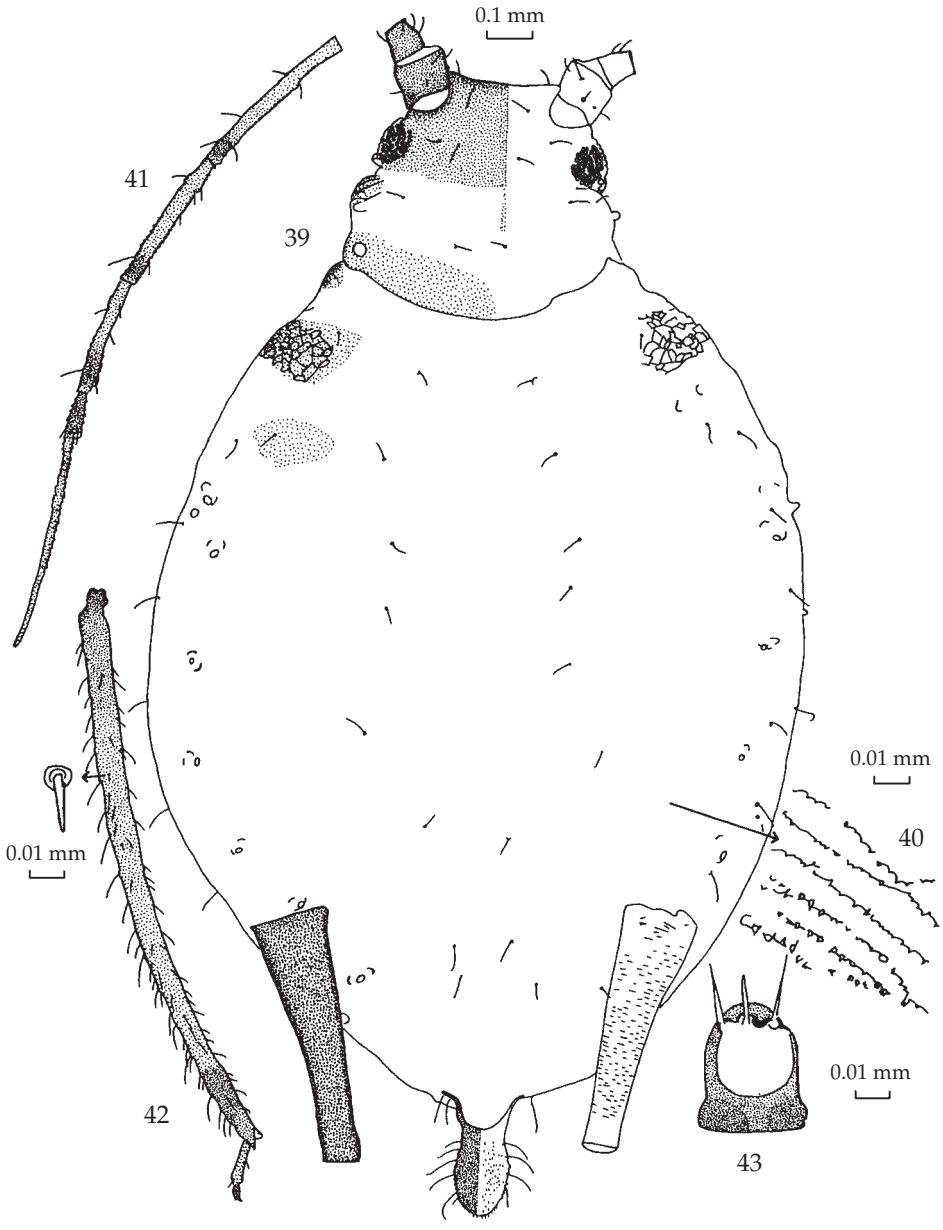
Figs 26-30. *Aphis gossypii* Glover, apterous viviparous ♀. Fig. 26, dorsal side of the body and ventrally spiracles. Fig. 27, antennal segments III-VI. Fig. 28, hind tibia and tarsi. Fig. 29, hind second tarsal segment. Fig. 30, first tarsal segment of the hind leg.



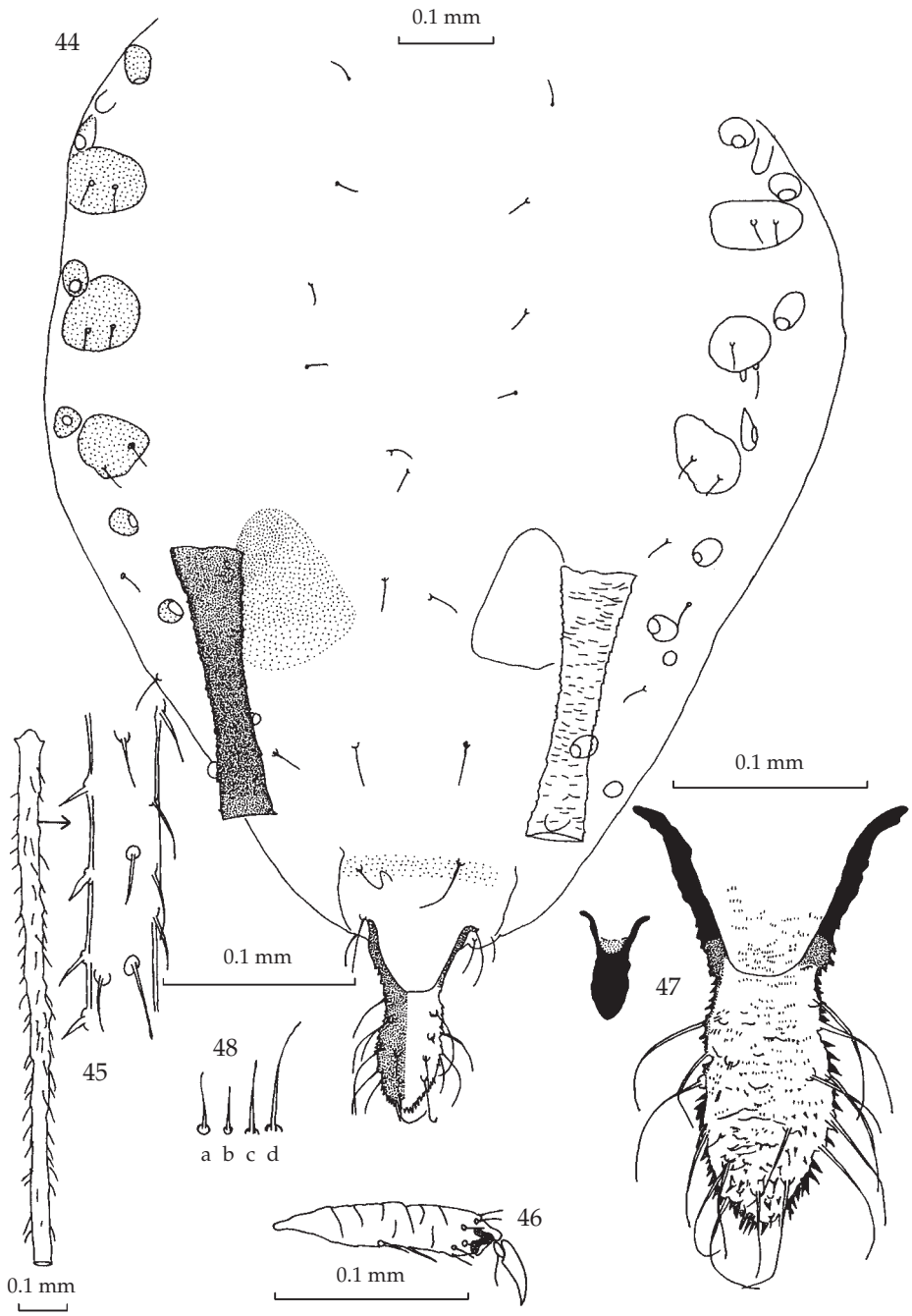
Figs 31-35. *Aphis gossypii* Glover, apterous viviparous ♀, dwarf type. Fig. 31, dorsal side of the body and ventrally spiracles. Fig. 32, antennal segments III-V. Fig. 33, tibia and tarsi of the hind leg. Fig. 34, second tarsal segment of the hind leg. Fig. 35, first tarsal segment of the hind leg.



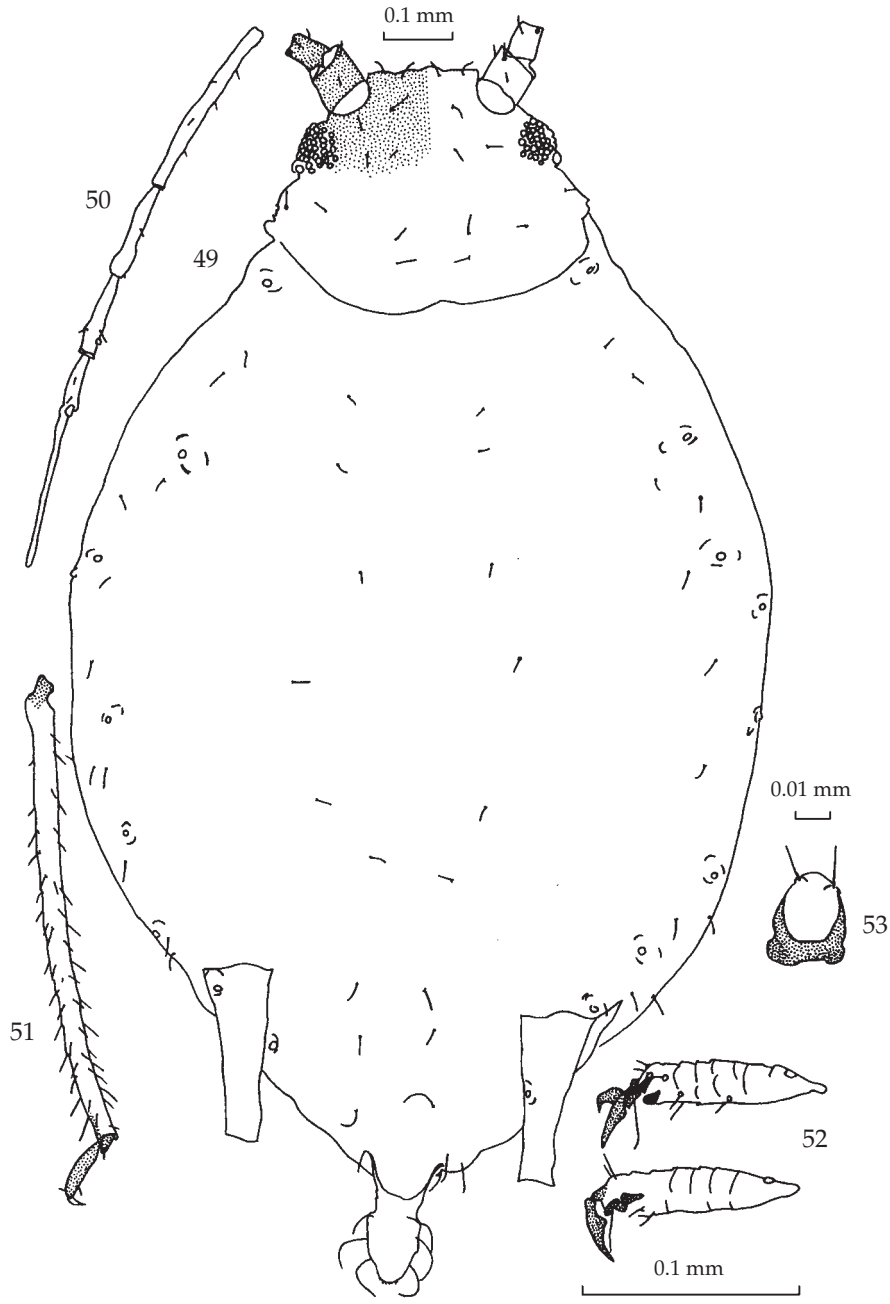
Figs 36-38. *Aphis gossypii* Glover, alate viviparous ♀. Fig. 36, abdomen dorsally and ventrally spiracles. Fig. 37 and 38, cauda and figure with colour indication.



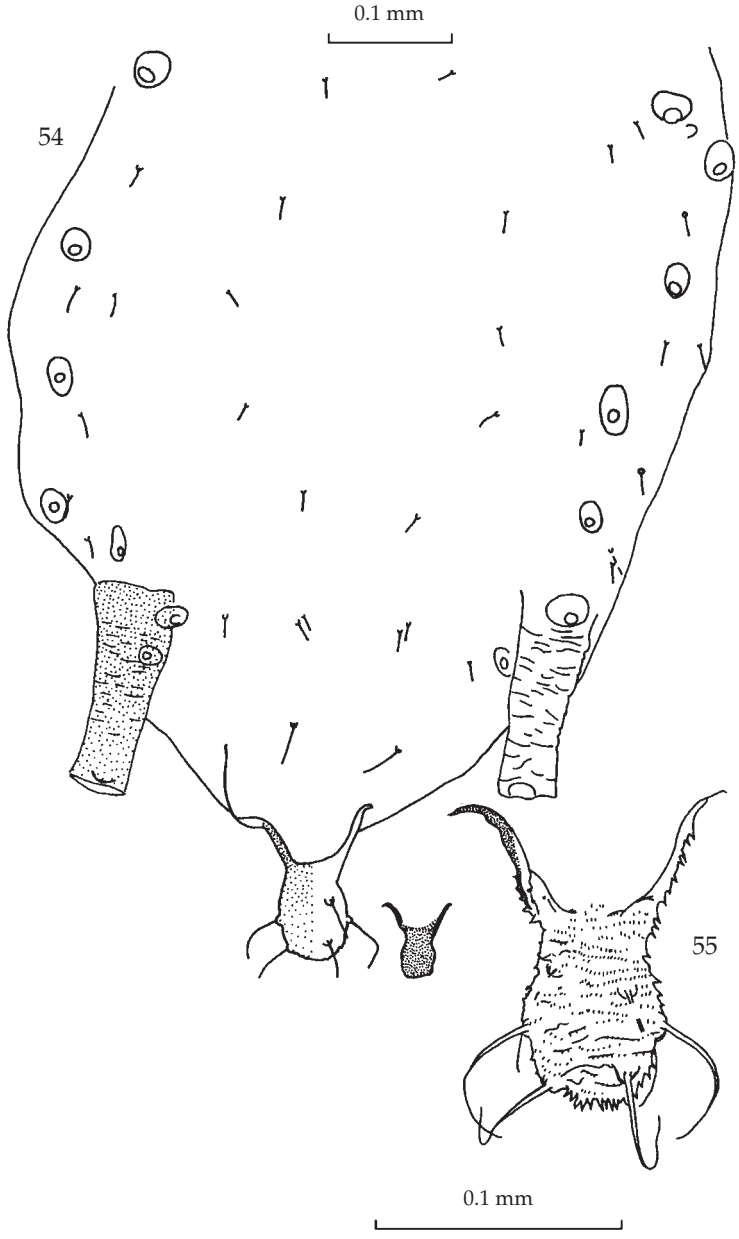
Figs 39-43. *Aphis nerii* Boyer de Fonscolombe, apterous viviparous ♀. Fig. 39, dorsal side of the body and ventrally spiracles. Fig. 40, crenulate ridges of ventral area indicated by an arrow in fig. 39. Fig. 41, antennal segments III-VI. Fig. 42, tibia and tarsi of the hind leg with one conical sturdy hair separately enlarged. Fig. 43, first tarsal segment of the hind leg.



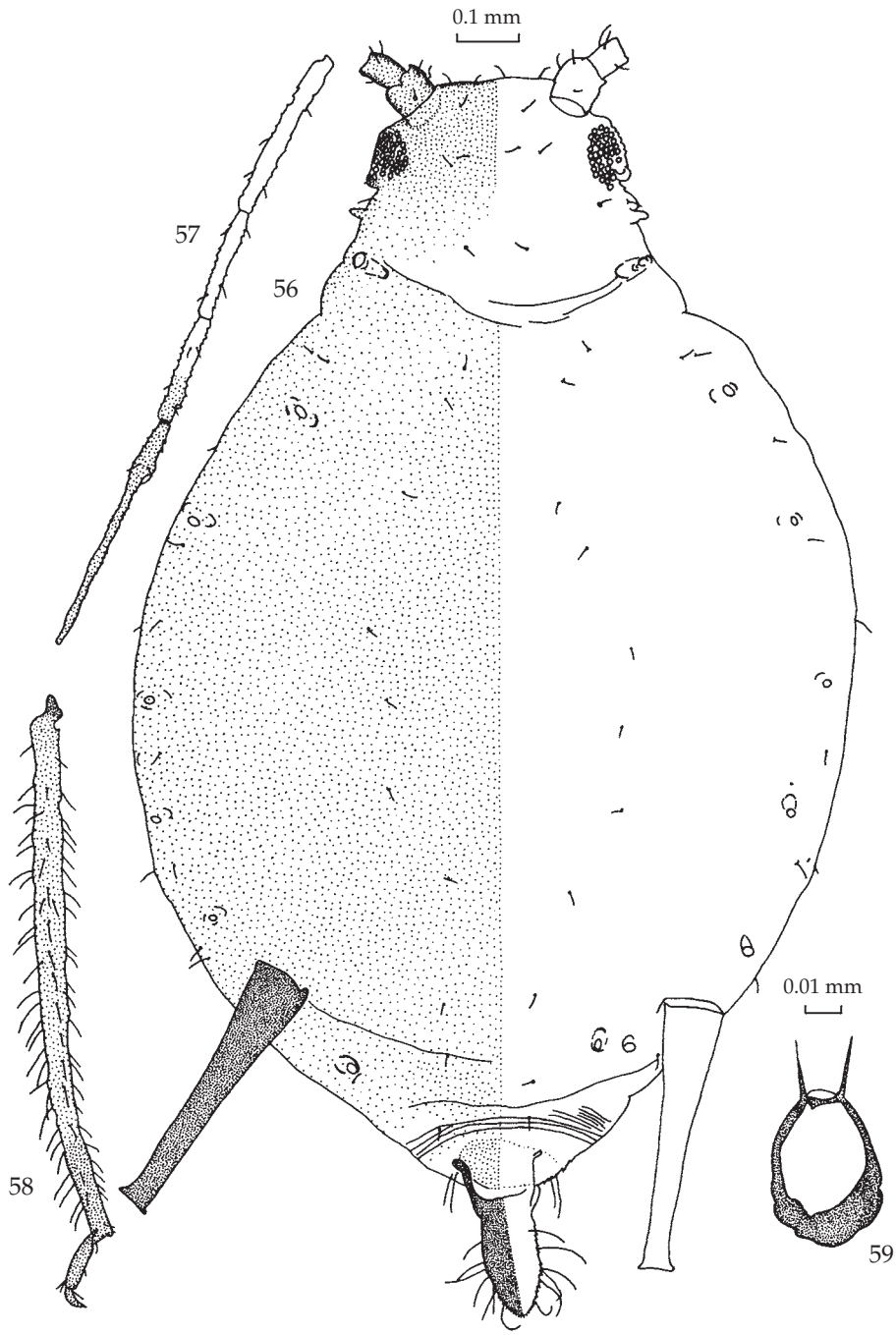
Figs 44-48. *Aphis nerii* Boyer de Fonscolombe, alate viviparous ♀. Fig. 44, dorsal side of the body and ventrally spiracles. Fig. 45, part of the hind tibia with separately enlarged some conical sturdy hairs. Fig. 46, second tarsal segment of the hind leg. Fig. 47, cauda. Fig. 48, hairs of: **a** the head; **b** tergite V; **c** tergite VII; **d** tergite VIII.



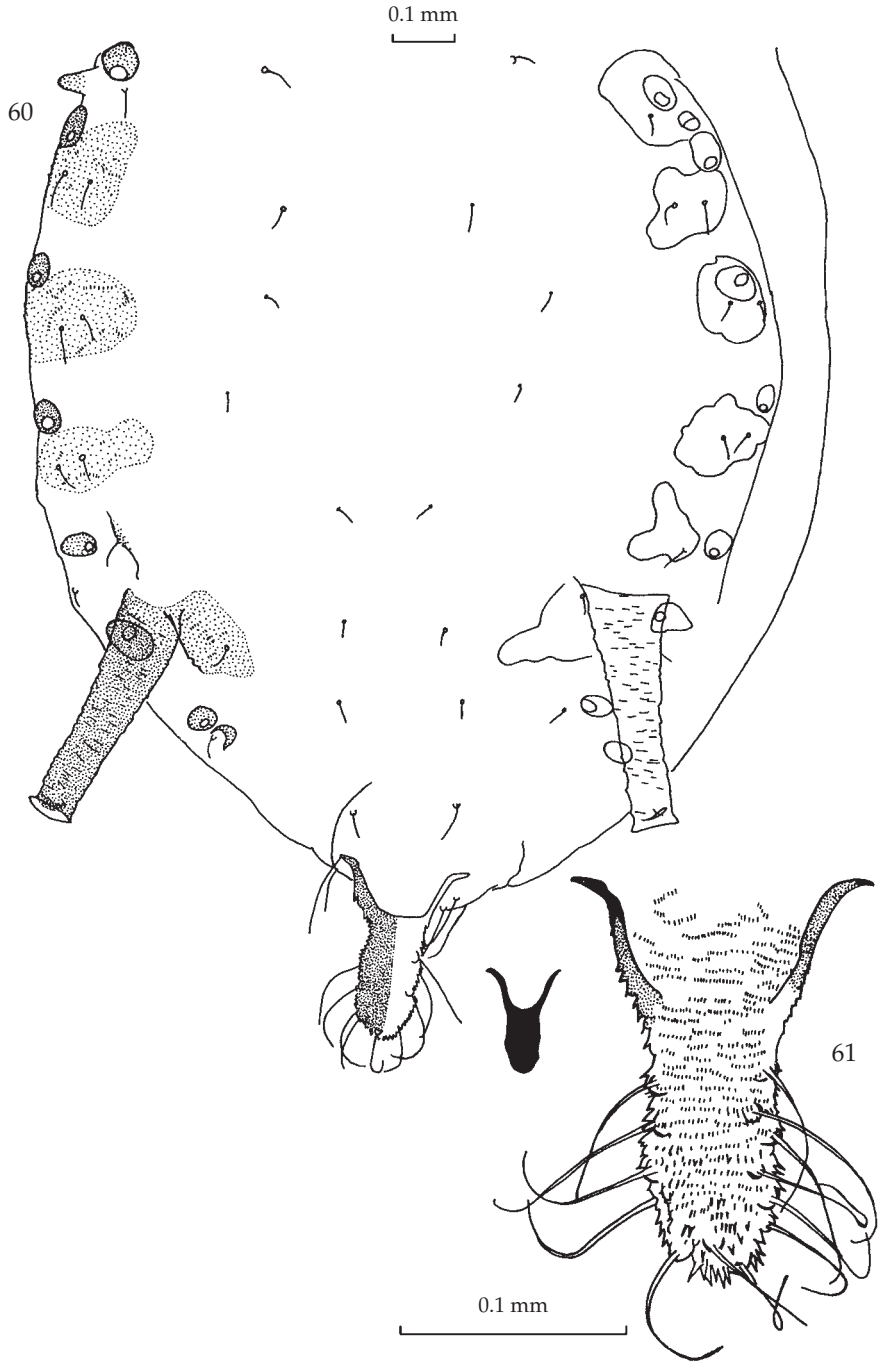
Figs 49-53. *Aphis punicae* Passerini, apterous viviparous ♀. Fig. 49, dorsal side of the body and ventrally spiracles. Fig. 50, antennal segments III-VI. Fig. 51, hind tibia and tarsi. Fig. 52, two second tarsal segments of the hind leg. Fig. 53, first tarsal segment of the hind leg.



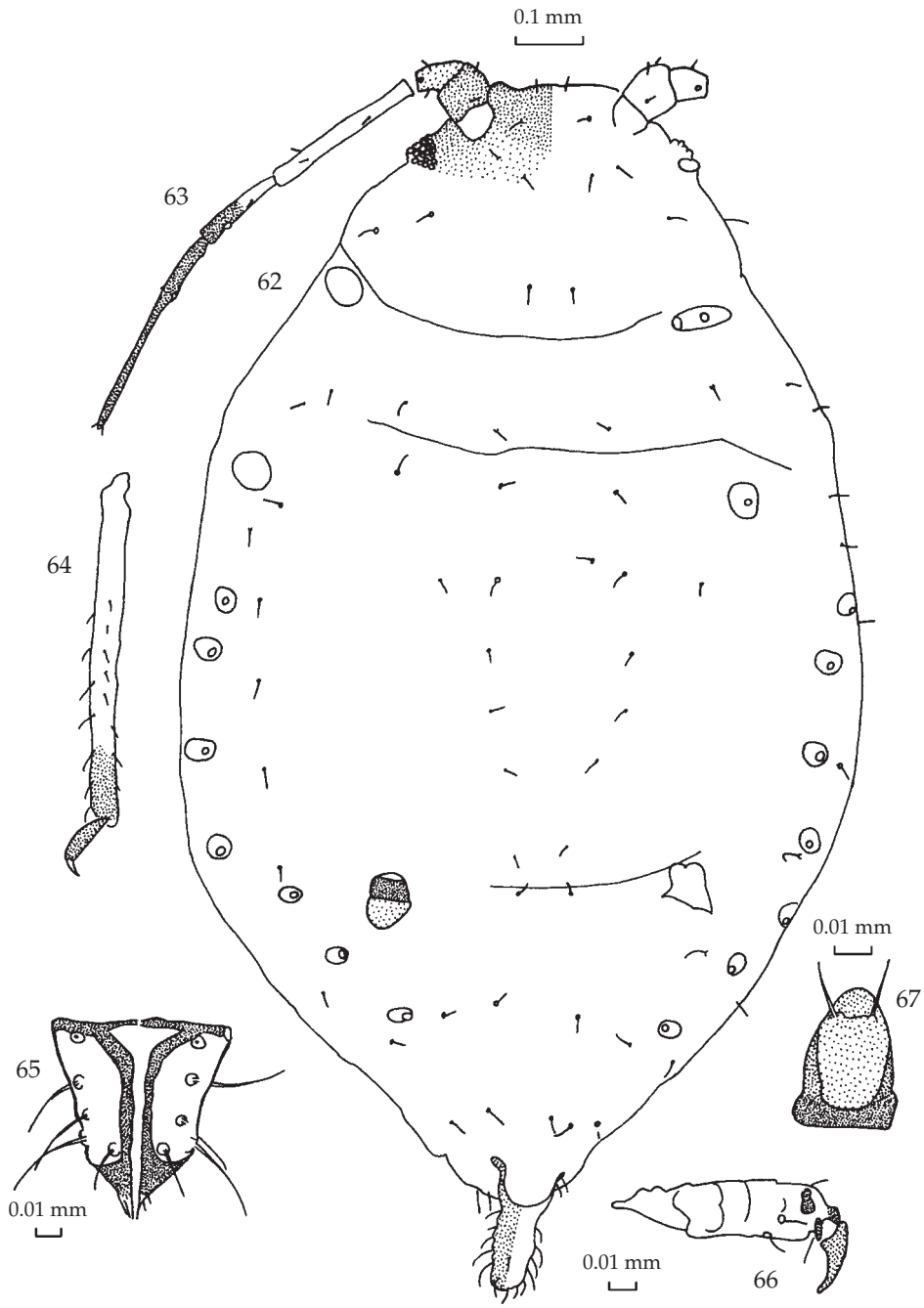
Figs 54-55. *Aphis punicae* Passerini, alate viviparous ♀. Fig 54, dorsal side of the body. Fig. 55, cauda and figure with colour indication.



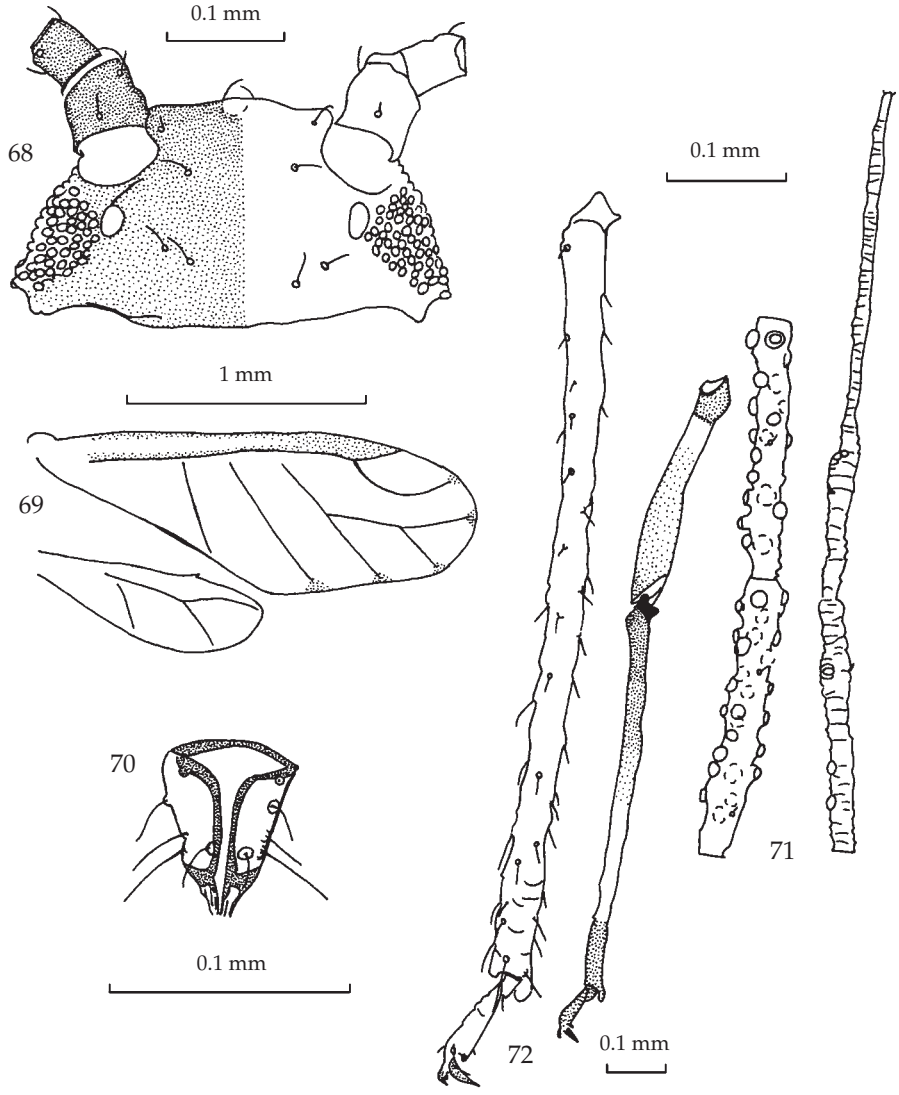
Figs 56-59. *Aphis spiraecola* Patch, apterous viviparous ♀. Fig. 56, dorsal side of the body and ventrally spiracles. Fig. 57, antennal segments III-VI. Fig. 58, hind tibia and tarsi. Fig. 59, first tarsal segment of the hind leg.



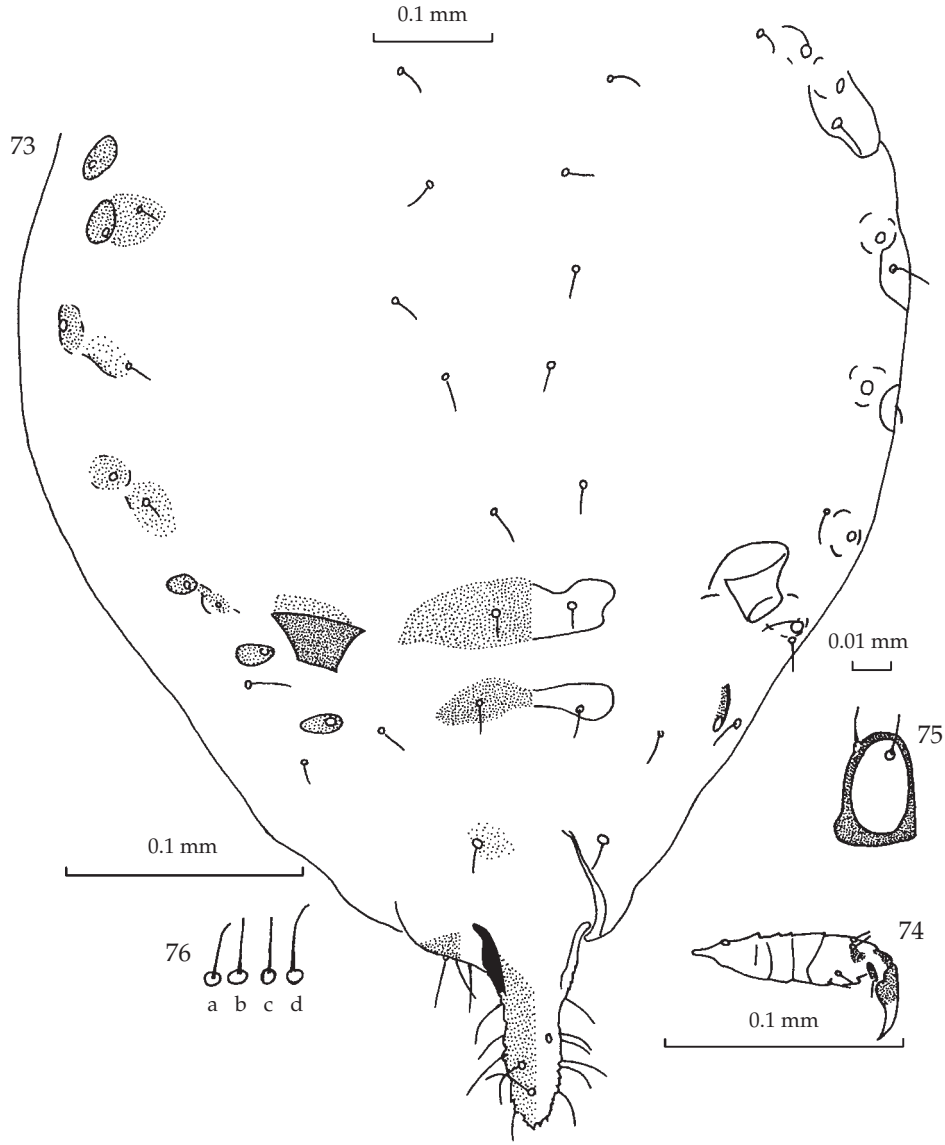
Figs 60-61. *Aphis spiraecola* Patch, alate viviparous ♀. Fig. 60, dorsal side of the body. Fig. 61, cauda and figure with colour indication.



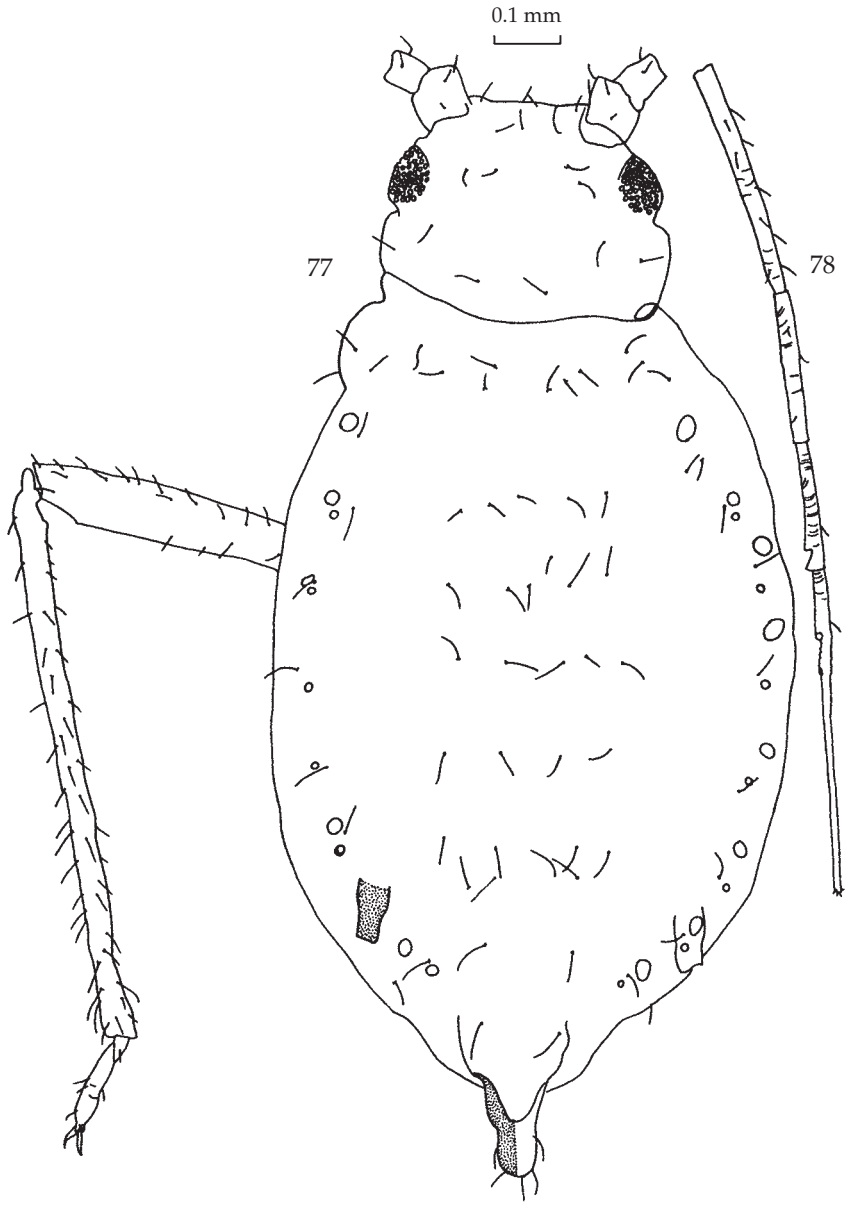
Figs 62-67. *Brachysiphoniella montana* (van der Goot), apterous viviparous ♀. Fig. 62, dorsal side of the body and ventrally spiracles. Fig. 63, antennal segments III-V. Fig. 64, hind tibia and tarsi. Fig. 65, last rostral segment. Fig. 66, second tarsal segment of the hind leg. Fig. 67, first tarsal segment of the hind leg.



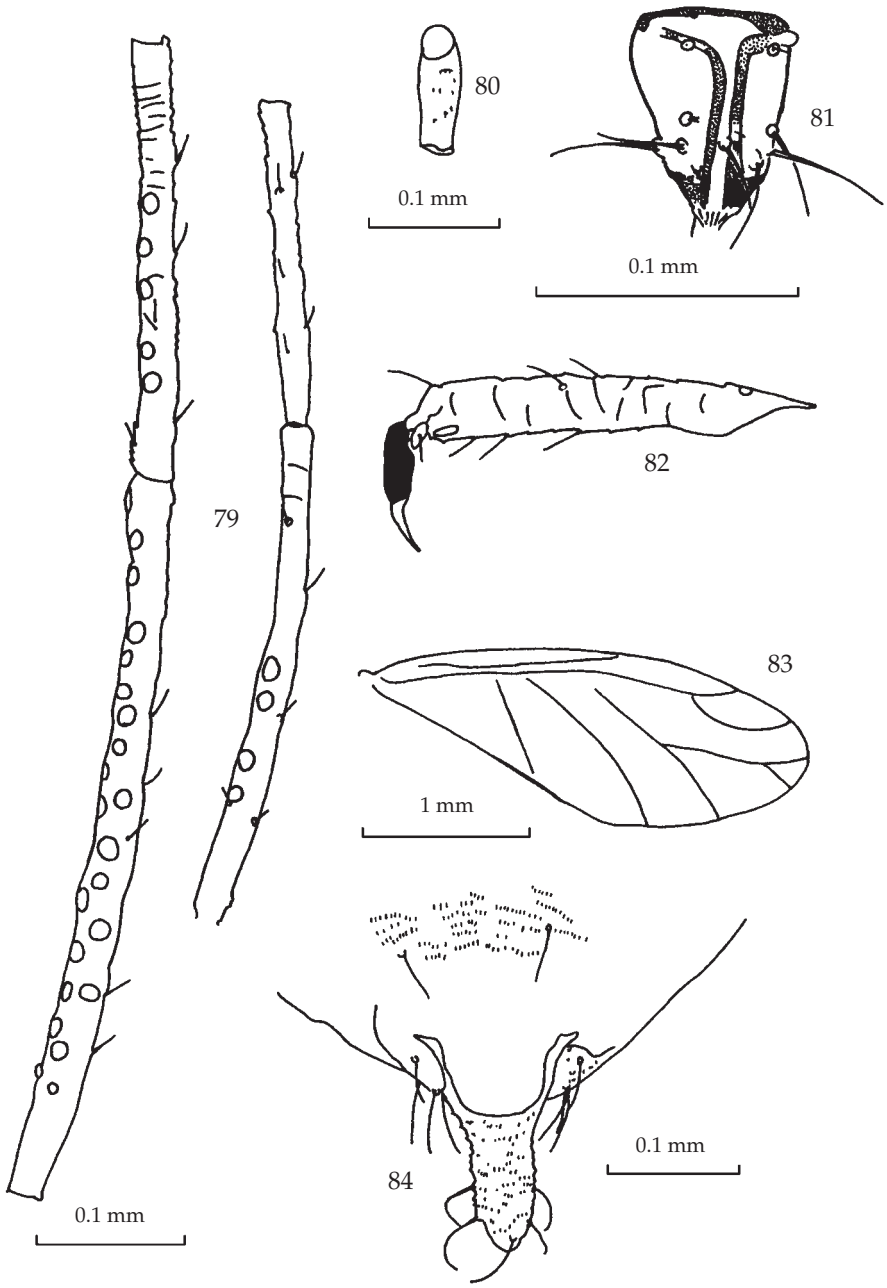
Figs 68-72. *Brachysiphoniella montana* (van der Goot), alate viviparous ♀. Fig. 68, dorsal side of the head. Fig. 69, fore and hind wing. Fig. 70, last rostral segment. Fig. 71, antennal segments III-VI. Fig. 72, tibia and tarsi of the hind leg, and colour indication of the hind leg.



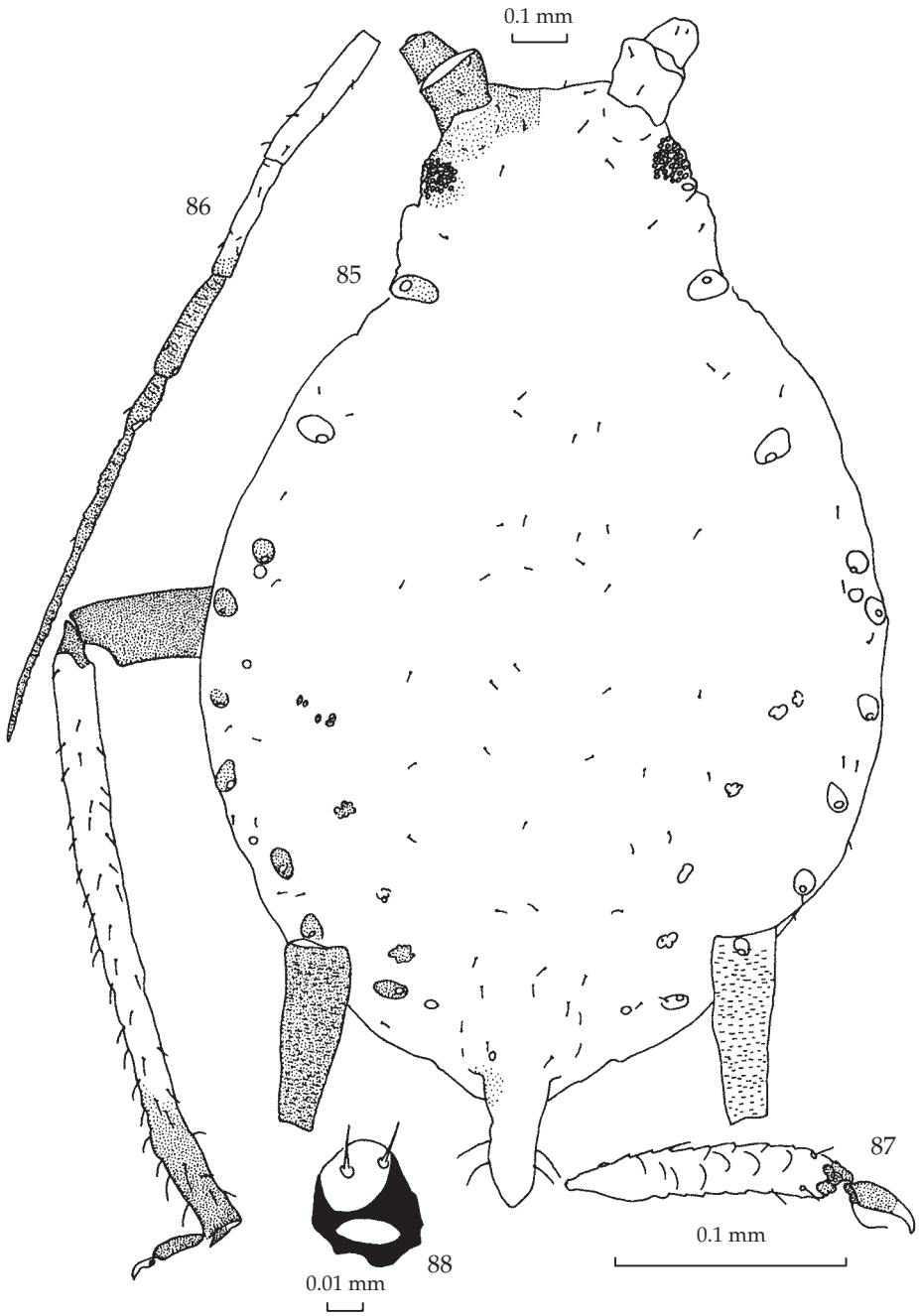
Figs 73-76. *Brachysiphoniella montana* (van der Goot), alate viviparous ♀. Fig. 73, dorsal side of the hind body. Fig. 74, second tarsal segment of the hind leg. Fig. 75, first tarsal segment of the hind leg. Fig. 76, hairs of: **a** the head; **b** tergite IV; **c** tergite VII; **d** tergite VIII.



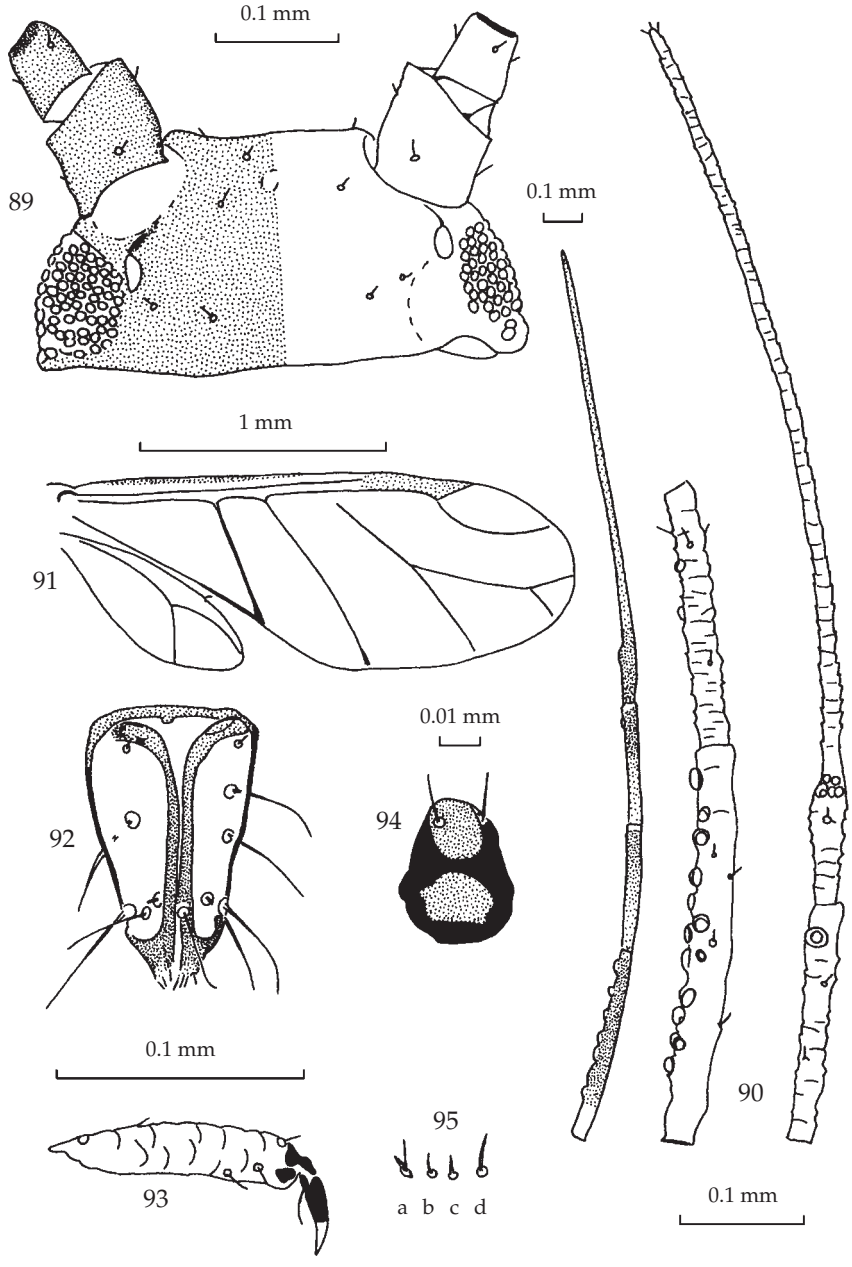
Figs 77-78. *Hyalopterus amygdali* (E. Blanchard), apterous viviparous ♀. Fig. 77, dorsal side of the body, ventrally spiracles. Fig. 78, antennal segments III-VI.



Figs 79-84. *Hyalopterus amygdali* (E. Blanchard), alate viviparous ♀. Fig. 79, antennal segments III and IV of two antennae. Fig. 80, siphunculus. Fig. 81, last rostral segment. Fig. 82, second tarsal segment of hind leg. Fig. 83, fore wing. Fig. 84, abdominal tergite VIII and cauda.



Figs 85-88. *Hysteroneura setariae* (Thomas), apterous viviparous ♀. Fig. 85, dorsal side of the body and ventrally spiracles. Fig. 86, antennal segments III-VI. Fig. 87, second tarsal segment of the hind leg. Fig. 88, first tarsal segment of the hind leg.



Figs 89-95. *Hysteroneura setariae* (Thomas), alate viviparous ♀. Fig. 89, dorsal side of the head. Fig. 90, antennal segments III-VI, and colour indications of the segments. Fig. 91, wing. Fig. 92, last rostral segment. Fig. 93, second tarsal segment of the hind leg. Fig. 94, first tarsal segment of the hind leg. Fig. 95, hairs of: **a** antennal segment III; **b** the head; **c** tergite IV; **d** tergite VIII.

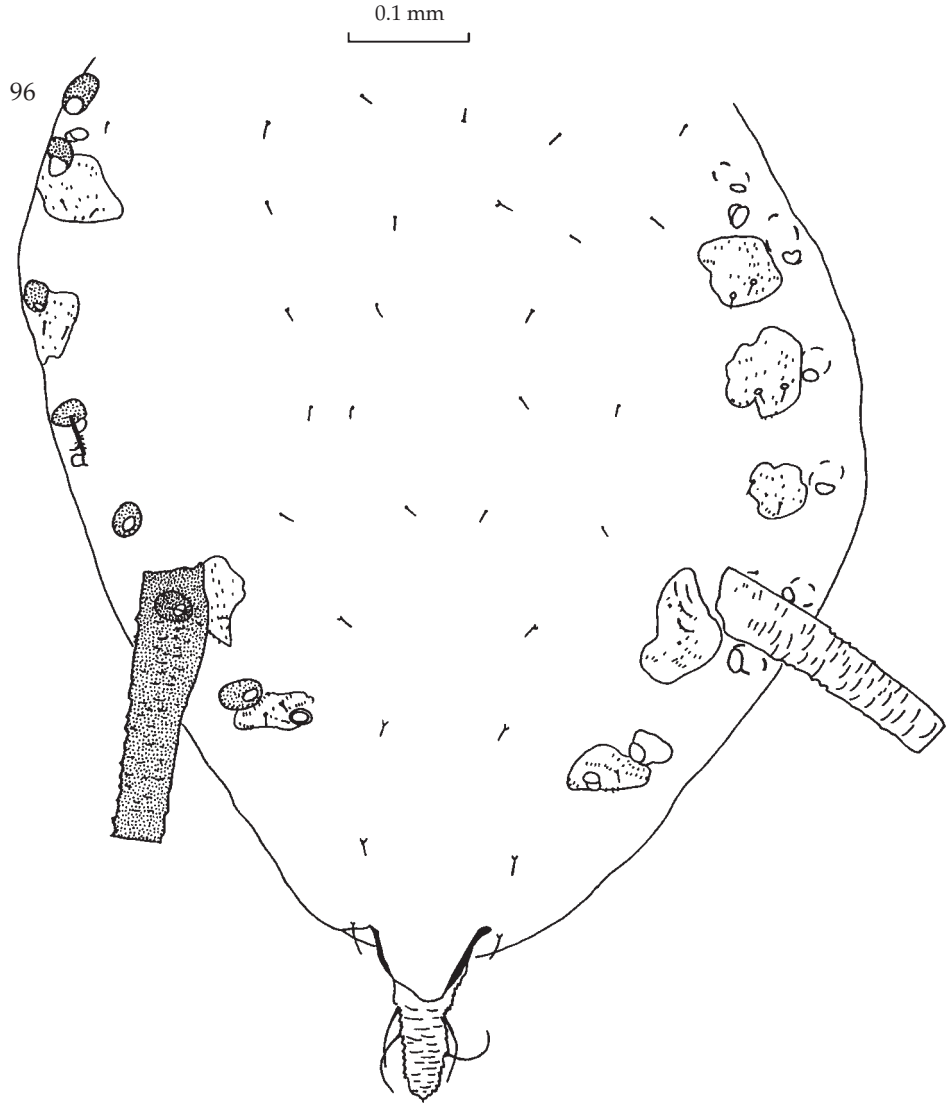
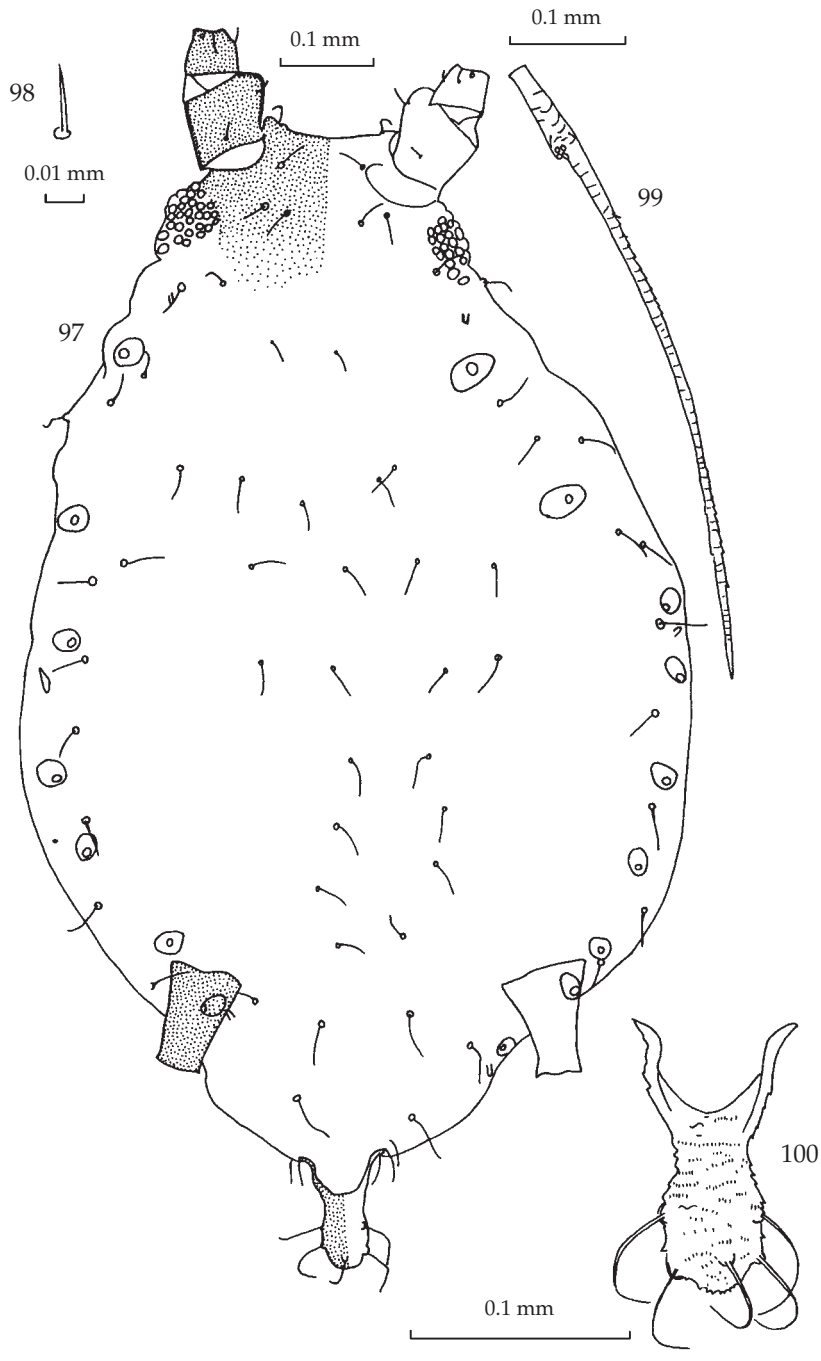
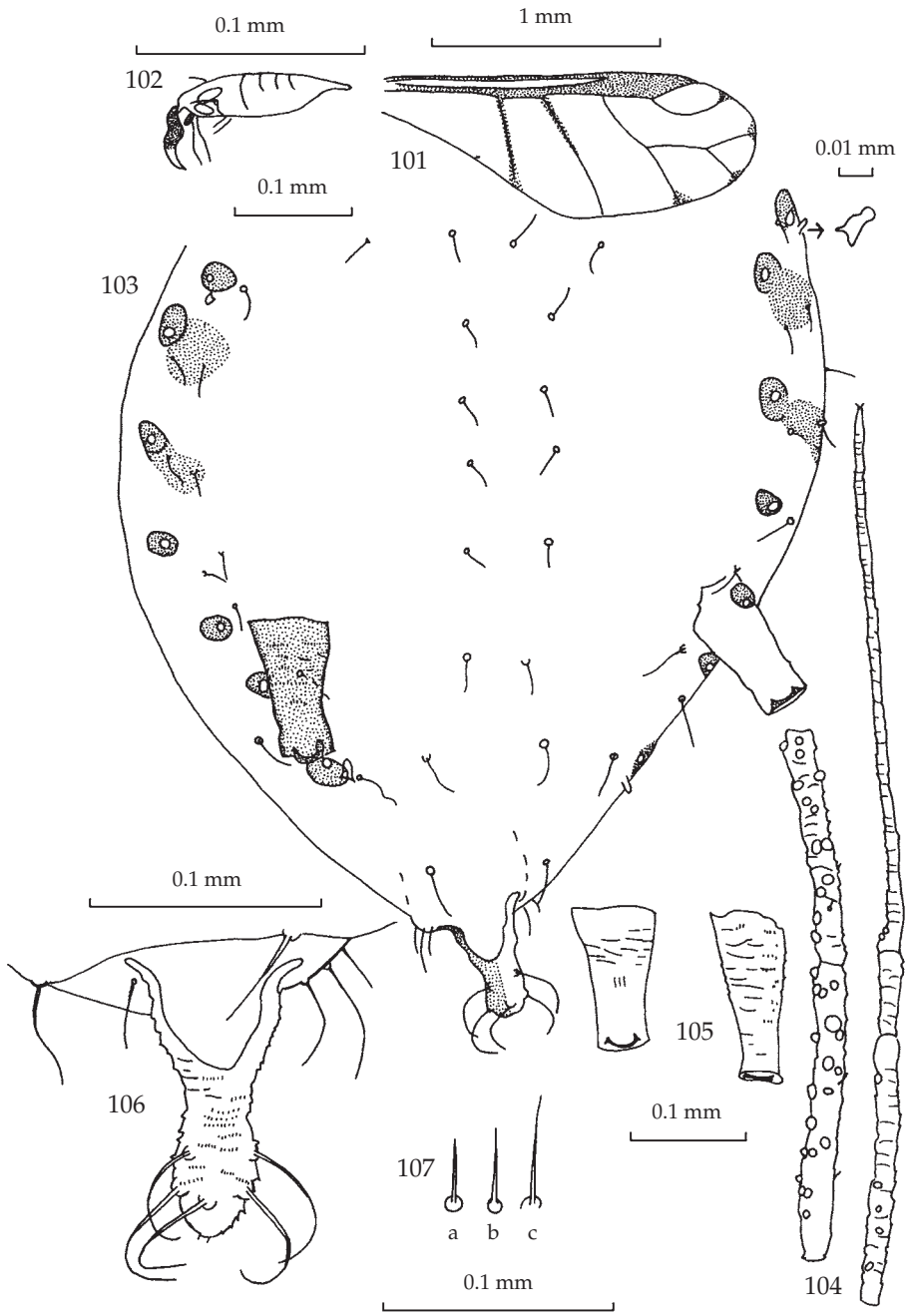


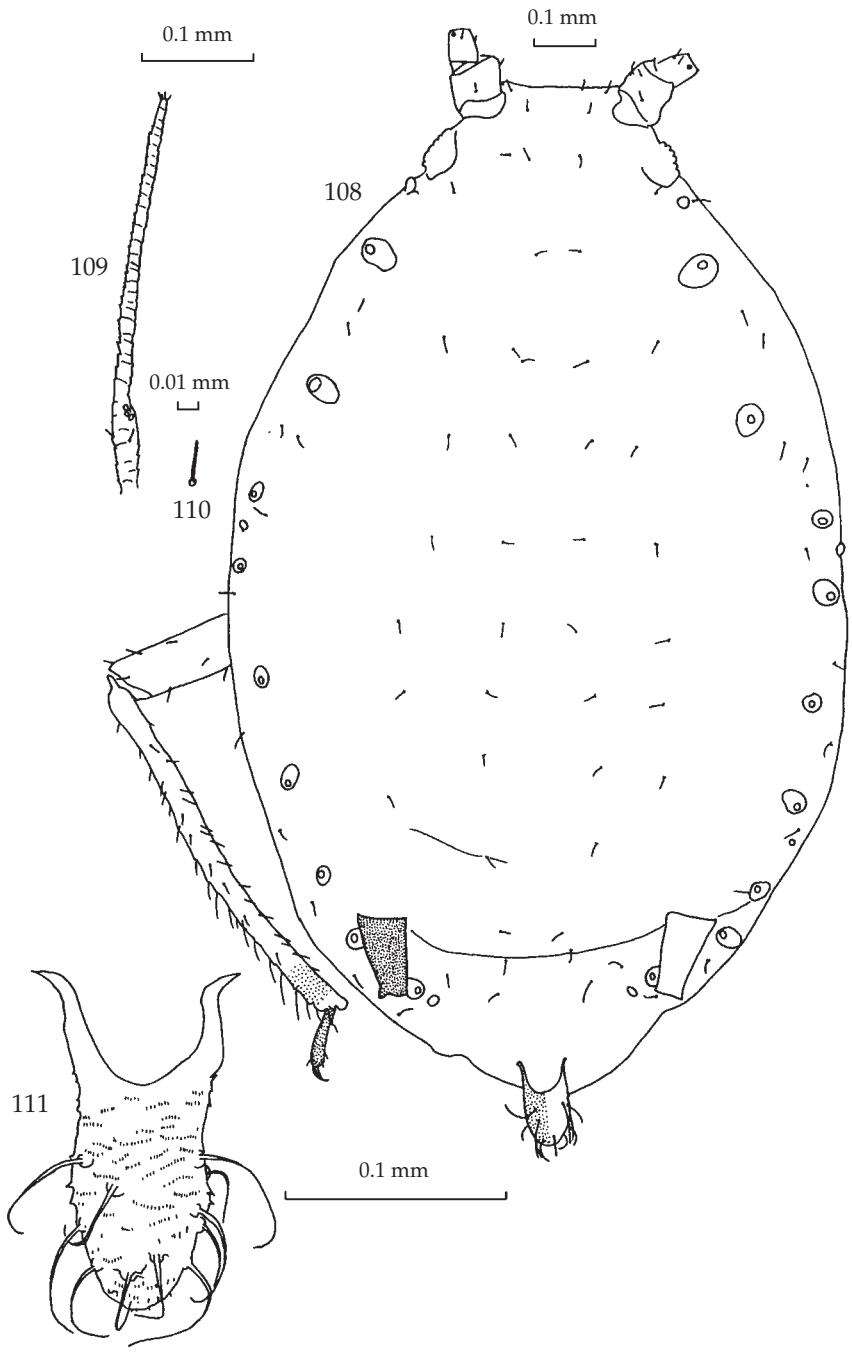
Fig. 96. *Hysteroneura setariae* (Thomas), alate viviparous ♀. Dorsal side of the abdomen.



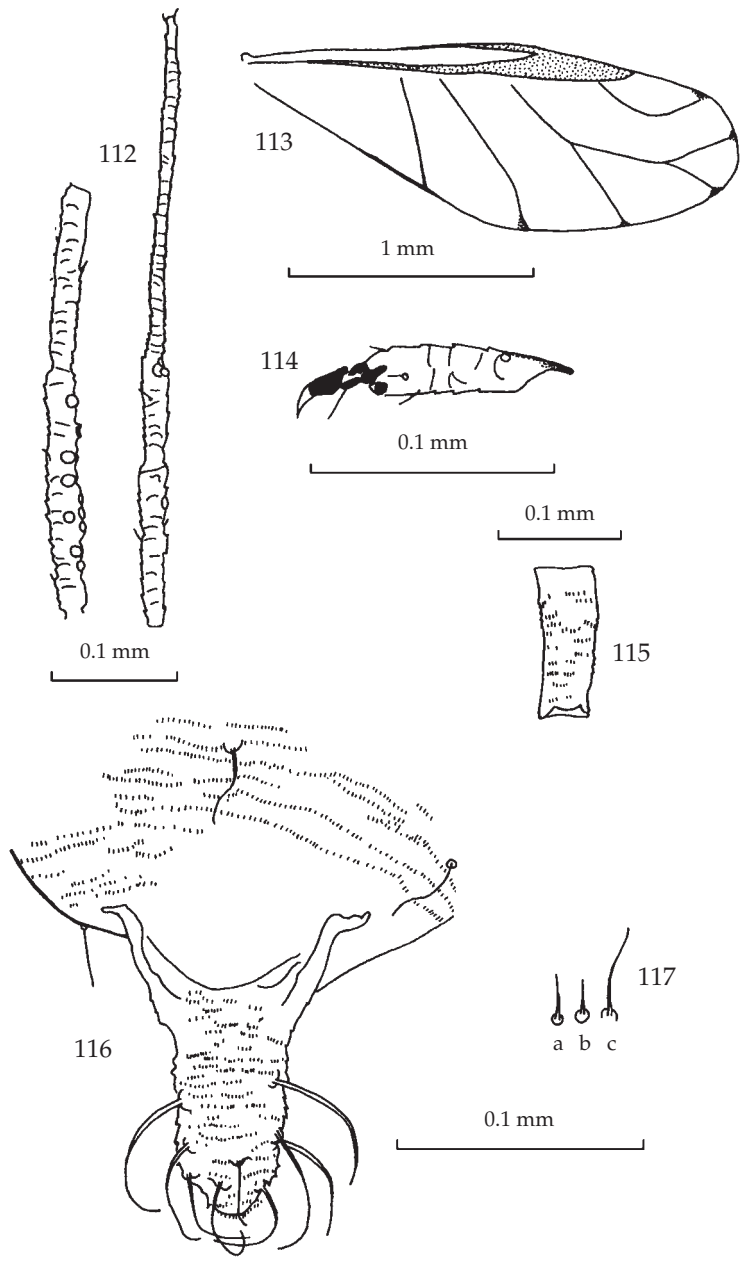
Figs 97-100. *Melanaphis bambusae* (Fullaway), apterous viviparous ♀. Fig. 97, dorsal side of the body and ventrally spiracles. Fig. 98, dorsal hair of the head. Fig. 99, last antennal segment. Fig. 100, cauda.



Figs 101-107. *Melanaphis bambusae* (Fullaway), alate viviparous ♀. Fig. 101, fore wing. Fig. 102, second tarsal segment of the hind leg. Fig. 103, dorsal side of the body. Fig. 104, antennal segments III-VI. Fig. 105, two siphunculi. Fig. 106, cauda. Fig. 107, hairs of: **a** the head, posterior; **b** tergite IV; **c** tergite VIII.



Figs 108-111. *Melanaphis sacchari* (Zehntner), apterous viviparous ♀. Fig. 108, dorsal side of the body and ventrally spiracles. Fig. 109, last antennal segment. Fig. 110, longest dorsal hair of the head. Fig. 111, cauda.



Figs 112-117. *Melanaphis sacchari* (Zehntner), alate viviparous ♀. Fig. 112, antennal segments III-VI. Fig. 113, fore wing. Fig. 114, second tarsal segment of the hind leg. Fig. 115, siphunculus. Fig. 116, abdominal segment VIII and cauda. Fig. 117, hairs of: **a** the head, posterior; **b** tergite IV; **c** tergite VIII.

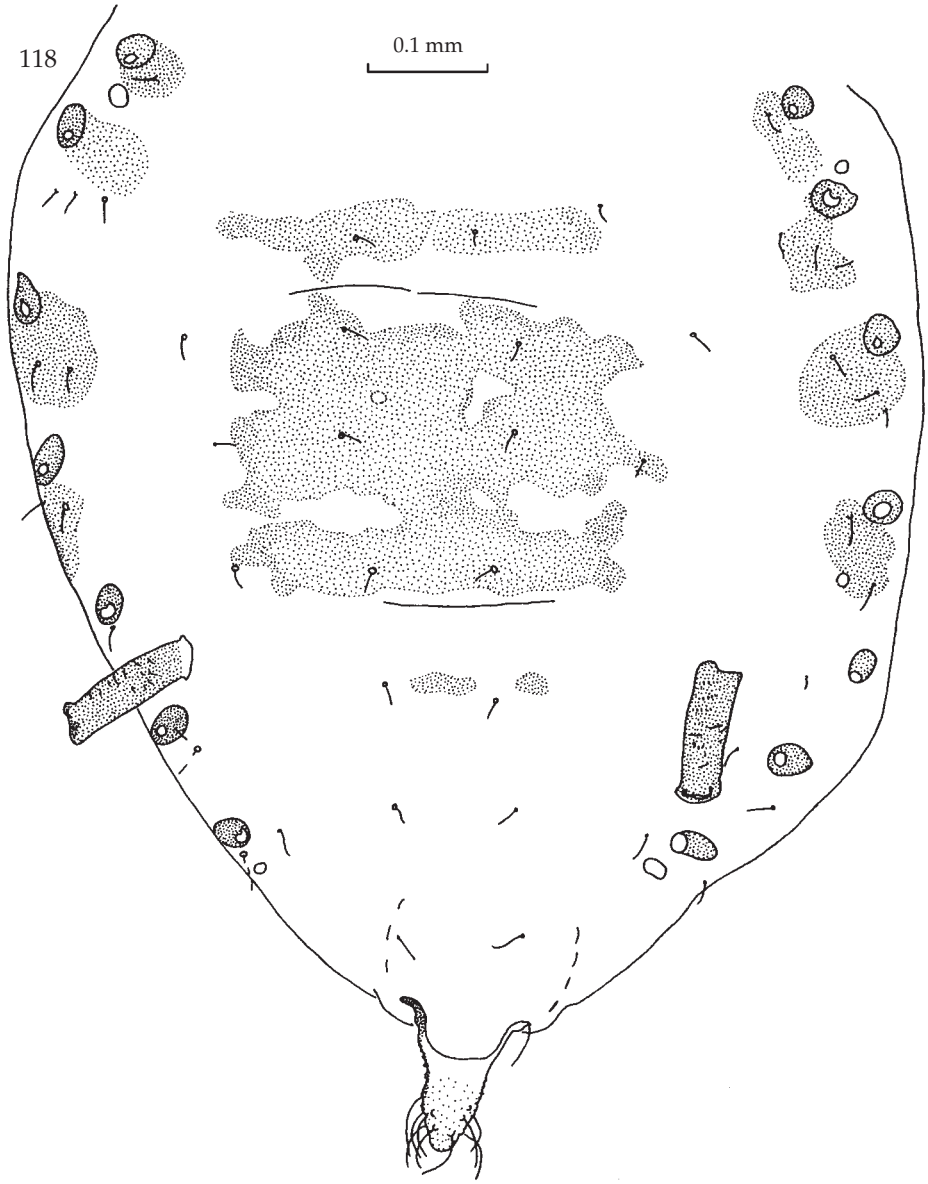
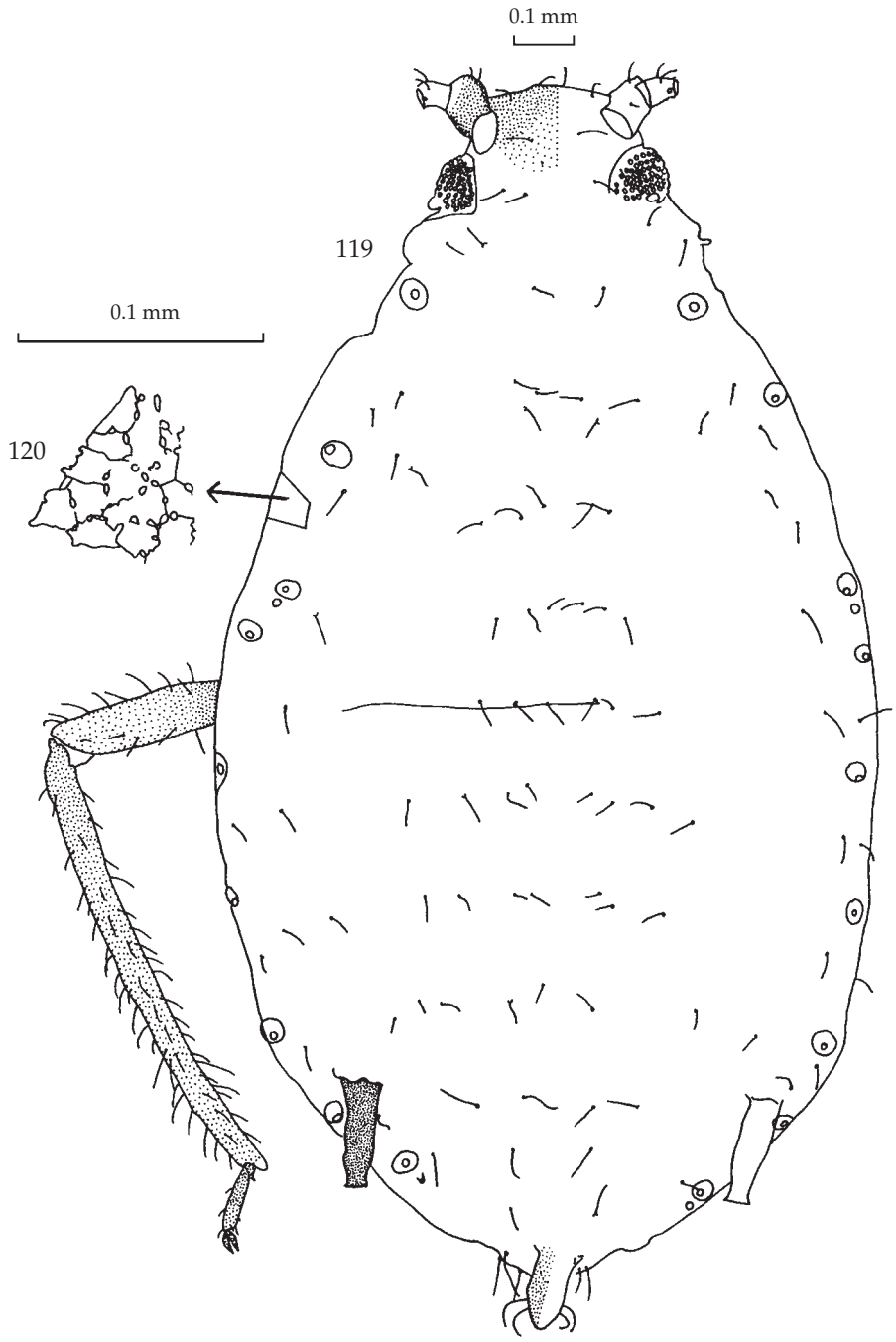
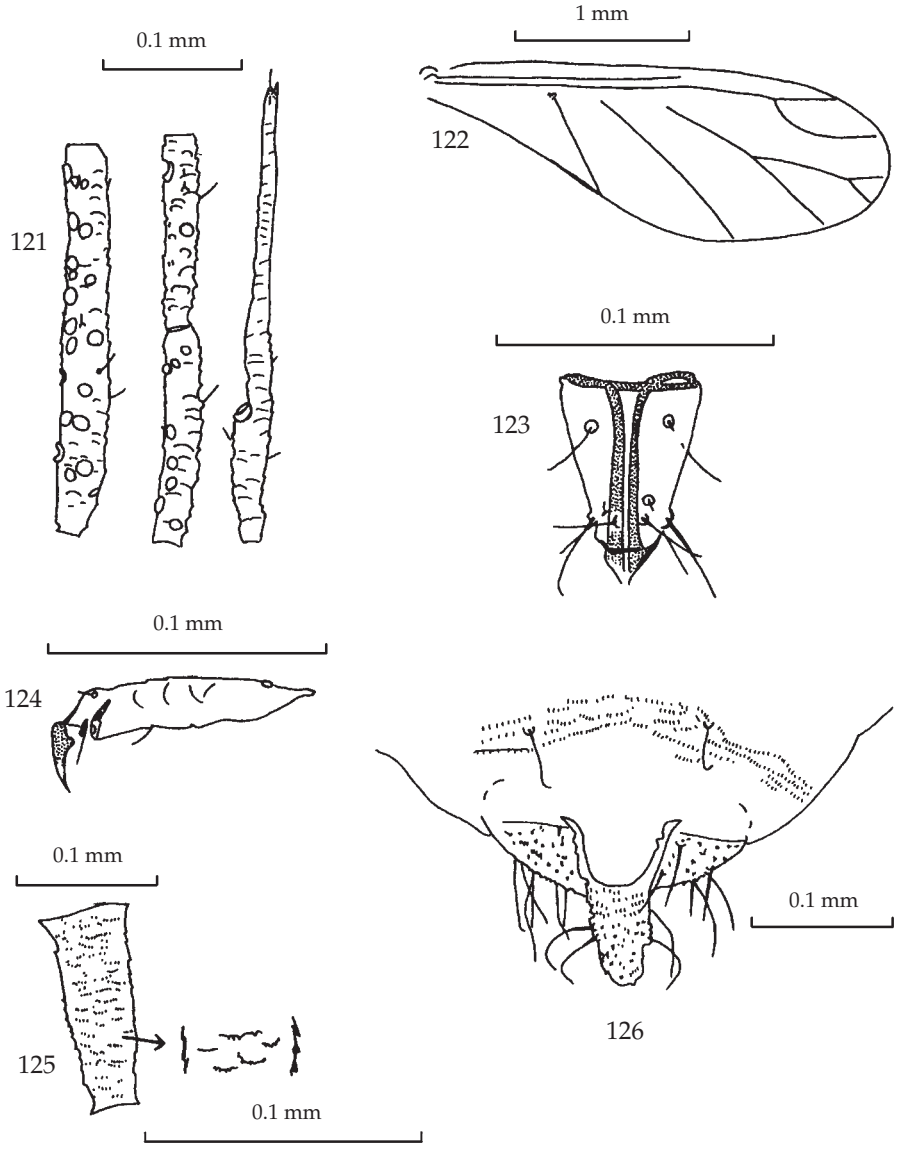


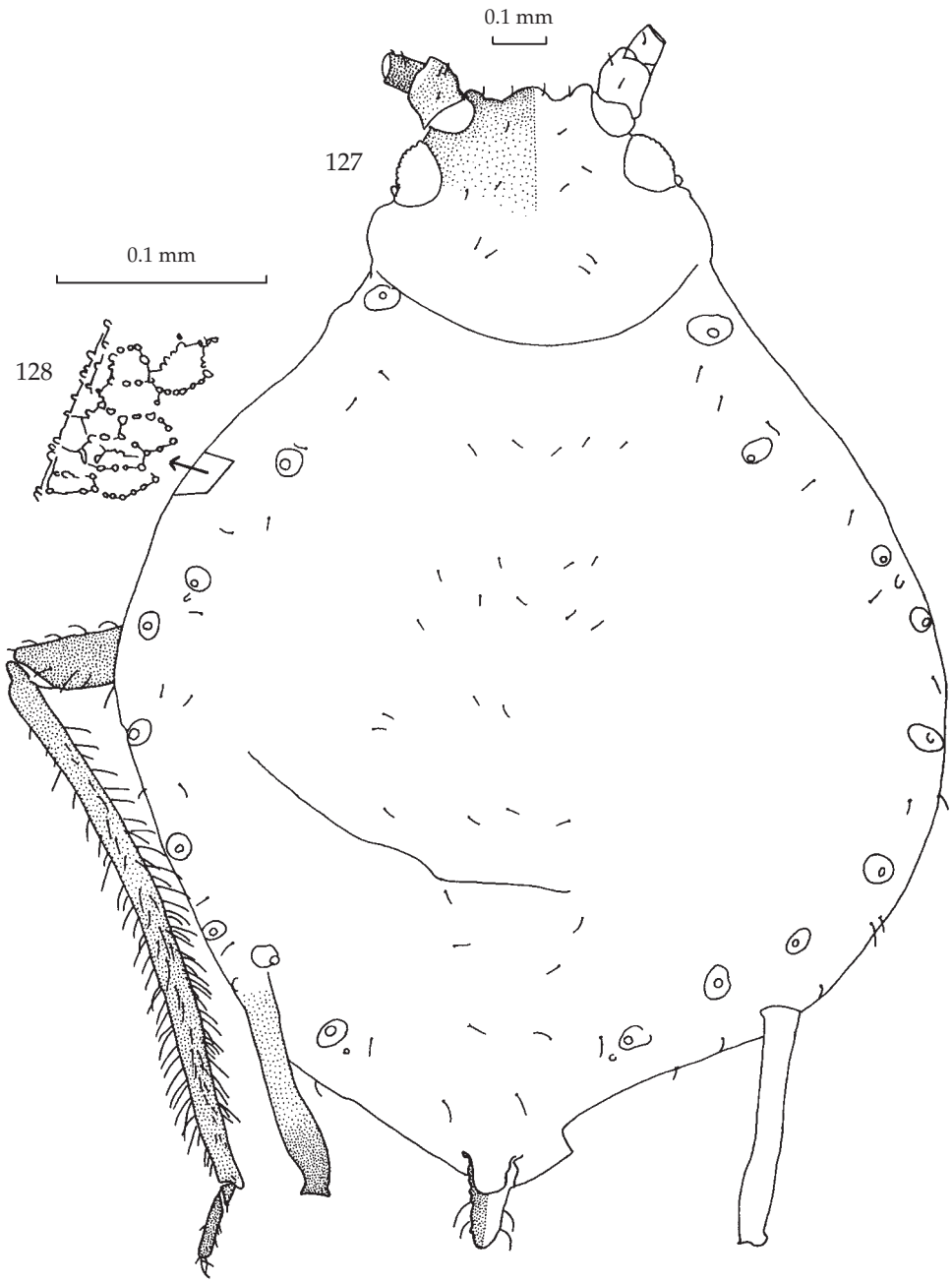
Fig. 118. *Melanaphis sacchari* (Zehntner), alate viviparous ♀. Dorsal side of the abdomen and ventrally spiracles.



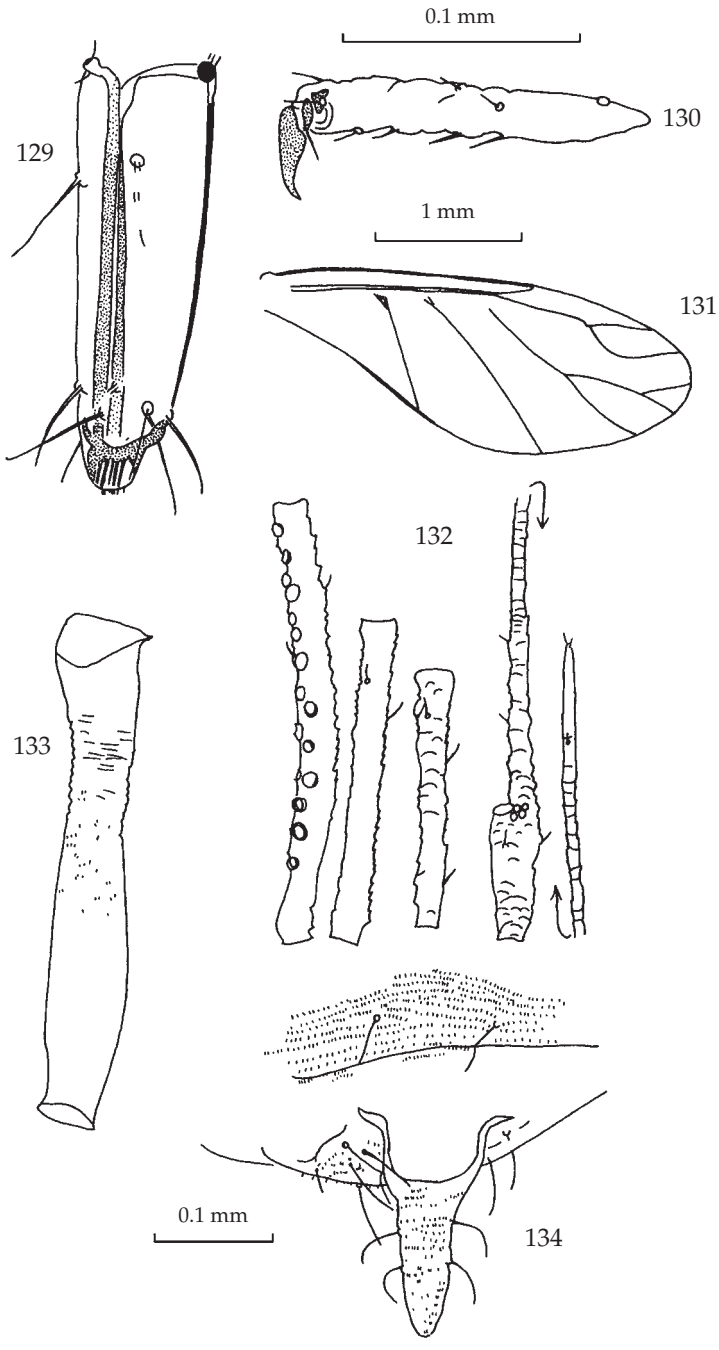
Figs 119-120. *Rhopalosiphum maidis* (Fitch), apterous viviparous ♀. Fig. 119, dorsal side of the body and ventrally spiracles. Fig. 120, cuticular structure.



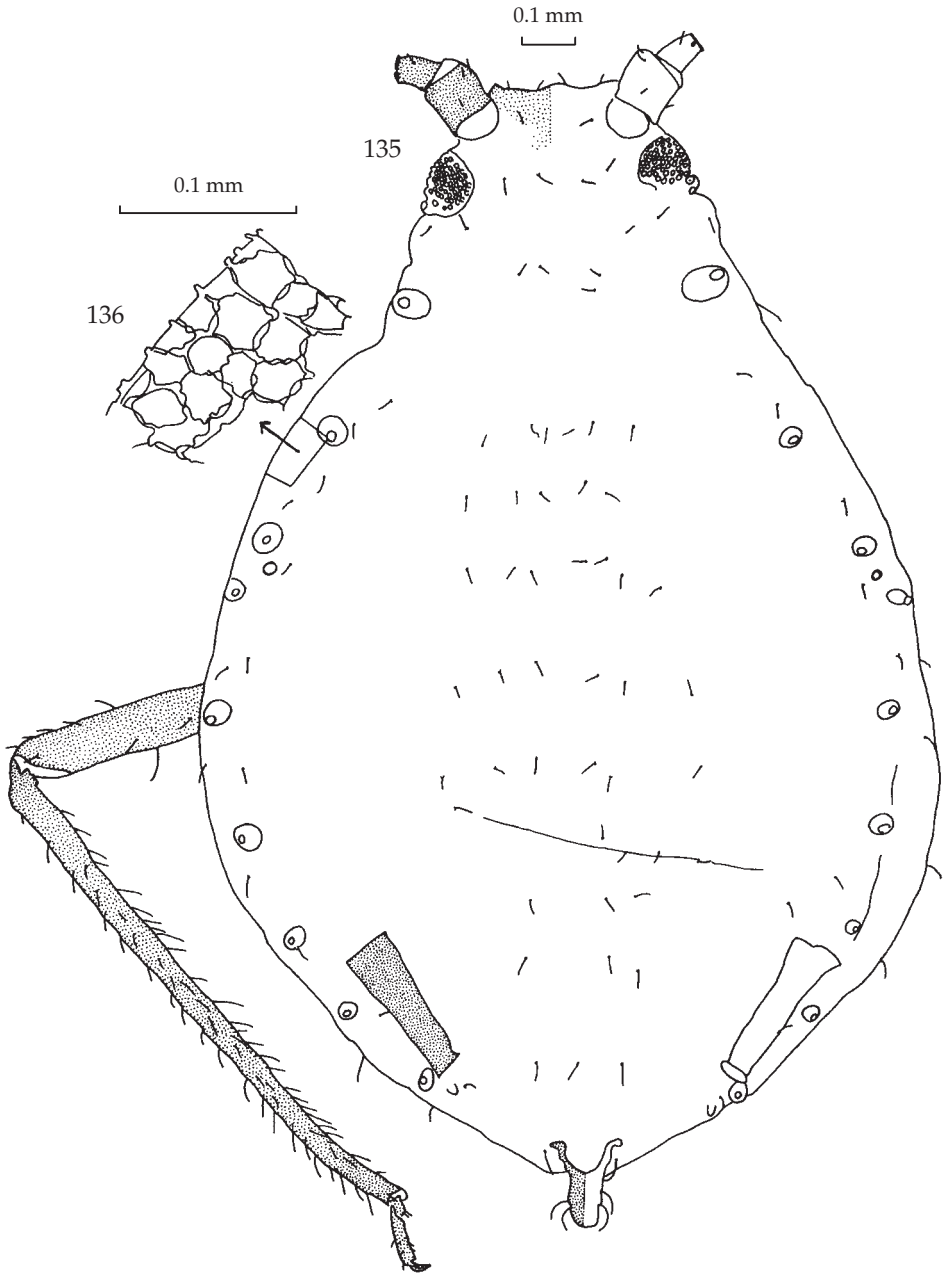
Figs 121-126. *Rhopalosiphum maidis* (Fitch), alate viviparous ♀. Fig. 121, antennal segments III-VI. Fig. 122, fore wing. Fig. 123, last rostral segment. Fig. 124, second tarsal segment of the hind leg. Fig. 125, siphunculus and detail. Fig. 126, abdominal segment VIII and cauda.



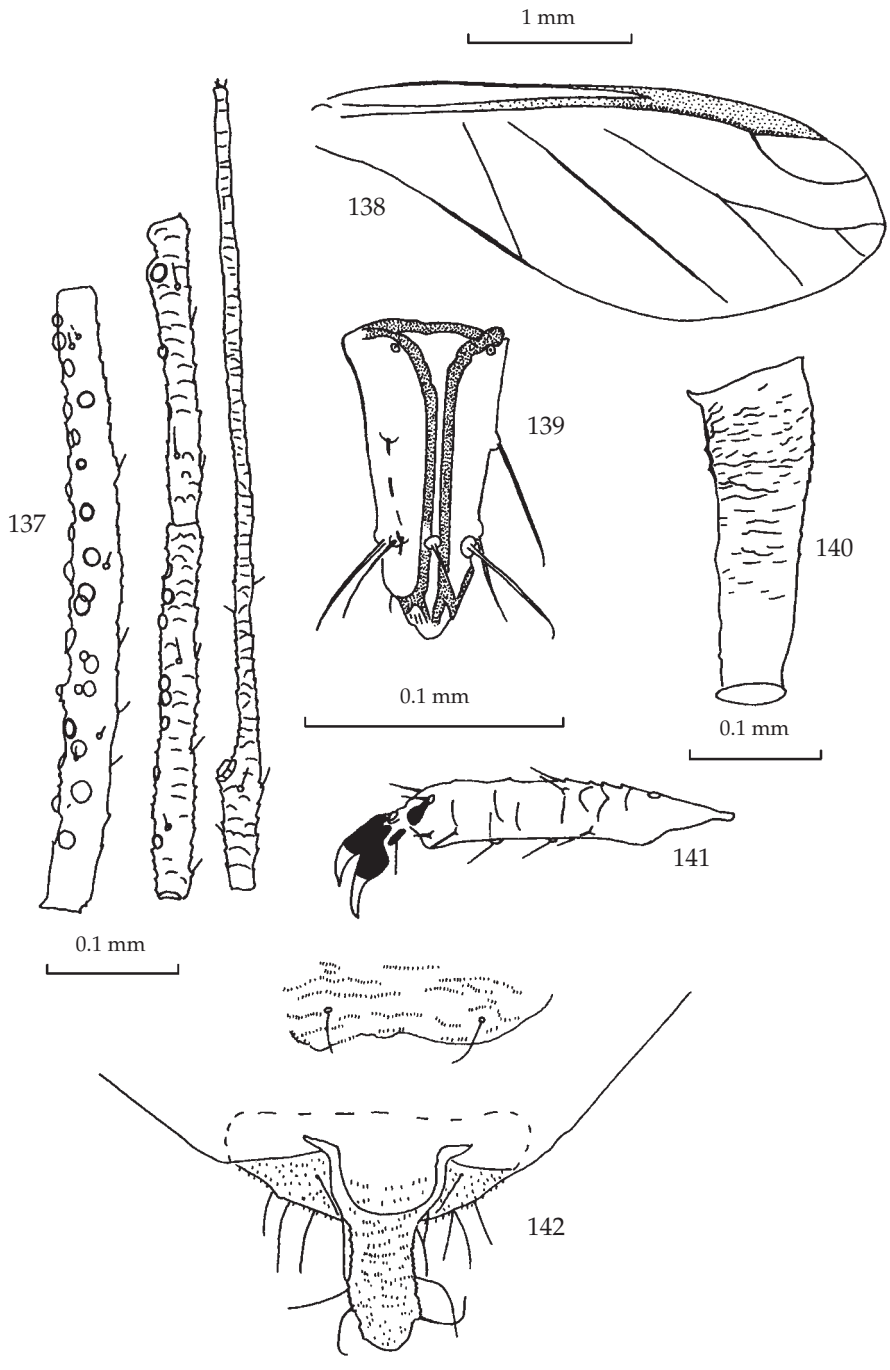
Figs 127-128. *Rhopalosiphum nymphaeae* (Linnaeus), apterous viviparous ♀. Fig. 127, dorsal side of the body and ventrally spiracles. Fig. 128, cuticular structure.



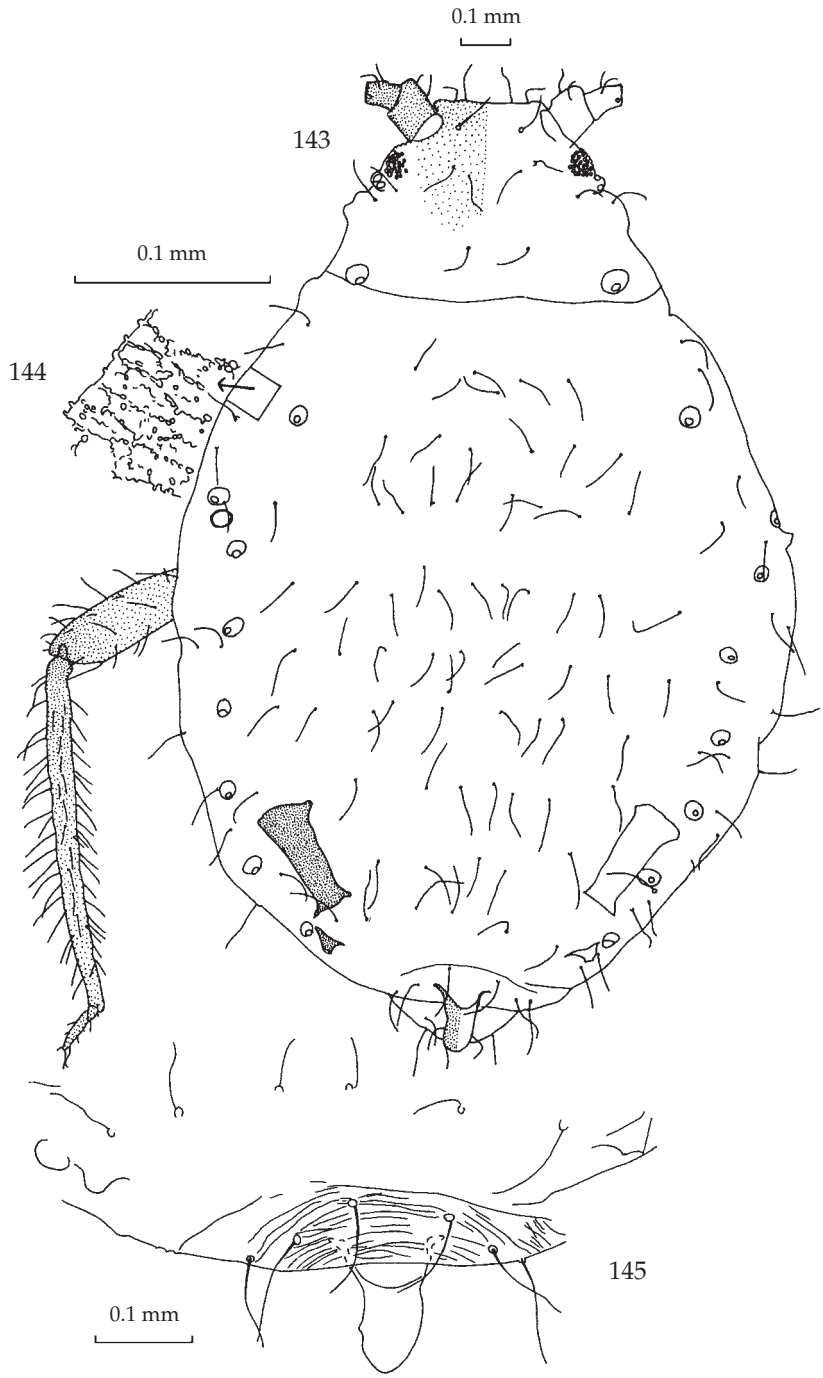
Figs 129-134. *Rhopalosiphum nymphaeae* (Linnaeus), alate viviparous ♀. Fig. 129, last rostral segment. Fig. 130, second tarsal segment of the hind leg. Fig. 131, fore wing. Fig. 132, antennal segments III-VI. Fig. 133, siphunculus. Fig. 134, abdominal tergite VIII and cauda.



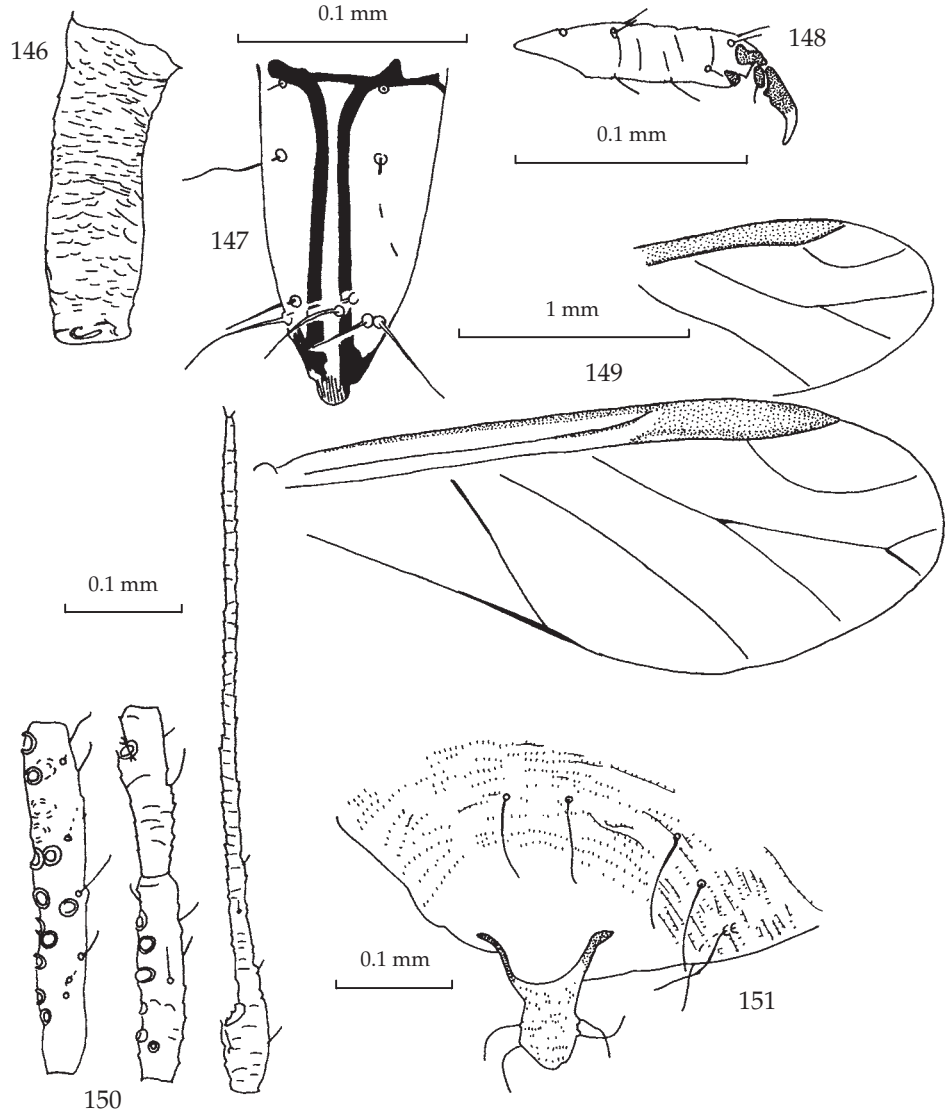
Figs 135-136. *Rhopalosiphum padi* (Linnaeus), apterous viviparous ♀. Fig. 135, dorsal side of the body and ventrally spiracles. Fig. 136, cuticular structure.



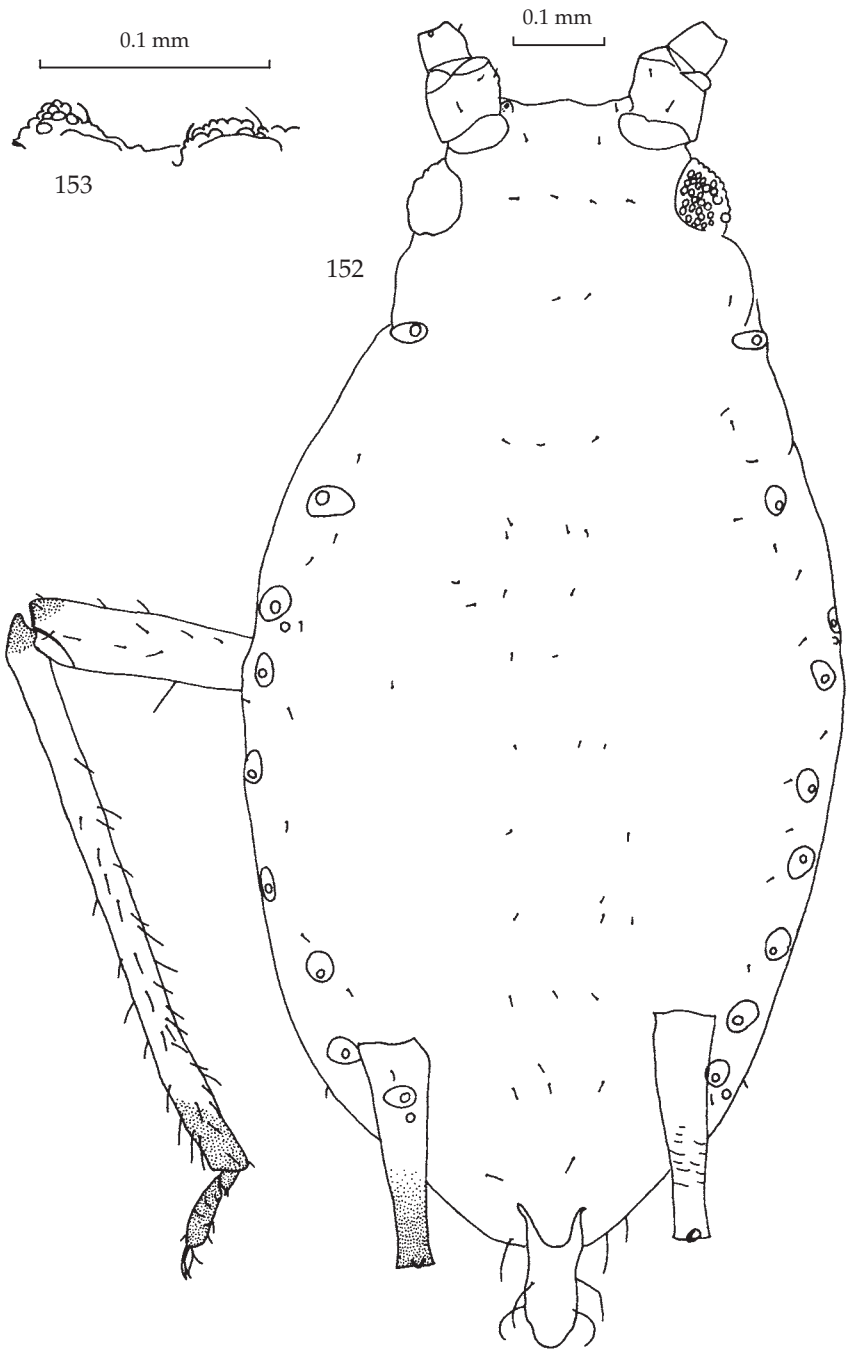
Figs 137-142. *Rhopalosiphum padi* (Linnaeus), alate viviparous ♀. Fig. 137, antennal segments III-VI. Fig. 138, fore wing. Fig. 139, last rostral segment. Fig. 140, siphunculus. Fig. 141, second tarsal segment of the hind leg. Fig. 142, abdominal tergite VIII and cauda.



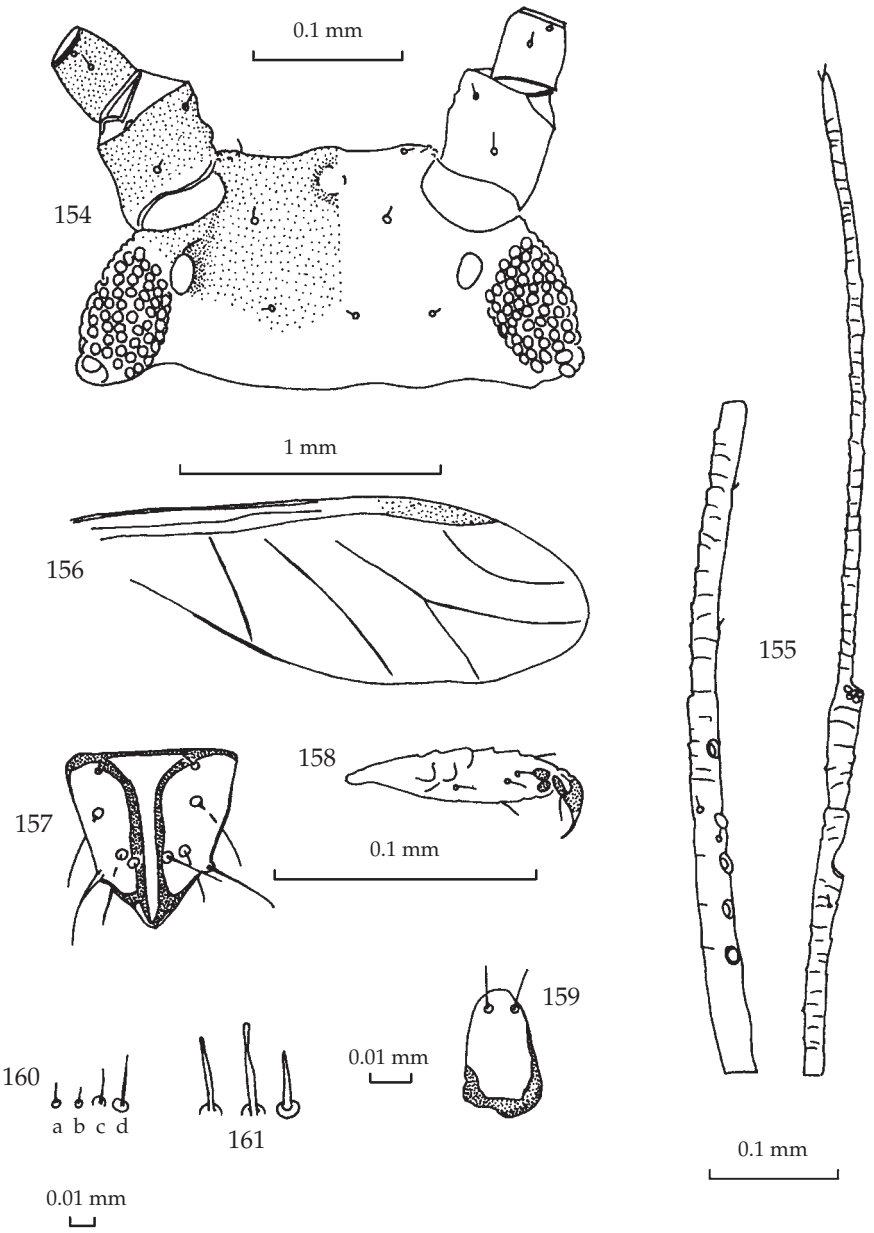
Figs 143-145. *Rhopalosiphum rufiabdominale* (Sasaki), apterous viviparous ♀. Fig. 143, dorsal side of the body and ventrally spiracles. Fig. 144, cuticular structure. Fig. 145, abdominal tergite VIII and cauda.



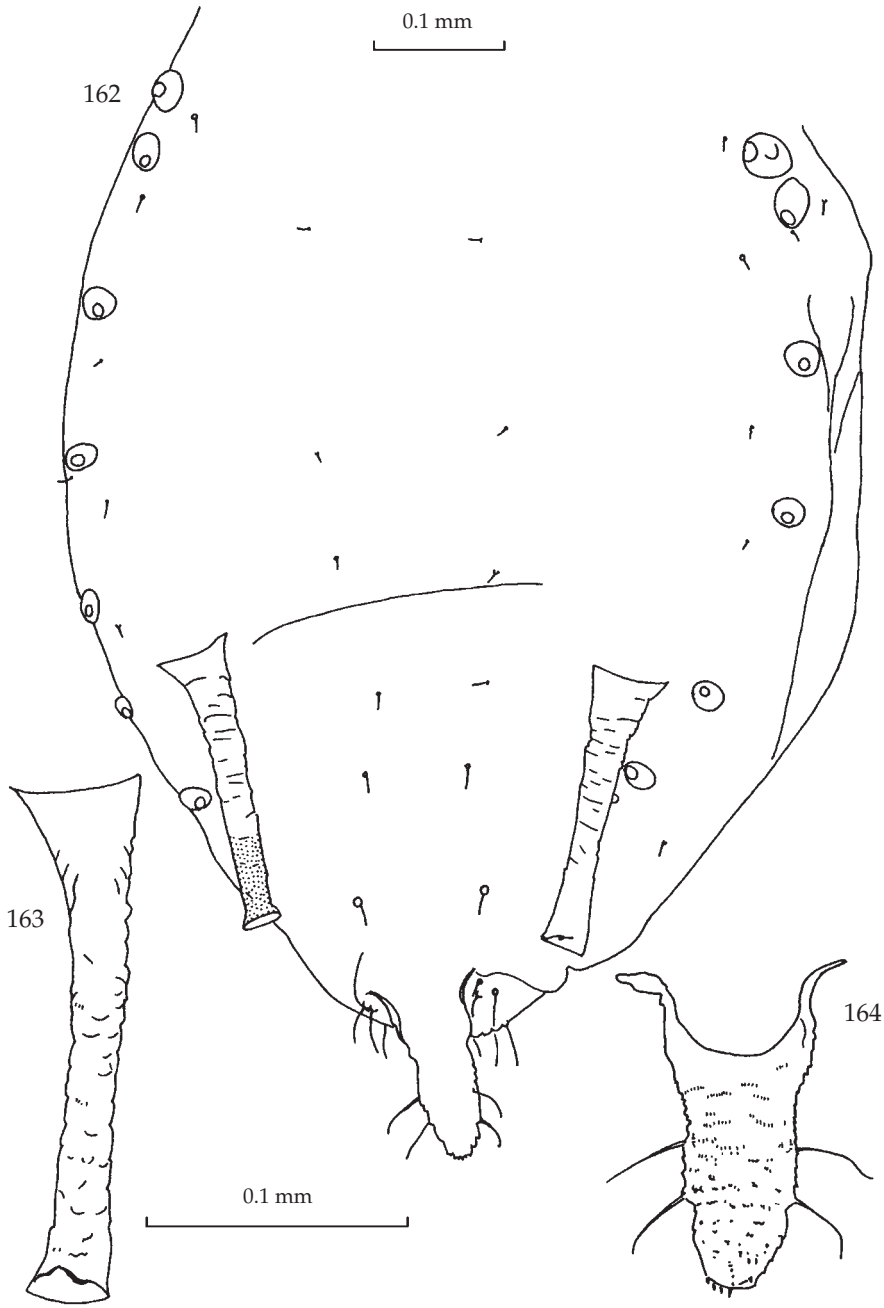
Figs 146-151. *Rhopalosiphum rufiabdominale* (Sasaki), alate viviparous ♀. Fig. 146, siphunculus. Fig. 147, last rostral segment. Fig. 148, second tarsal segment of the hind leg. Fig. 149, two fore wings. Fig. 150, antennal segments III-VI. Fig. 151, abdominal tergite VIII and cauda.



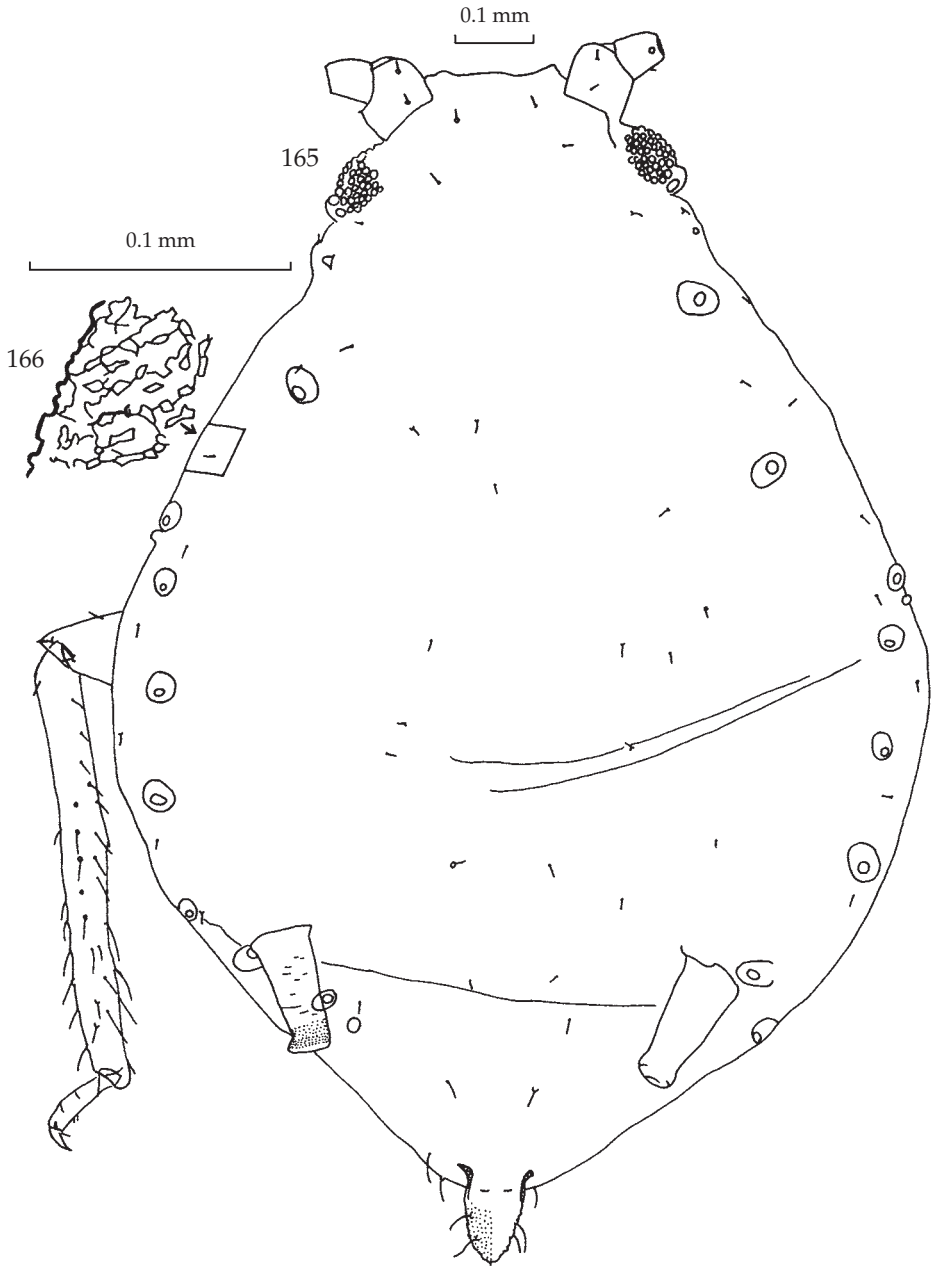
Figs 152-153. *Schizaphis hypersiphonata* A.N. Basu, apterous viviparous ♀. Fig. 152, dorsal side of the body and ventrally spiracles. Fig. 153, left and middle projection of the head.



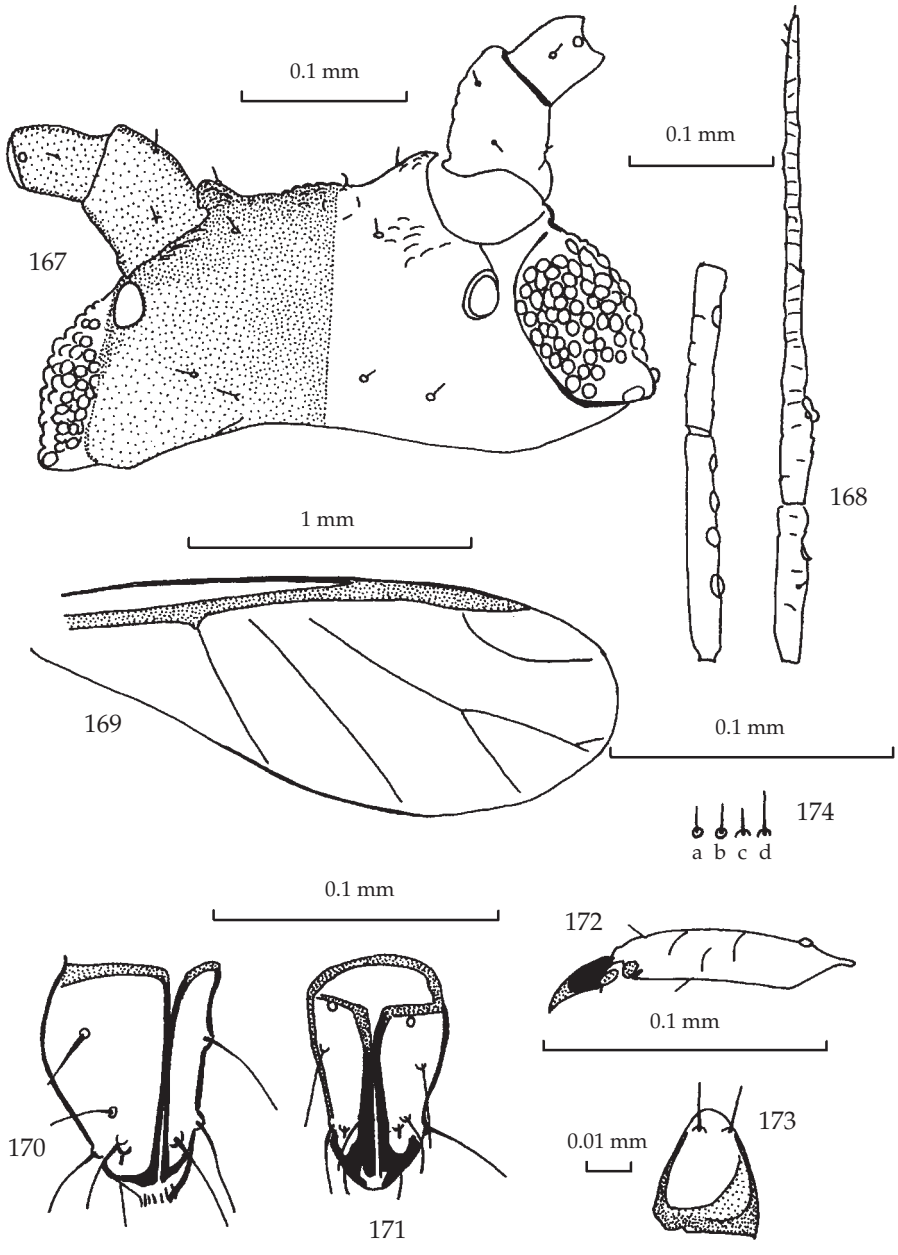
Figs 154-161. *Schizaphis hypersiphonata* A.N. Basu, alate viviparous ♀. Fig. 154, dorsal side of the head. Fig. 155, antennal segments III-VI. Fig. 156, fore wing. Fig. 157, last rostral segment. Fig. 158, second tarsal segment of the hind leg. Fig. 159, first tarsal segment of the hind leg. Fig. 160, hairs of: **a** the head; **b** tergite IV; **c** tergite VII; **d** tergite VIII. Fig. 161, hairs of tergite VIII.



Figs 162-164. *Schizaphis hypersiphonata* A.N. Basu, alate viviparous ♀. Fig. 162, dorsal side of the body and ventrally spiracles. Fig. 163, siphunculus. Fig. 164, cauda.



Figs 165-166. *Schizaphis minuta* (van der Goot), apterous viviparous ♀. Fig. 165, dorsal side of the body and ventrally spiracles. Fig. 166, cuticular structure.



Figs 167-174. *Schizaphis minuta* (van der Goot), alate viviparous ♀. Fig. 167, dorsal side of the head. Fig. 168, antennal segments III-VI. Fig. 169, fore wing. Fig. 170 and Fig. 171, last rostral segment. Fig. 172, second tarsal segment of the hind leg. Fig. 173, first tarsal segment of the hind leg. Fig. 174, hairs of: **a** antennal segment III; **b** the head; **c** tergite IV; **d** tergite VIII.

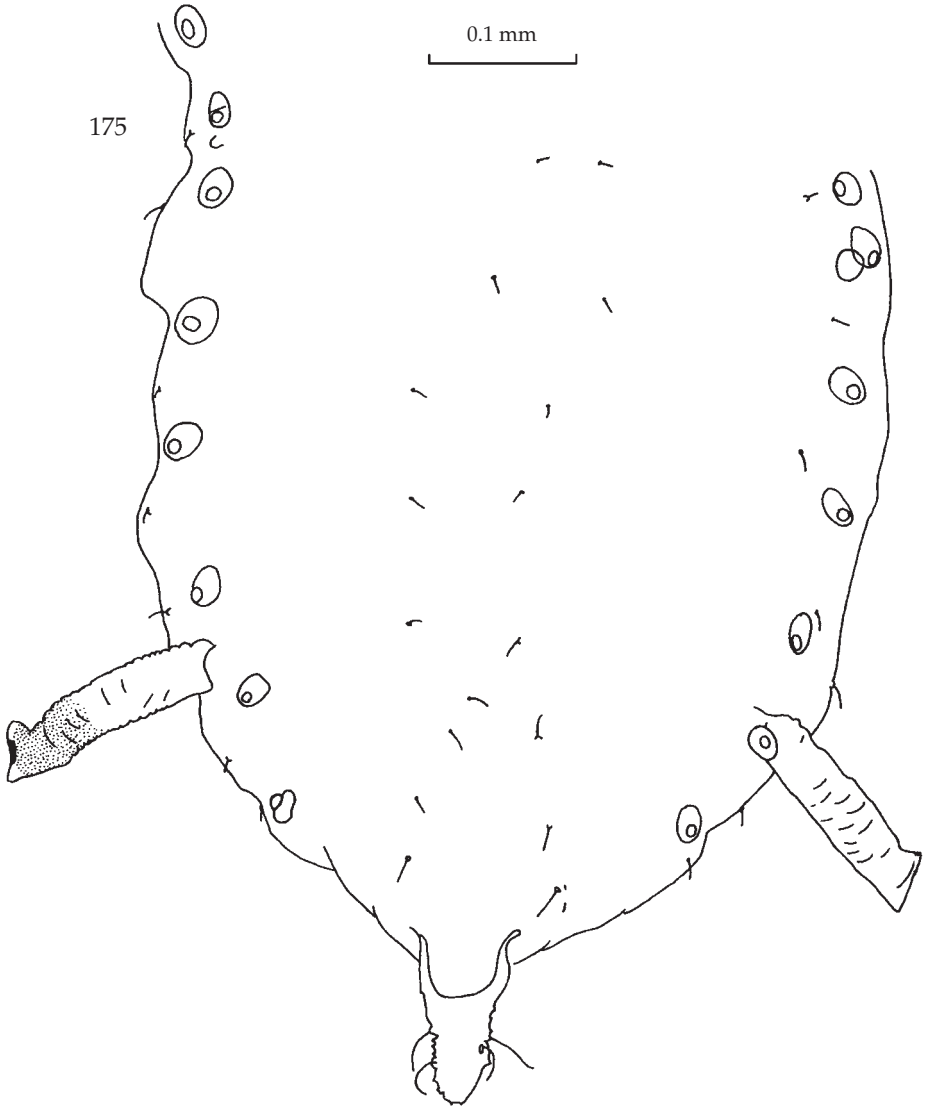


Fig. 175. *Schizaphis minuta* (van der Goot), alate viviparous ♀, dorsal side of the abdomen and ventrally spiracles.

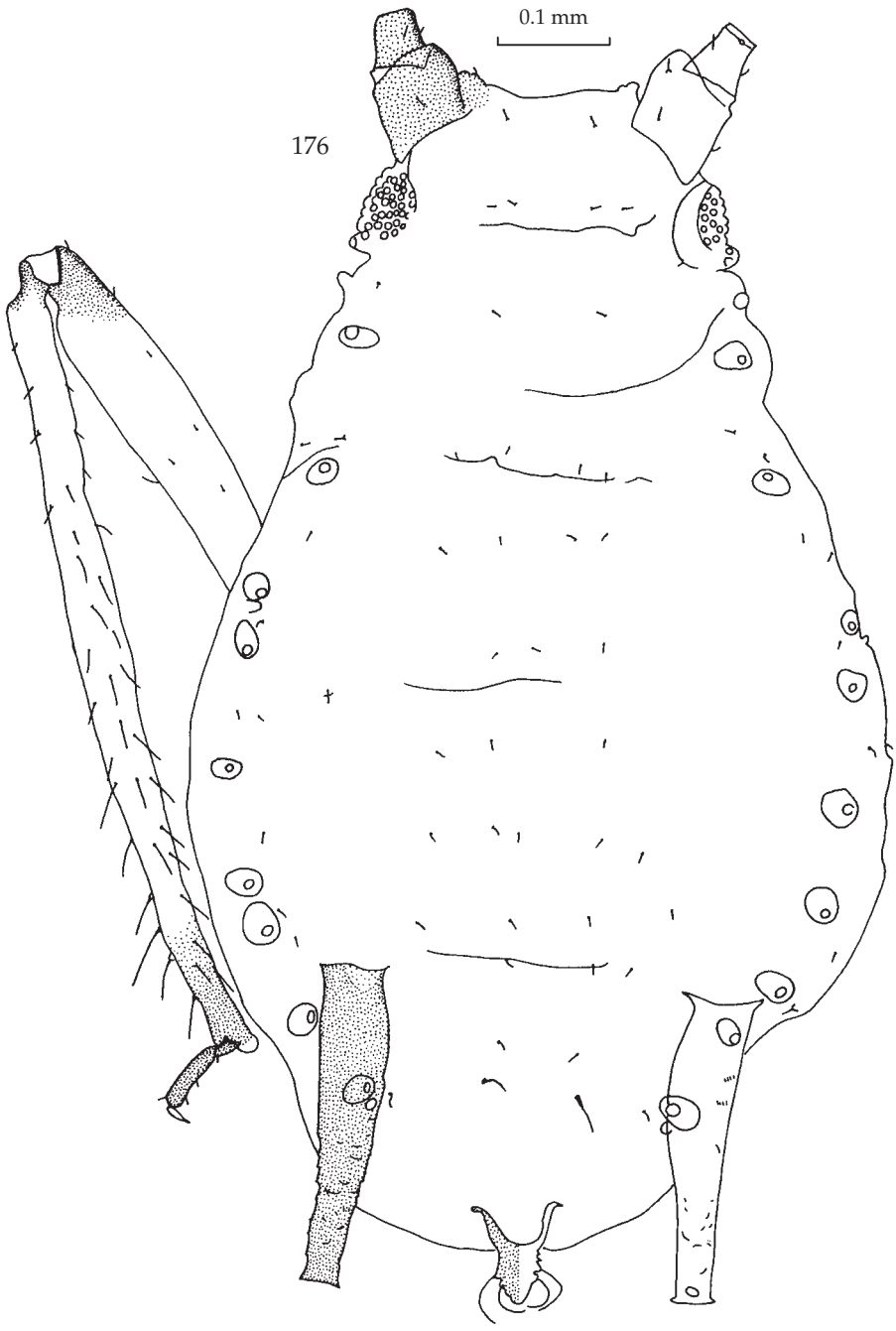
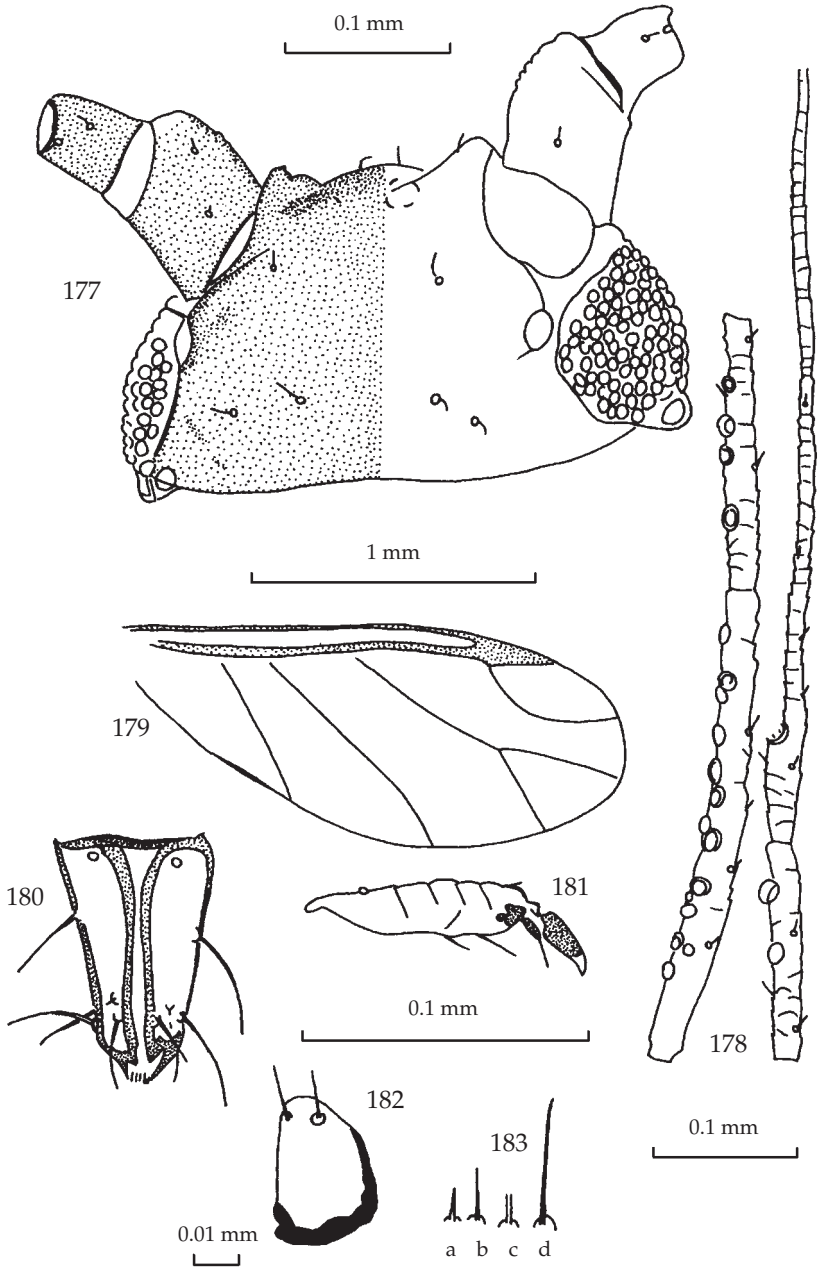


Fig. 176. *Schizaphis rotundiventris* (Signoret), apterous viviparous ♀, dorsal side of the body and ventrally spiracles.



Figs 177-183. *Schizaphis rotundiventris* (Signoret), alate viviparous ♀. Fig. 177, dorsal side of the head. Fig. 178, antennal segments III-VI. Fig. 179, fore wing. Fig. 180, ultimate rostral segment. Fig. 181, second tarsal segment of the hind leg. Fig. 182, first tarsal segment of the hind leg. Fig. 183, hairs of: **a** antennal segment III; **b** the head; **c** tergite IV; **d** tergite VIII.

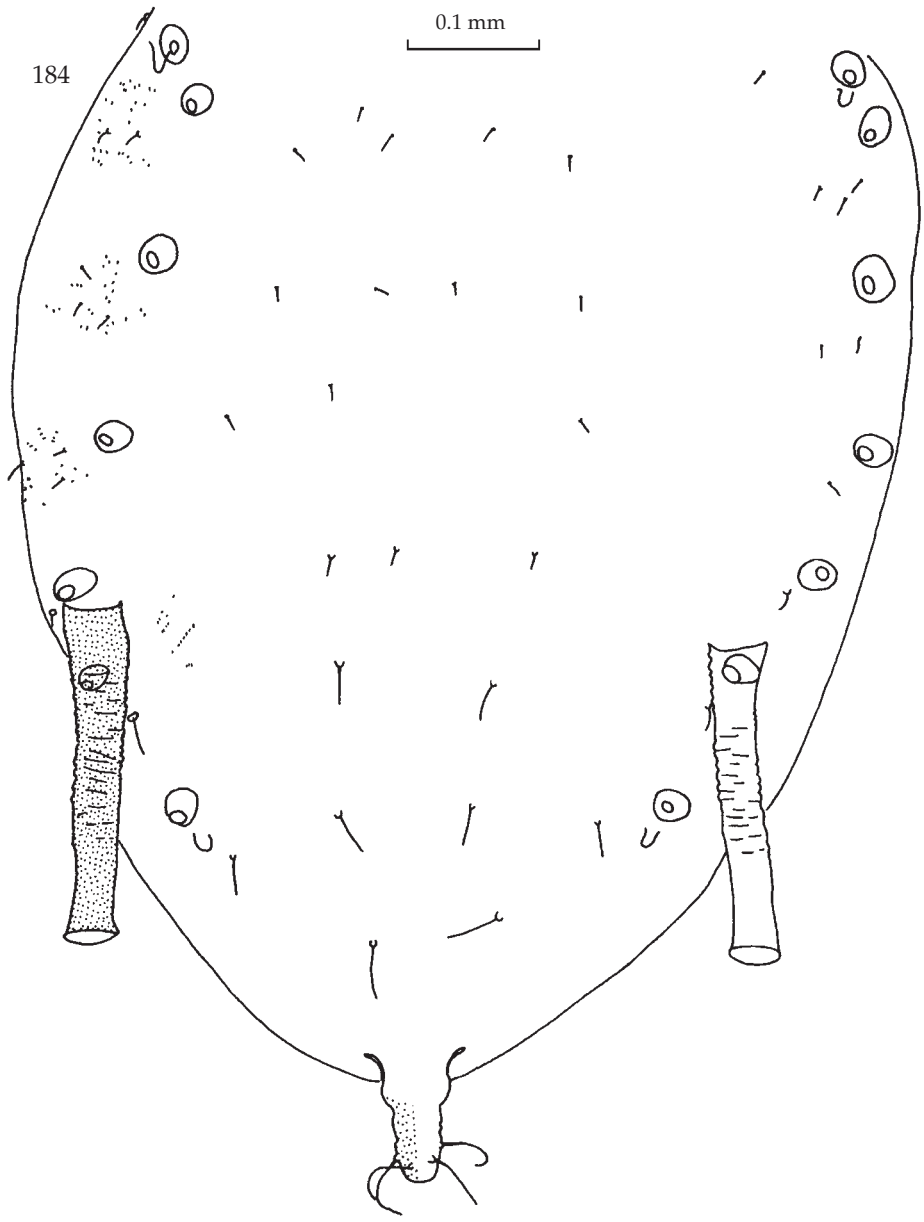
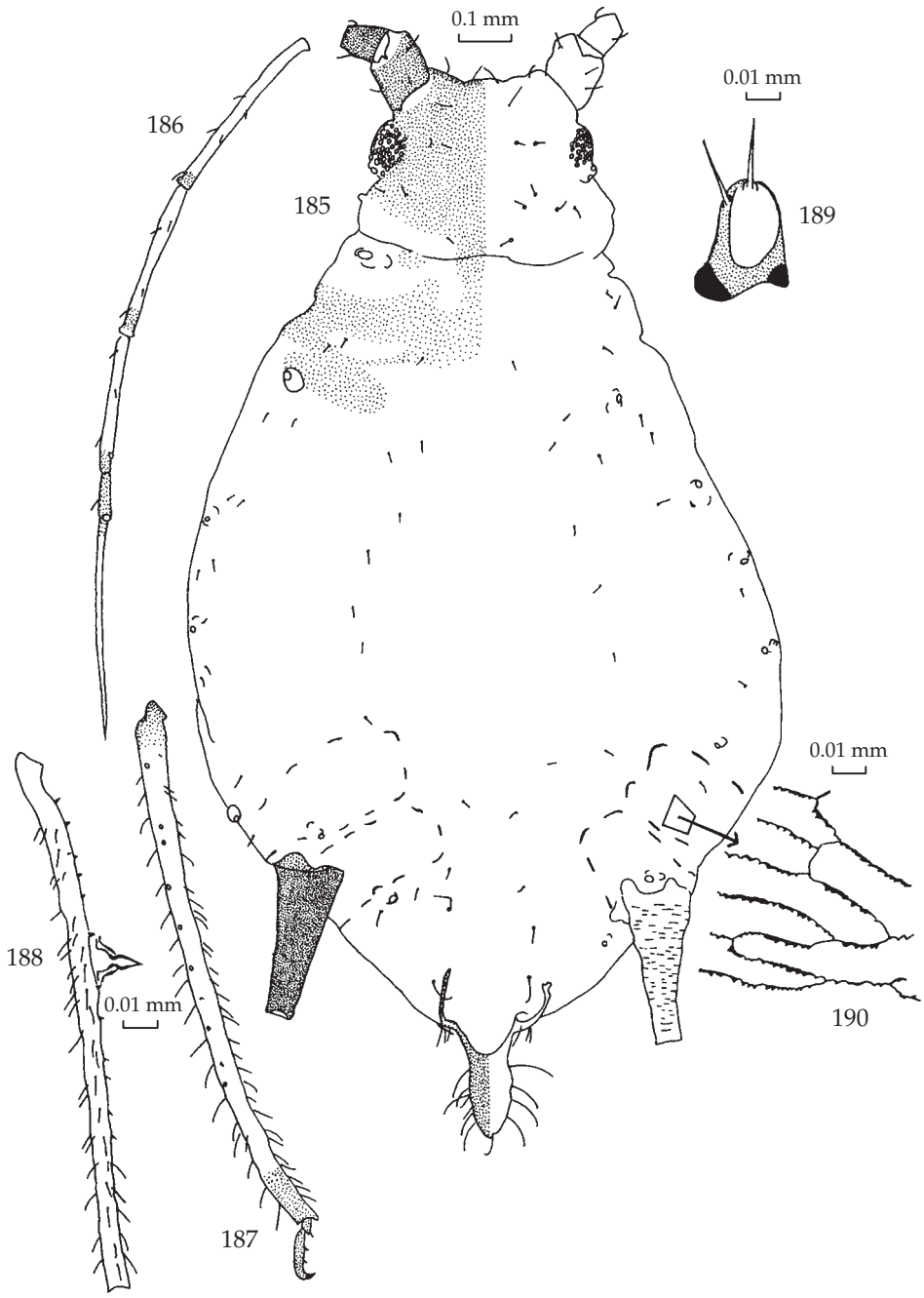
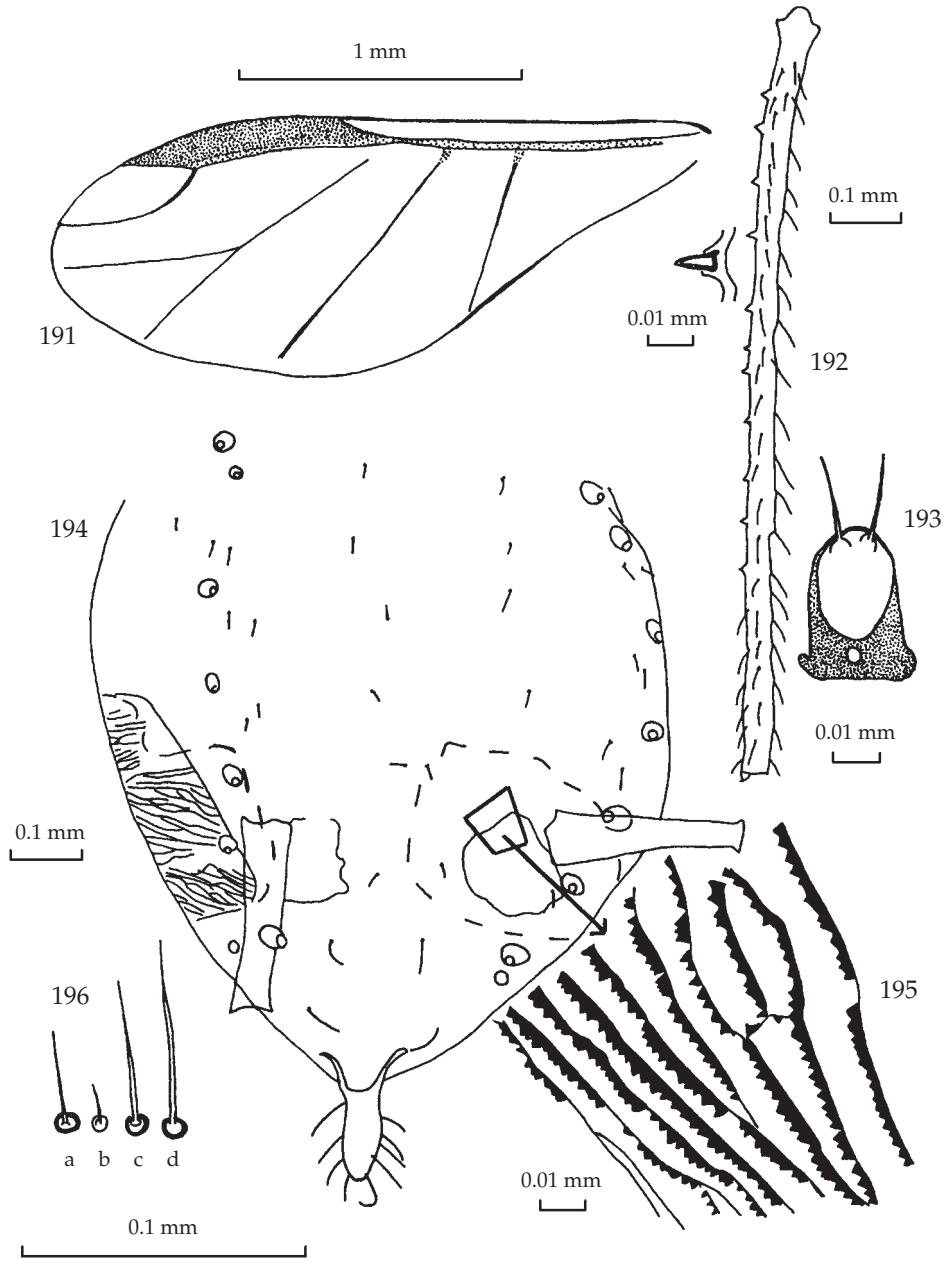


Fig. 184. *Schizaphis rotundiventris* (Signoret), alate viviparous ♀, dorsal side of the abdomen and ventrally spiracles.

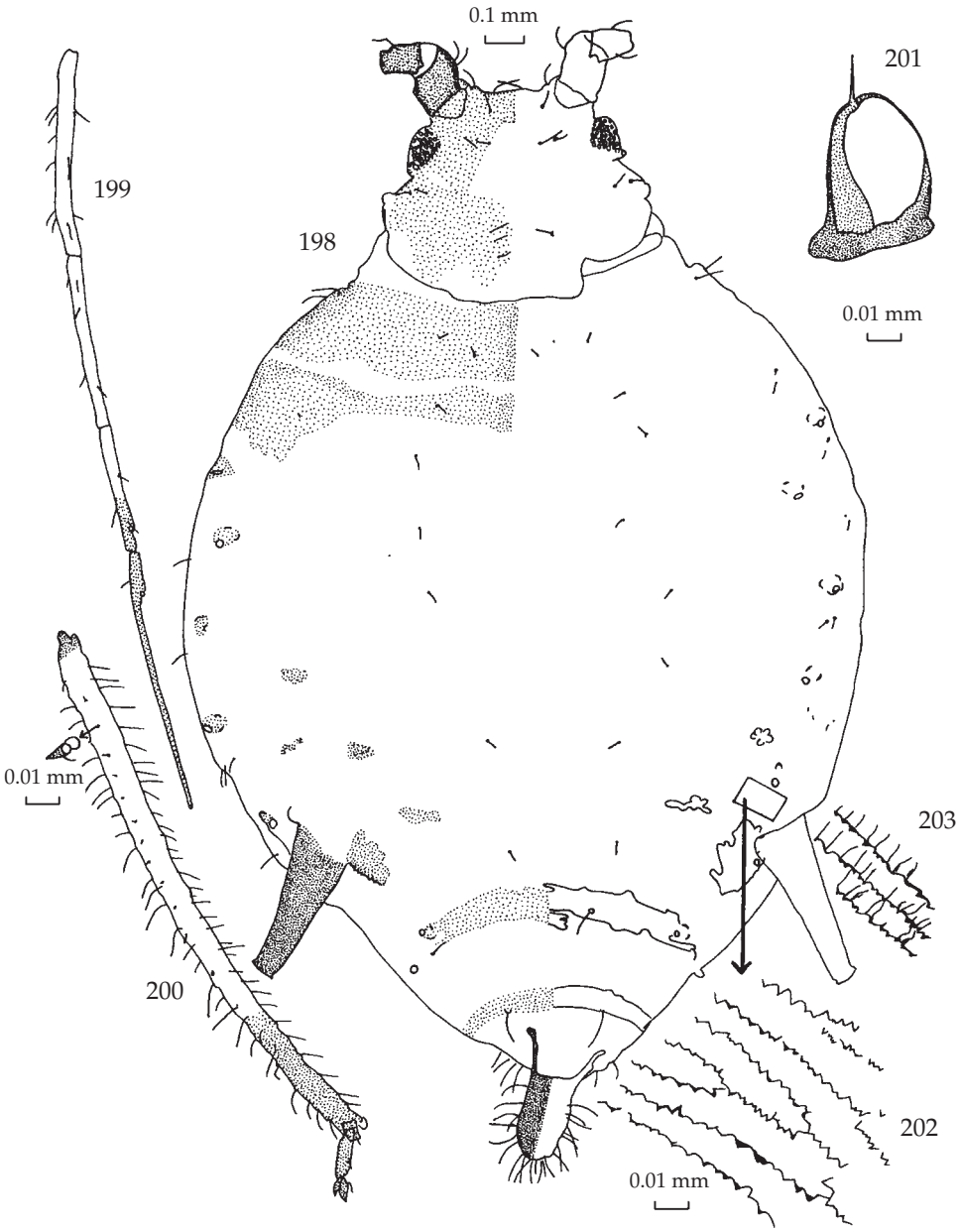


Figs 185-190. *Toxoptera aurantii* (Boyer de Fonscolombe), apterous viviparous ♀. Fig. 185, dorsal side of the body. Fig. 186, antennal segments III-VI. Fig. 187, two tibiae of hind leg. Fig. 188, conical sturdy hair of tibia of the hind leg. Fig. 189, first tarsal segment of the hind leg. Fig. 190, serrated lines of ventral areas within the broken lines.

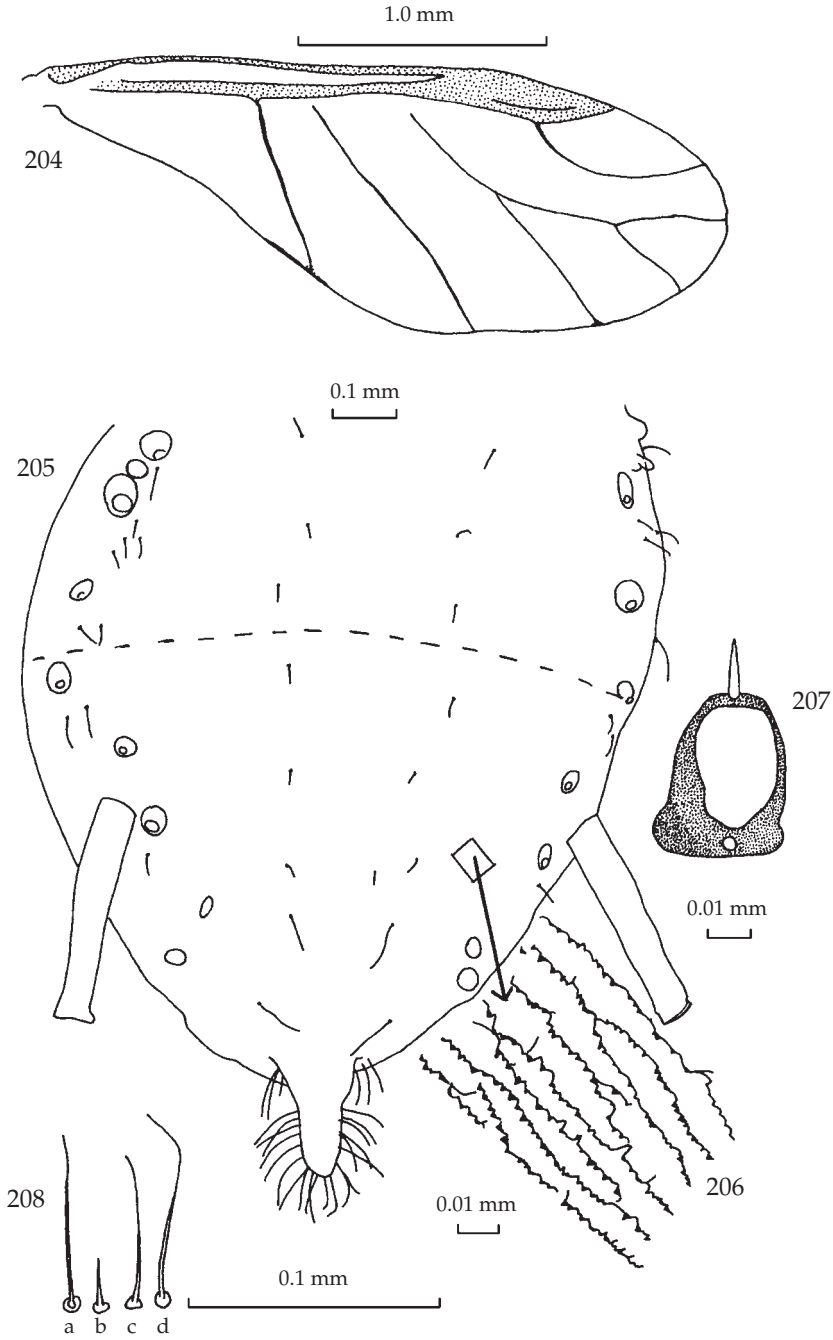


Figs 191-196. *Toxoptera aurantii* (Boyer de Fonscolombe), alate viviparous ♀. Fig. 191, fore wing. Fig. 192, hind tibia with separately a conical sturdy hair. Fig. 193, first tarsal segment of the hind leg. Fig. 194, abdomen with serrated lines, ventral part indicated with broken lines, ventrally spiracles. Fig. 195, serrated lines. Fig. 196, hairs of: **a** the head; **b** tergite V; **c** tergite VII; **d** tergite VIII.

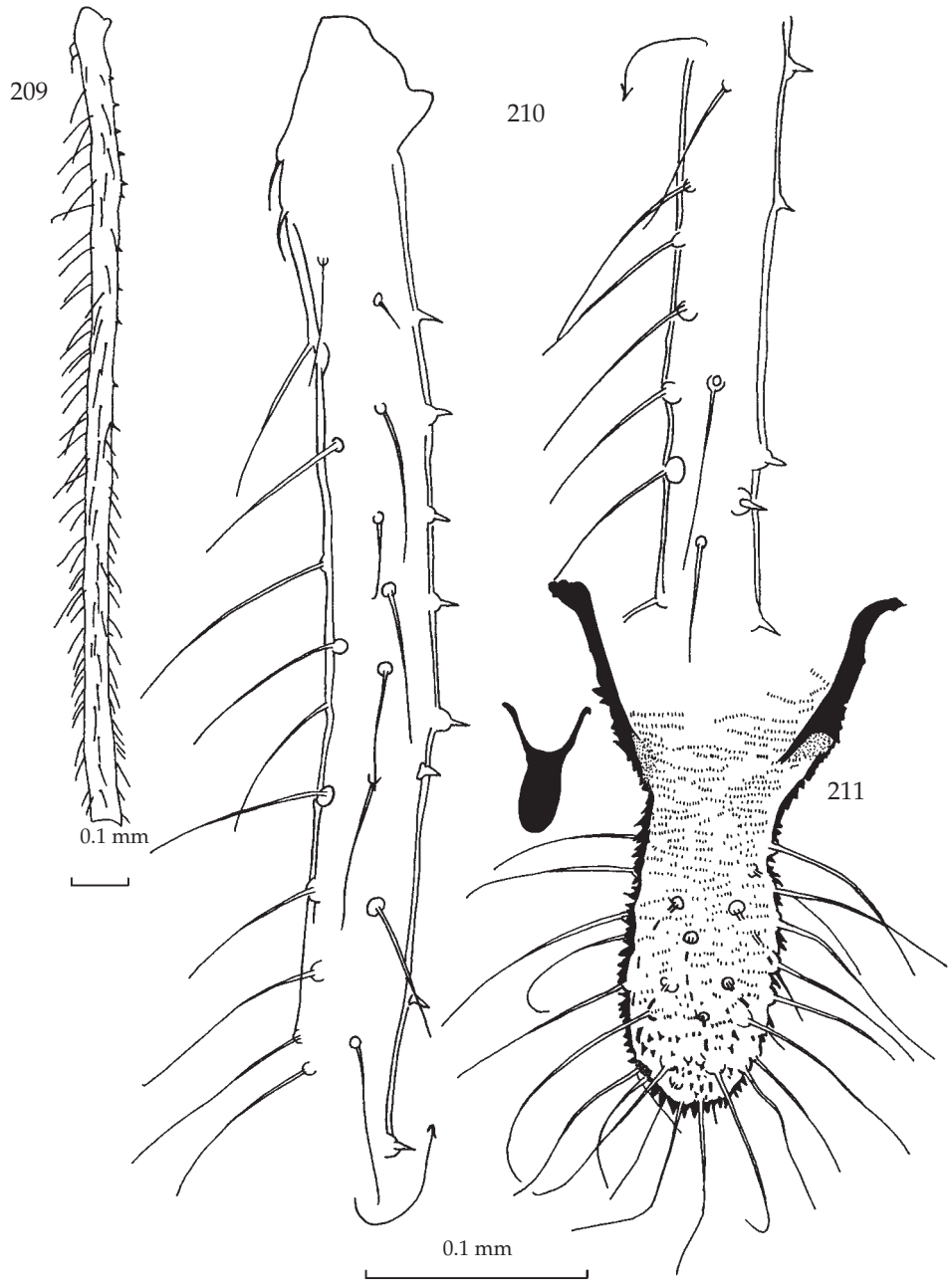
Fig. 197. *Toxoptera aurantii* (Boyer de Fonscolombe), alate viviparous ♀, dorsal side of the abdomen and ventrally spiracles.



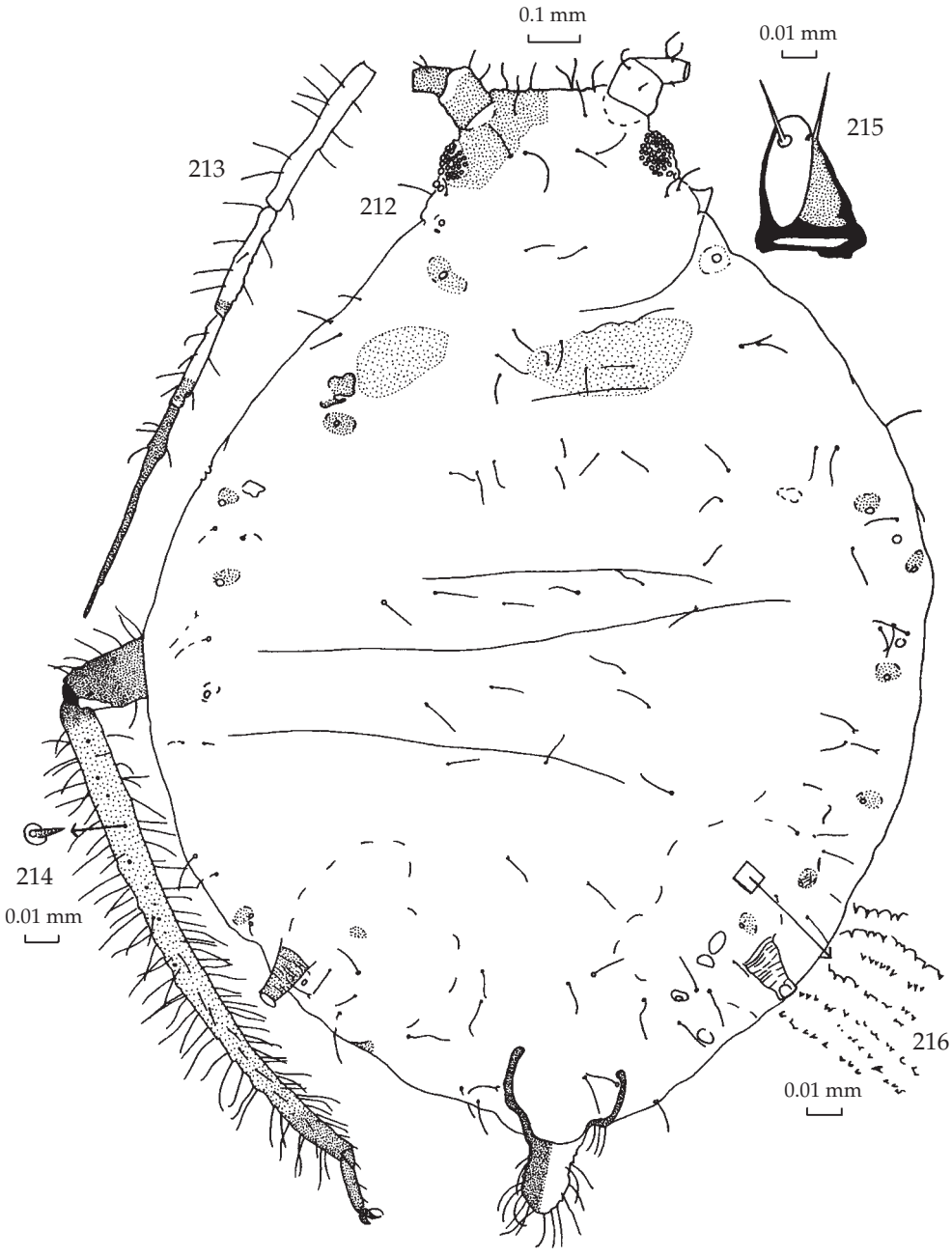
Figs 198-203. *Toxoptera citricida* (Kirkaldy), apterous viviparous ♀. Fig. 198, dorsal side of the body and ventrally spiracles. Fig. 199, antennal segments III-VI. Fig. 200, hind tibia and tarsi, with one sturdy hair separately enlarged. Fig. 201, first tarsal segment of the hind leg. Fig. 202 and Fig. 203, ventral serrated lines.



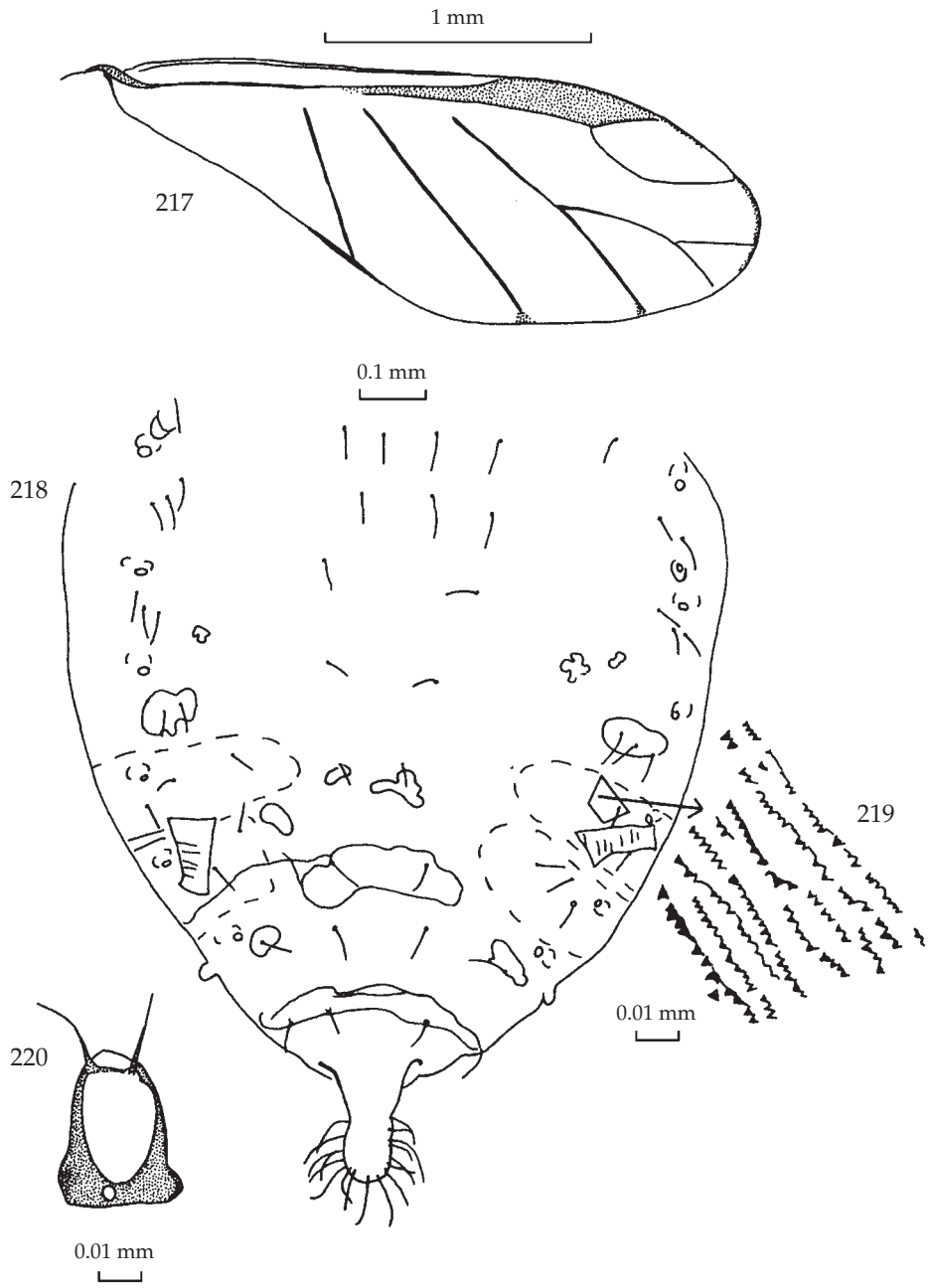
Figs 204-208. *Toxoptera citricida* (Kirkaldy), alate viviparous ♀. Fig. 204, fore wing. Fig. 205, dorsal side of the body and ventrally spiracles. Interrupted line is about the border of the serrated area, sharp border does not exist. Fig. 206, ventral serrated lines. Fig. 207, first tarsal segment. Fig. 208, hairs of: **a** the head; **b** tergite V; **c** tergite VII; **d** tergite VIII.



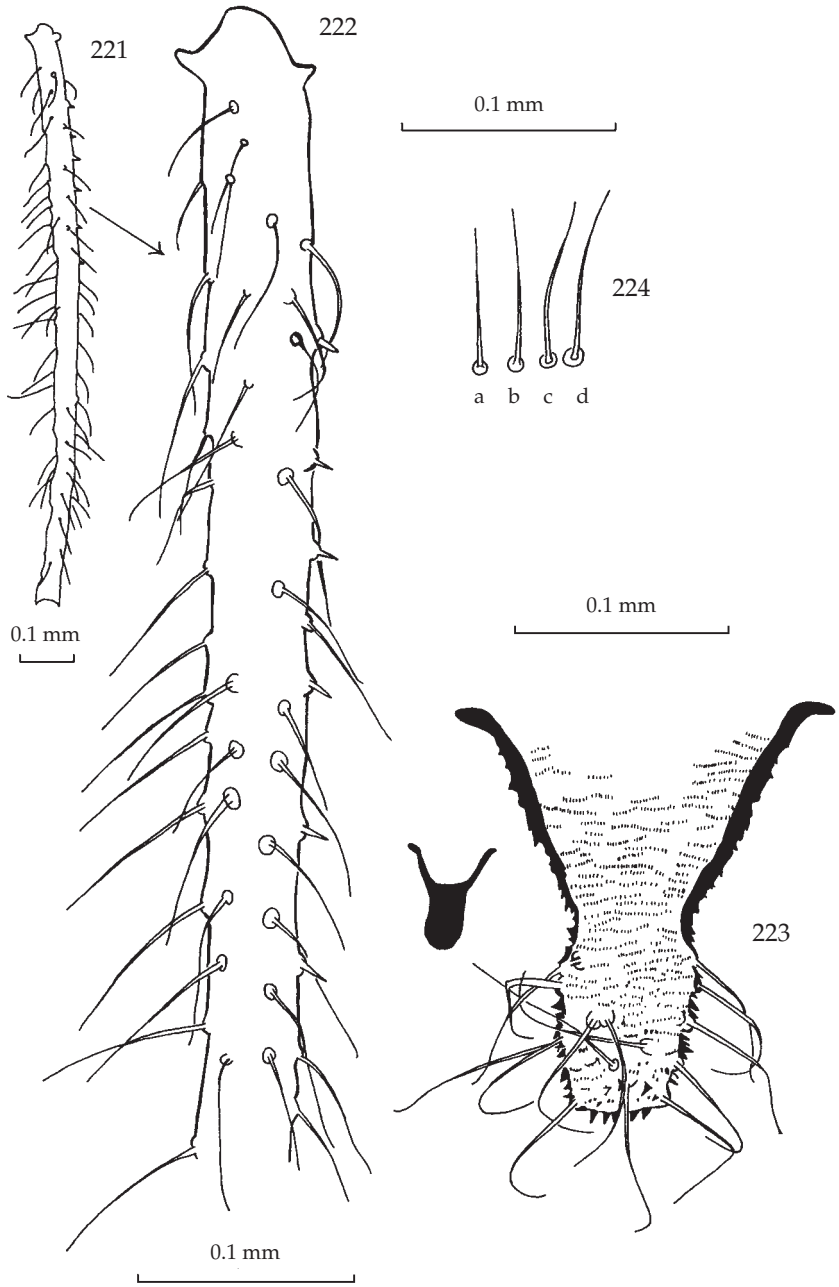
Figs 209-211. *Toxoptera citricida* (Kirkaldy), alate viviparous ♀. Fig. 209, tibia of the hind leg. Fig. 210, part of tibia of the hind leg with sturdy hairs. Fig. 211, cauda and figure with colour indication.



Figs 212-216. *Toxoptera odinae* (van der Goot), apterous viviparous ♀. Fig. 212, dorsal side of the body and ventrally spiracles. Fig. 213, antennal segments III-VI. Fig. 214, sturdy hair of hind tibia. Fig. 215, first tarsal segment of the hind leg. Fig. 216, ventral serrated lines.



Figs 217-220. *Toxoptera odinae* (van der Goot), alate viviparous ♀. Fig. 217, fore wing. Fig. 218, abdomen. Ventrally at each side two areas with serrated lines. Fig. 219, serrated lines. Fig. 220, first tarsal segment of the hind leg.



Figs 221-224. *Toxoptera odinae* (van der Goot), alate viviparous ♀. Fig. 221, hind tibia. Fig. 222, hind tibia, part with six sturdy hairs. Fig. 223, cauda and figure with colour indication. Fig. 224, hairs of: **a** the head; **b** tergite IV; **c** tergite VII; **d** tergite VIII.

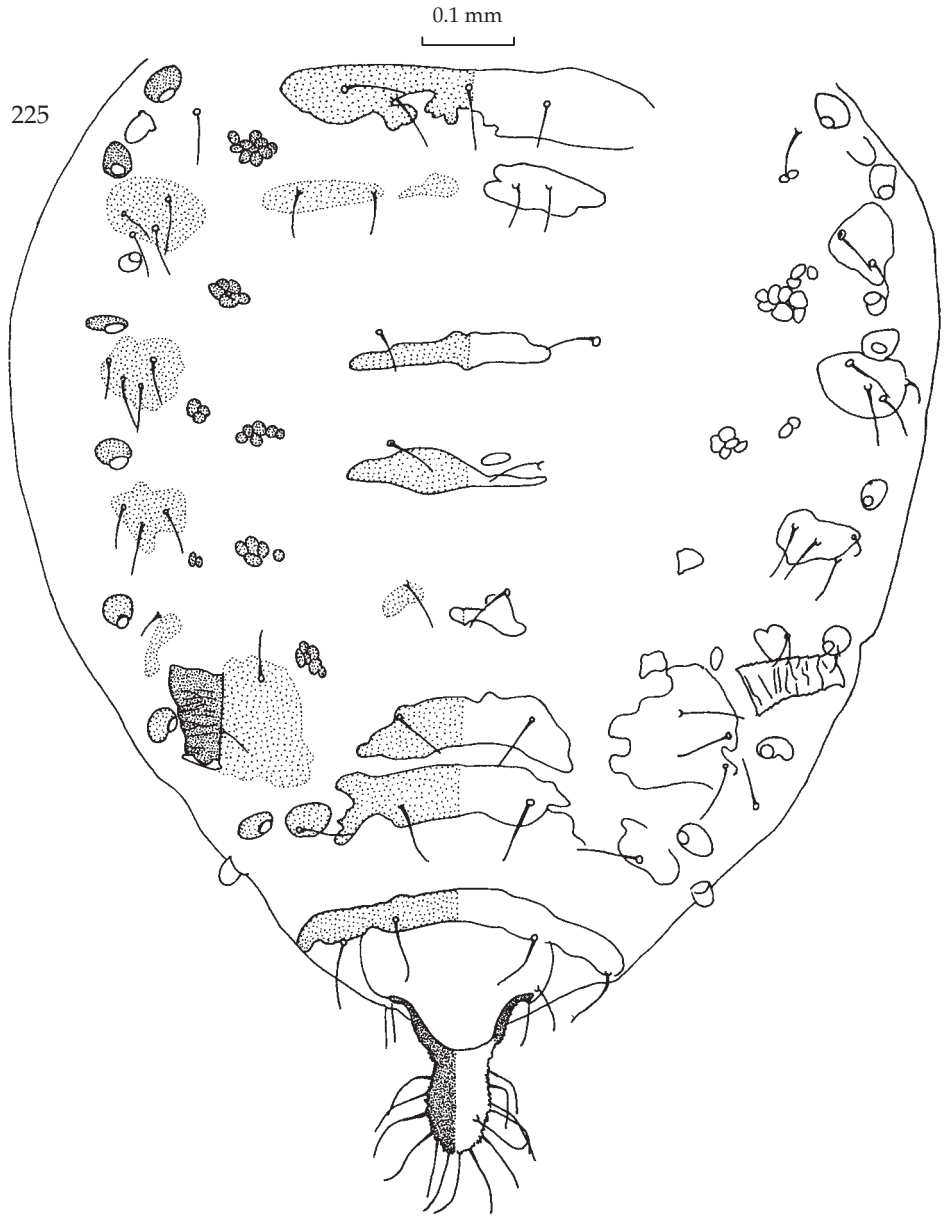


Fig. 225. *Toxoptera odinae* (van der Goot), alate viviparous ♀, dorsal side of the abdomen and ventrally spiracles.

Aphids of Java. Part VI: sixty species, six of which are newly described (Homoptera: Aphididae: Aphidinae, Lachninae, Neophyllaphidinae, Pemphiginae)

D. Noordam

Noordam, D. Aphids of Java. Part VI: Sixty species, six of which are newly described (Homoptera: Aphididae: Aphidinae, Lachninae, Neophyllaphidinae, Pemphiginae).
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Key words: Aphididae; Aphidinae; Lachninae; Neophyllaphidinae; Pemphiginae; *Aulacorthum; Brachycaudus; Capitophorus; Carolinaia; Cavariella; Chaetosiphon; Cinara; Eulachnus; Geoica; Hyperomyzus; Ipuka; Juncomyzus; Lachnus; Liosomaphis; Lipaphis; Macromyzella; Macrosiphoniella; Micromyzella; Micromyzus; Myzus; Neophyllaphis; Neotoxoptera; Oedisiphum; Ovatus; Pentalonia; Rhodobium; Semiaphis; Shinjia; Sitobion; Tetraneura; Trichosiphonaphis; Tuberocephalus; Tuberolachnus; Uroleucon;* taxonomy; key; Java.
Sixty species of aphids are described in this paper in an alphabetically arranged order of genera belonging to Aphidinae, Lachninae, Neophyllaphidinae and Pemphiginae. Six species are newly described: *Carolinaia javanica* spec. nov. collected from *Cyperus flabelliformis* Rottb. and *C. halpan* L.; *Micromyzus vandergooti* spec. nov. from the fern *Cyclophorus nummularifolius* C. Chr.; *Myzus debregeasiae* spec. nov. from *Debregeasia longifolia* (Burm. f.) Wedd.; *Myzus duriatae* spec. nov. from *Aeschynanthus radicans* Jack.; *Sitobion breyniae* spec. nov. from *Breynia microphylla* (Kurz) M.A. and *Sitobion javanicum* spec. nov. from *Themeda arguens* (L.) Hack.

Contents

Introduction

This is the sixth and final part of the "Aphids of Java". The first part was published in 1985 (Noordam & Hille Ris Lambers, 1985), the second in 1986 (Noordam, 1986), the third in 1991 (Noordam, 1991), the fourth in 1994 (Noordam, 1994) and the fifth is the first part of this publication. I wish to state emphatically that these publications could not have been possible without the help of Dr D. Hille Ris Lambers during the period from 1978 until his death in 1984.

The aphids in this sixth part are described in an alphabetical arrangement of genera and species. Two exceptions, however, are the genera originating from ferns starting with *Macromyzus, Micromyzella, Micromyzus* and ending with *Shinjia*. These genera are described in one key but placed in the normal alphabetical order. Secondly, the genera *Myzus* and *Tuberocephalus* are treated in one key but *Tuberocephalus* directly follows after *Trichosiphonaphis polygoni*. The names of the aphids are in accordance with Remaudière & Remaudière (1997). The aphid's characters are mentioned, and only the new species are described. Directly after the first genus a key is included. Of the 60 species presented in this publication, 50 belong to the Aphidinae (to which two species of the second part also belong (Noordam, 1994)), and 11 species belong to the subfamilies Lachninae, Neophyllaphidinae and Pemphiginae.

The names of plants or places are taken over directly from the original slides.

Measurements

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

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 are in mm.

Abbreviations

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

Aulacorthum Mordvilko, 1914 (Aphidinae: Macrosiphini)

Key based on apterae of *Aulacorthum* Mordvilko

1. Sides of siphunculi finely serrated. Siphunculi brown, the end about as dark as the other part. Second tarsal segment of the hind leg 1.1-1.5 times as long as the diameter of the siphunculi in the middle. Abdomen colourless. In life reddish. On *Paederia scandens* ..... ***Aulacorthum nipponicum*** (Essig & Kuwana)
- Sides of siphunculi coarsely serrated. Siphunculi pale or brown with darker end or rim. Second tarsal segment of the hind leg 1.9-2.8 times as long as the diameter of the siphunculi in the middle. Abdomen colourless or with a brown patch 2
2. Abdominal dorsum with a brown U-shaped mark. Head dorsally also in the centre with spinulae. Stylet 465-525 μ long. Ultimate rostral segment next to distal hairs with only 2 basal hairs. Distal end of femora and siphunculi not much darker than more basally. Distal half of hind tibia in larvae with spinulae. Polyphagous (24 plant species) ..... ***Aulacorthum circumflexum*** (Buckton)
- Abdominal dorsum with a central brown mark. Head dorsally in the centre with spinulae. Stylets 600-680 μ long. Ultimate rostral segment next to distal hairs with 6 hairs more basally. Distal end of femora and siphunculi black. Larvae without spinulae on distal half of hind tibiae. On *Cestrum aurantiacum, Cuphea procumbens, Emilia sonchifolia, Helichrysum bracteatum, Hydrocotyle sibthorpioides, Pseudelephantopus spicatus* ..... ***Aulacorthum solani*** (Kaltenbach)

Key based on alatae of *Aulacorthum* Mordvilko

1. Length of the second tarsal segment of the hind leg 1.4-2.1 times the diameter of the siphunculi in the middle. Siphunculi finely imbricated, evenly dark. Antennal segment III with 5-13 rhinaria. Processus terminalis 4.8-5.0 times the length of the base, and 1.4-1.6 times the length of antennal segment III ..... ***Aulacorthum nipponicum*** (Essig & Kuwana)
- Length of the second tarsal segment of the hind leg 2.2-2.8 times the diameter of the siphunculi in the middle. Siphunculi coarsely imbricated, pale or dark at the end. Antennal segment III with 11-16 rhinaria. Processus terminalis 4.4-4.8 times the length of the base and 1.2-1.4 times the length of antennal segment III 2
2. Siphunculi 0.17-0.18 times as long as the body, and 0.8 times the width of the head across the eyes. Processus terminalis 2.2-2.3 times as long as the siphunculi. Cauda usually with 5 hairs. Ultimate rostral segment next to distal hairs with only 2 hairs more towards the base ..... ***Aulacorthum circumflexum*** (Buckton)
- Siphunculi 0.21-0.24 times as long as the body, and 1.1-1.2 times as the width of the head across the eyes. Processus terminalis 1.4-2.1 times as long as the siphunculi.

Cauda usually with 7 hairs. Ultimate rostral segment next to distal hairs with about 6 hairs more to the base ..... ***Aulacorthum solani*** (Kaltenbach)

Aulacorthum circumflexum (Buckton, 1876)
(figs 1-13)

Material.— Specimens collected in **Indonesia, Java**, the collectors are indicated by numbers between parenthesis: P. van der Goot, WU, Wageningen or lost (1); F.W. Rappard, BMNH, London (2); D. Noordam, RMNH, Leiden (3). *Senecio tenuifolia* Jacq., *Bixa orellana* L., *Fuchsia* spec., Mt Dieng (2050 m), 4.iv.1916, 24.iv.1916; leg. Poespoh (715 m), Songoriti (Mt Kawi, 1000 m), Mt Telemojo (1900 m) (1); *Montanoa grandiflora* (DC.) Hemsl., Blawan, 29.vi.1948 (2); *Glycine hispida* Maxim., Banjoewangi, 29.ii.1949 (2); *Chlorophytum comosum* (Thunb.) Baker, Sindanglaya (1100 m), 17.iv.1975 (3); *Alternanthera philoxeroides* (Mart.) Griseb., Sindanglaya (1100 m), 19.v.1975 (3); ?, Cibodas (1400 m), 6.vii.1975 (3); *Ageratum houstonianum* Mill., Sindanglaya (1100 m), 27.x.1975 (3); *Drymaria cordata* (L.) Willd., Cibodas-Lembang, 11.xi.1975 (3); *Spergula arvensis* L., Pangelengan, 13.xi.1975 (3); *Hydrocotyle sibthorpioides* Lamk., Sindanglaya (1100 m), 20.xi.1975 (3); *Crassocephalum crepidioides* (Benth.) S. Moore, Sindanglaya (1100 m), 13.ii.1976 (3); *Bocconia frutescens* L., Cibodas (1400 m), 15.ii.1976 (3); *Chlorophytum comosum* (Thunb.) Baker, Sindanglaya (1100 m), 18.iii.1976 (3); *Ranunculus sundaicus* (Back.) Eichl., Cibodas (1400 m), 23.v.1976 (3); *Widdringtonia dracomontana* Stapf, Cibodas (1400 m), 23.v.1976 (3); *Debregeasia longifolia* (Burm. f.) Wedd., 29.v.1976 (3); *Spilanthes iabacensis* A.H. Moore, Malang-Pujon, 11.vi.1976 (3); *Kalanchoe prolifera* (Bowie) Hamet, Tosari, 14.vi.1976 (3); *Capsella bursa-pastoris* (L.) Medik., Tosari (1800 m), 14.vi.1976 (3); *Pinus canariensis* Sm., Cibodas (1400 m), 27.vi.1976 (3); *Drymaria villosa* Cham. & Schlecht., Sindanglaya (1100 m), 7.vii.1976 (3); *Lycium chinense* Mill., Dieng (1850 m), 21.vii.1976 (3); *Dahlia rosea* Cav., Pangalengan (1300 m), 15.viii.1976 (3); *Cestrum aurantiacum* Lindl., Lembang, 10.i.1977 (3); *Youngia japonica* (L.) DC., Sindanglaya (1100 m), 24.i.1977 (3); *Sagina micrantha* Boreau, Sindanglaya (1100 m), 14.v.1977 (3); *Pinus canariensis* Sm., Cibodas (1400 m), 18.xii.1977 (3); *Aeschynanthus radicans* Jack., Cibodas (1400 m), 27.ii.1978 (3); *Liparis javanica* J.J.S., Sindanglaya (1100 m), 2.iii.1978 (3).

Diagnosis.— Dorsal side of the body with a horseshoe-like darker spot.

Biology.— The aphids live on the lower side of young leaves, on developing needles, on young stems, and on stems between the flowers.

Etymology.— "*circumflexum*", bending round, presumably bearing towards the dorsal horseshoe-like spot.

Aulacorthum nipponicum (Essig & Kuwana, 1918)

Material.— Specimens collected in **Indonesia, Java** by F.W. Rappard: *Paederia foetida* L., Sarangan (1200 m), Lawu helling, 10.ix.1951.

Diagnosis.— Green to greenish yellow aphids with black legs.

Biology.— The aphids live on flower buds and on the linear leaves.

Etymology.— "*nipponicum*", of Nippon, the country of Japan.

Aulacorthum solani (Kaltenbach, 1843)
(figs 14-19)

Material.— Specimens collected in **Indonesia, Java** by F.W. Rappard, BMNH, London (1) and by D. Noordam, RMNH, Leiden (2). *Digitalis purpurea* L., Pundaklembu (2200 m), 7.xi.1951 (1); *Ranunculus diffusus* DC., Pundaklembu (2200 m), 8.xi.1951 (1); *Emilia sonchifolia* (L.) DC., Sindanglaya (1100 m),

2.vi.1975 (2); *Hydrocotyle sibthorpioides* Lamk., Sindanglaya (1100 m), 20.xi.1975 (2); *Cuphea procumbens* Cav., Cibodas (1400 m), 23.v.1976 (2); *Helichrysum bracteatum* (Vent.) Andr., Pangalengan (1500 m), 15.viii.1978 (2); *Cestrum aurantiacum* Lindl., Lembang, 10.i.1977 (2).

Diagnosis.— Apterae in life dorsal side of the body without darker spots.
Biology.— The aphids live on the lower side of leaves and on young buds.
Etymology.— "*solani*", of *Solanum*, a genus of the Solanaceae.

Brachycaudus van der Goot, 1913 (Aphidinae: Macrosiphini)

Brachycaudus helichrysi (Kaltenbach, 1843)
(figs 20-32)

Material.— Specimens collected in **Indonesia, Java**, the collectors are indicated by numbers between parenthesis: P. van der Goot, see van der Goot 1917: 121 (1); F.W. Rappard, BMNH, London (2); D. Noordam, RMNH, Leiden (3). *Centaurea* spec., *Senecio tenuifolia* Jacq., *Sonchus* spec., *Vernonia chinensis* Less., Pasoeroean, Salatiga (570 m), Ngadiwono (Mt Tenger, 2000 m), Songoriti (Mt Kawi, 980 m), Diember (100 m), Buitenzorg (250 m), Garoeng (Mt Dieng, 1800 m), Mt Telemojo (1900 m), Djambean (Selokaton) (1200 m), Siti Ardja (Preanger, 1050 m) (1); *Erigeron linifolius* Willd., Idjen, 28.vi.1948 (2); *Crepis biennis* L., Banjoewangi (400 m), 7.viii.1949 (2); *Senecio* spec., Rayap (600 m), 7.v.1950 (2); *Myosotis scorpioides* L., Gondang (650 m), 29.vii.1950 (2); *Myosotis* spec., Malang, 5.vi.1951 (2); *Myosotis* spec., Malang, 18.vi.1951 (2); *Gnaphalium japonicum* Thunb., Zandzee Tengergeb, 4.x.1951 (2); *Anaphalis viscida* DC., Ngadas-Tosari (2300 m), 4.x.1951 (2); *Achillea millefolium* L., Pundaklembo (2200 m), 7.xi.1951 (2); *Achillea millefolium* L., Pundaklembu (2200 m), 7.xi.1951 (2); *Crassocephalum crepidioides* (Benth.) S. Moore, Bogor, 27.iv.1975 (3); *Eupatorium odoratum* L., Bogor, 5.vi.1975 (3); *Crassocephalum crepidioides* (Benth.) S. Moore, 14.vi.1975 (3); *Ageratum houstonianum* Mill., Sindanglaya (1100 m), 27.x.1975 (3); *Ageratum houstonianum* Mill., Sindanglaya (1100 m), 5.xi.1975 (3); *Ageratum houstonianum* Mill., Cisarua-Bandung, 12.xi.1975 (3); *Emilia sonchifolia* (L.) DC., Sindanglaya (1100 m), 31.xii.1975 (3); *Eupatorium odoratum* L., Bogor, 14.v.1976 (3); *Ageratum* spec., Bogor Keb. R., 14.v.1976 (3); *Crassocephalum crepidioides* (Benth.) S. Moore, Malang-Selekta Brantas, 10.vi.1976 (3); *Oenanthe javanica* DC., Malang-Selekta, 13.vi.1976 (3); *Chrysanthemum frutescens* L., Tosari (1700 m), 14.vi.1976 (3); *Chrysanthemum maximum* Ramond, Bromo (1350 m), 15.vi.1976 (3); *Senecio petasites* DC., Cibodas (1400 m), 27.vi.1976 (3); *Chrysanthemum segetum* L., Cibodas (1300 m), 27.vi.1976 (3); *Ageratum houstonianum* Mill., Sindanglaya (1100 m), 3.xii.1976 (3); *Bothriospermum tenellum* Fisch & Mey., Sindanglaya (1100 m), 6.ix.1977 (3); *Ageratum conyzoides* (L.), Sindanglaya (1100 m), 15.xi.1977 (3).

Diagnosis.— Apterae in life whitish or with some yellow or green. Siphunculi at the end or wholly black, cauda very short. Cauda 0.18-0.27 times as long as the width of the head across the eyes. Siphunculi 1.5-2.0 times as long as the cauda.

Biology.— The aphids live on upwards curling leaves, between developing flowers, in the upper part of growing shoots, between flowers and fruits.

Etymology.— "*helichrysi*", of *Helichrysum*, a genus of the Compositae.

Capitophorus van der Goot, 1913 (Aphidinae: Macrosiphini)

Capitophorus hippophaes subspec. *javanicus* Hille Ris Lambers, 1953
(figs 33-37)

Material.— Specimens collected in **Indonesia, Java** by F.W. Rappard, BMNH, London: *Polygonum barbatum* L., Bondowoso (250m), 25.viii.1949; by D. Noordam, RMNH, Leiden: *Polygonum longisetum* De Br., Sindanglaya (1100 m), 28.x.1975; *Polygonum longisetum* De Br., Bandung, 12.xi.1975.

Diagnosis.— Apterae in life whitish yellow, siphunculi and cauda white, with capitate hairs, which on the head and abdominal tergites VII and VIII are longer. Siphunculi slightly widened in the upper third part. Red eyes.

Biology.— The aphids live on the underside of the leaves and on the hairs of the buds. Not in colonies.

Etymology.— "*javanicus*", from Java.

Carolinaia Wilson, 1911 (Aphidinae: Macrosiphini)

Key based on apterae of *Carolinaia* Wilson

1. Body 1.1-1.6 times as long as the antennae. Width of the head across the eyes 0.27-0.37 times the length of the antennae. Antennal segment III 2.3-2.6 times as long as antennal segment V, and 2.9-4.0 times as long as the base of antennal segment VI. Last rostral segment 1.2-1.3 times the length of hind tarsus 2. Last rostral segment with 4-5, but usually 4 hairs beside the distal hairs. Stylets 550-670 μ long. Brown but antennae distally, femora distally, and siphunculi black. In life shiny black with brown head and white cauda. On *Carex baccans, Cyperus cyperoides, C. flabelliformis* ..... ***Carolinaia scirpi*** (van der Goot)
- Body 1.6-1.8 times as long as the antennae. Width of the head across eyes 0.42-0.47 times the length of the antennae. Antennal segment III 1.5-1.7 times as long as antennal segment V, and 1.9-2.2 times as long as the base of antennal segment VI. Last rostral segment 0.9-1.0 times the length of hind tarsus 2. Last rostral segment with 2 hairs beside the distal hairs. Stylets 340-390 μ long. Pale brown, but distal parts of antennae, tibiae and siphunculi darker. In life olive green with brown head and thorax. On *Cyperus flabelliformis, C. halpan* ..... ***Carolinaia javanica*** spec. nov.

Key based on alatae of *Carolinaia* Wilson

1. Last rostral segment 1.2-1.3 times the length of hind tarsus 2. Last rostral segment beside distal hairs with 4-5, but usually 4 hairs more basally. Antennal segment III 3.3-3.7 times as long as the base of antennal segment VI. Siphunculi 2.2-2.4 times as long as the cauda. Antennal segment III with 10-19 rhinaria. Stylets 630-660 μ long ..... ***Carolinaia scirpi*** (van der Goot)
- Last rostral segment 0.9-1.0 times the length of hind tarsus 2. Last rostral segment beside distal hairs with 2-3, but usually 2 hairs more basally. Antennal segment III 2.5-3.2 times as long as the base of antennal segment VI. Siphunculi 1.8-2.1 times as long as the cauda. Antennal segment III with 4-8 rhinaria. Stylets 360-390 μ long ..... ***Carolinaia javanica*** spec. nov.

Carolinaia javanica spec. nov.
(figs 38-50)

Types.— Specimens collected in **Indonesia, Java** by D. Noordam, RMNH, Leiden: *Cyperus flabelliformis* Rottb., Sindanglaya (1100 m), 17.ix.1975; *Cyperus halpan* L., Bogor Keb. R., 7.iii.1976. Holotype (RMNH, Leiden), apterous viviparous female from *Cyperus halpan* L., Bogor Keb. R., Java, no. 526-4-1, 7.iii.1976, D. Noordam. Paratypes six apterous viviparous females in no. 526-1-5, and 3 in no. 412-1, 412-2 from *Cyperus flabelliformis* Rottb., and eight alate viviparous females in no. 526-1 to 5.

Diagnosis.— Apterous viviparae in life dirty green, thorax and head brown, which continues somewhat along the sides of the abdomen. Legs pale brown, tarsi black. Cauda pale brown, at the end with wax. Siphunculi pale brown, distally black. Antennae pale, distally black. Eyes black.

Macerated specimens (figs 38-43; described from nine specimens).— Body length 1.22-1.67 mm, about 1.7 times as long as it is wide. Antennal tubercles present, about 50 μ wide and protruding about 15 μ, with some wrinkles. Head very pale brown with some hairs, blunt, about 10 μ long. Antennae with 6 segments, pale but the distal parts of segments V and VI brown, 730-970 μ long, 0.5-0.6 times as long as the body, and 2.1-2.4 times as long as the width of the head across the eyes; segments I and II ventrally with some imbrications; segment III with some imbrications, 152-200 μ long, 1.5-1.9 times as long as segment IV, 1.5-1.7 times as long as segment V, with some short, blunt hairs; segment IV dorsally and ventrally with smooth imbrications, 80-130 μ long, 0.8-1.1 times as long as segment V, with some blunt hairs; segment VI, 305-352 μ long, the processus terminalis 2.6-2.9 times as long as the base of the segment. The eyes colourless. The ultimate rostral segment (fig. 43) 83-92 μ long, 0.94-1.02 times as long as the second tarsal segment of the hind leg; stylets 340-390 μ long.

Thorax pale brown like the head. Legs pale brown, but the tibiae distally and the tarsi brown. Chaetotaxy of tarsus 1,3,3,3. Tarsus 2 of the hind leg 83-93 μ long.

Abdomen pale brown like the head, with blunt hairs, about 5 μ long. Siphunculi pale brown, darker than the abdomen, and darker towards the end, 275-350 μ long. The cauda pale brown, 125-150 μ long, with 5 hairs, 40-50 μ long.

Alate viviparous female.-Macerated specimens (figs 44-50; described from three specimens). Body length 1.42-1.73 mm, 2.2-2.5 times as long as it is wide.

Head (fig. 44) brown, with a small smooth antennal tubercle, each with 1 hair dorsally. Between the eyes 2 plus 4 hairs, sharp or somewhat blunt, about 10 μ long. Antennae with 6 segments, brown, the base of segment III paler, segment III 1100-1280 μ long, 0.7-0.8 times as long as the body, and 3.2-3.4 times as long as the width of the head across the eyes; segment III with 4-8 rhinaria, segment IV with 0, segments V and VI with 1 main rhinarium. All segments imbricated and with some rather blunt hairs. Segment III, 1.5-1.7 times as long as segment IV, and 1.8-2.0 times as long as segment V and 0.7 as long as segment VI. The processus terminalis is 2.9-3.0 times as long as the base of the segment. The eyes are colourless. The ultimate rostral segment is 80-84 μ long, 0.95 times as long as the second tarsal segment of the hind leg. Stylets 360 μ long.

Thorax.— Medial vein of the fore wing (fig. 47) branched twice, hind wing with 2 oblique veins. Legs pale brown, the femora and tibiae distally slightly darker, the same colour as the second tarsal segments. All first tarsal segments with 3 hairs.

Abdomen.— Dorsal hairs on tergite IV, 6 μ long, on tergite VIII 2 hairs, 16-20 μ long, with sharp tips. Siphunculi pale brown, imbricated, 240-275 μ long, 0.15-0.17 times as long as the body, 1.8-2.1 times as long as the cauda, and 0.7 times the width of the head across the eyes. Cauda 120-140 μ long, with 5-6 hairs, the longest 45 μ long.

Biology.— The aphids live between spikelets.

Etymology.— "*javanica*", of Java.

Carolinaia scirpi (van der Goot, 1917)
(figs 51-52)

Material.— Specimens collected in **Indonesia, Java** by P. van der Goot (1917: 28): *Scirpus grossus* Linn. f., Botanical Garden, Buitenzorg, xii.1914; and by D. Noordam, RMNH, Leiden: *Carex baccas* Nees, Salak (1000 m), 14.vi.1975; *Cyperus flabelliformis* Rottb., Sindanglaya (1100 m), 17.ix.1975, 16.x.1975, 2.iii.1976 and 4.v.1976; *Cyprus cyperoides* (L.) O. Kuntze, Bogor Keb. R., 7.iii.1976.

Diagnosis.— Apterous viviparous female in life shiny black or greenish brown. Head and part of the thorax and last abdominal segment more pale. Antennal segment III whitish, other parts black. Siphunculi black. Cauda almost white or greyish brown. Femora and tibiae pale brown, distally black. Eyes black.

Macerated specimens.— See key to apterae and alatae.

Biology.— The aphids live on the floral unit or on the fruits.

Etymology.— "*scirpi*", of *Scirpus*, a genus of the Cyperaceae.

Comments.— Van der Goot (1917: 26-28) described *Aulacorthum scirpi* from *Scirpus grossus* Linn. f. collected in December 1914 in the Botanical Garden "Buitenzorg". One slide exists in the Laboratory of Entomology in Wageningen, but the other label has the name *Aulacorthum symplocois*. The mount had indeed specimens of *Aulacorthum symplocois*, and not of *Aulacorthum scirpi*. The description of van der Goot of the apterae agrees with what in this key is named *C.* (*J.*) *scirpi* (van der Goot, 1917), and the characters L/A, L/S, A_3/A_4, A_3/A_5, pt/base, pt/A_3, A_3/baseVI, rhin. A_3 agree with *C.* (*J.*) *scirpi*, but not with *C.* (*J.*) *javanica*. Van der Goot's description of the alatae, however, agrees with *C.* (*J.*) *javanica*, and not with *C.* (*J.*) *scirpi* in the number of rhinaria on antennal segment III, and L/A, pt/base, A_3/base, S/C. Only L/S 5 times would agree with *C.* (*J.*) *scirpi*, and less *C.* (*J.*) *javanica* - 6-7 times. The A_3/A_4, A_4/A_5 values of van der Goot do not agree with *C.* (*J.*) *scirpi* and *C.* (*J.*) *javanica* but are nearer to *C.* (*J.*) *javanica.*

Cavariella del Guercio, 1911 (Aphidinae: Macrosiphini)

Cavariella araliae Takahashi, 1921
(figs 53-55)

Material.— P. van der Goot collected this aphid from *Rubus* spec., 11.viii.1918 on Mt Salak (**Indonesia, Java**), now present on 13 slides, WU, Wageningen. The supracaudal process is much longer than the cauda (Miyazaki, 1971).

Live specimens.— I have never found any material of this species.

Etymology.— "*araliae*", of *Aralia*, a genus of the Araliaceae.

Chaetosiphon Mordvilko, 1914 (Aphidinae: Macrosiphini)

Chaetosiphon fragaefolii (T.D.A. Cockerell, 1901)
(figs 56-61)

Material.— Specimens collected in **Indonesia, Java** by D. Noordam (RMNH, Leiden): *Fragaria* x *ananassa* Duch. Malang-Punten Experimental Garden, 10.vi.1976.

Diagnosis.— Apterae in life white, end of the rostrum and the tarsi black. Antennal segment V, base of VI and processus terminalis somewhat grey. Alatae with black head, mesothorax brown, abdomen pale green, siphunculi colourless. Cauda somewhat green. Hairs in apterae and less distinct in alatae capitate.

Biology.— The aphids live on petioles and on the lower side of young, unfolded leaves.

Etymology.— "*fragaefolii*", of strawberry leaf.

Hyperomyzus Börner, 1933 (Aphidinae: Macrosiphini)

Key based on apterae of *Hyperomyzus* Börner

1. Length of hair on antennal tubercles 21-40 μ, on abdominal tergum VIII 30-60 μ. Processus terminalis 5.8-7.2 times as long as the base of the segment. Swollen part of siphunculi 1.3-1.7 times as wide as the smallest part more basally. Siphunculi 1.5-1.6 times the length of the cauda. Antennal segment IV exceptionally with rhinaria. Not known on Java ..... ***Hyperomyzus lactucae*** (Linnaeus)
- Length of hair on antennal tubercles 5-15 μ, on abdominal tergum VIII 7-20 μ. Processus terminalis 4.4-5.8 times as long as the base of the segment. Swollen part of siphunculi 1.0-1.3 times as wide as the smallest part more basally. Siphunculi 1.0-1.4 times the length of the cauda. Antennal segment IV with 0-9 rhinaria. On *Sonchus arvensis, S. asper, S. oleraceus* ..... ***Hyperomyzus carduellinus*** (Theobald)*

Key based on alatae of *Hyperomyzus* Börner

1. Length of hair on antennal tubercles 23-28 μ, on abdominal tergum VIII 33-45 μ. Processus terminalis 6.3-6.9 times as long as the base of the segment. Swollen part of siphunculi 1.7-2.1 times the diameter of the smallest part more basally. Siphunculi 1.5-1.9 times as long as the cauda. Antennal segment IV with 11-21 rhinaria, antennal segment V with 2-7. Not known in Java ..... ***Hyperomyzus lactucae*** (Linnaeus)
- Length of hair on antennal tubercles 7-12 μ, on abdominal tergum VIII 8-20 μ. Processus terminalis 4.7-6.1 times as long as the base of the segment. Swollen part of siphunculi 1.2-1.5 times the diameter of the smallest part more basally. Siphunculi 1.2-1.3 times as long as the cauda. Antennal segment IV with 19-25 rhinaria, antennal segment V with 6-11 rhinaria ..... ***Hyperomyzus carduellinus*** (Theobald)

Hyperomyzus carduellinus (Theobald, 1915)
(figs 62-64)

Material.— Specimens collected in **Indonesia, Java**, by P. van der Goot 1917: 42, WU, Wageningen (1) or lost; by D. Noordam, RMNH, Leiden (2). *Sonchus* spec., Nongkodjadjar (1200 m), 4.xi.1913 (1); *Sonchus* spec., Ngadiwono (2000 m), 27.x.1919 (1); *Sonchus* spec., Singaniti (1); *Sonchus* spec., Songoriti Mt Kawi (990 m) (1); *Sonchus* spec., Mt Dieng (2200 m) (1); *Sonchus* spec., Mt Telemojo (1400 m) (1); *Sonchus arvensis* L., Bandung, 12.xi.1975 (2); *Sonchus asper* (L.) Hill, Sindanglaya (1100 m), 1.v.1976 (2); *Sonchus arvensis* L., Malang S. Brantos, 10.vi.1976 (2); *Sonchus arvensis* L., Malang-Pujon, 11.vi.1976 (2); *Sonchus oleraceus* L., Sindanglaya (1100 m), 1.ix.1976 (2); *Sonchus arvensis* L., Bogor Keb. R., 17.xii.1976 (2); *Sonchus asper* (L.) Hill, Sindanglaya (1100 m), 30.viii.1977 (2).

* Material collected by P. van der Goot, WU, Wageningen, of "*Rhopalosiphum oleraceae*" from Nongkodjadjar, 4.xi.1913, and from "Singati" without data, and "Ngadiwono", 27.x.1919.

Diagnosis.— Apterae in life green, head, lower side and last abdominal segment upper side slightly covered with wax. Femur, antennal segment II and base of III and cauda also slightly covered with wax. Antennae pale brown, segments III, IV, V and VI distally black, processus terminalis black. Siphunculi pale brown, distally black. Cauda pale brown. Legs pale brown, femur and tibia distally black, tarsi black. Rostrum distally black. Larvae with more wax.

Biology.— The aphids live on the pedicels and stems of flowers, but not on parts with glands.

Etymology.— "*carduellinus*", of *Carduus*, a genus of the Compositae.

Ipuka van Harten & Ilharco, (1975) 1976 (Aphidinae: Macrosiphini)

Ipuka dispersum (van der Goot, 1917)
(figs 65-74)

Material.— Specimens collected in **Indonesia, Java** by P. van der Goot (1917: 24), Ngadiwono (Mt Tenger, 2000 m); Lebaksarie (Mt Kawi, 1200 m); *Sonchus* spec., Salatiga (570 m), 25.ii.1915, one slide WU, Wageningen; and by F.W. Rappard, *Emilia sonchifolia* (L.) DC., Malang, 5.iv.1957.

Diagnosis.— Apterae in life the body dull brown black. Sides of the body, borders of the segments, region of the cauda, a line on the back and two unclear lines on the sides pale yellow. Eyes black. Antennae black and base of segment III colourless. Legs whitish, tarsi, tibiae and femora distally black. Siphunculi black but at the base reddish brown. Cauda pale yellow.

Macerated material.— Great number of secondary rhinaria on the antennae (van Harten & Ilharco, 1976). First tarsal chaetotaxy 3,3,3 (van Harten & Ilharco, 1976). Antennal segment III: processus terminalis e.g. 36:53 (van der Goot, 1917). Hairs on the head blunt 8 μ long in apterae and alatae.

Biology.— The aphids live on stems of flowers (van der Goot, 1917).

Etymology.— "*dispersum*", here and there.

Liosomaphis Walker, 1868 (Aphidinae: Macrosiphini)

Liosomaphis himalayensis A.N. Basu, 1964
(figs 75-77)

Material.— Specimens collected in **Indonesia, Java** by P. van der Goot, WU, Wageningen: *Berberis* spec., Merbaboe, 2.vi.1916.

Diagnosis.— Siphunculi cylindrical at the base, but clavate on distal 0.50-0.75 part, and then gradually tapering to a distinct flange.

Biology.— The aphids form colonies on the lower surface of the leaves.

Etymology.— "*himalayensis*", of the Himalayas.

Lipaphis Mordvilko, 1928 (Aphidinae: Macrosiphini)

Lipaphis erysimi (Kaltenbach, 1843)
(figs 78-80)

Material.— Specimens collected in **Indonesia, Java** by P. van der Goot (1917: 66), Ngadiwono, Mt Tenger (2000 m); Goenoeng Ider-Ider, Mt Tenger (2200 m); *Raphanus sativus* L., Selokatan, 15.viii.1915, WU Wageningen. By D. Noordam, RMNH, Leiden: *Brassica juncea* (L.) Czern., Bogor, 25.x.1975.

Diagnosis.— Apterae in life pale green. Head and thorax at the sides distinctly white due to wax. Four rows of shiny spots from the thorax to the end of the abdomen in granular surface. Middle spot of siphunculi towards the distal end fused in the middle. Antennae, legs and siphunculi pale greyish brown. Cauda pale brown. Antennae distally almost black and tarsi and tibiae distally black.

Macerated material.— Inconspicuous antennal tubercles, antennae about half the body length, absence of secondary rhinaria in apterae, weakly swollen siphunculi (Millar, 1990).

Biology.— The aphids live on the flowers and stems of fruits and on the fruits.

Etymology.— "*erysimi*", of *Erysimum*, a genus of the Cruciferae.

Key to aphids of ferns

Key based on apterae of *Macromyzella, Micromyzella, Micromyzus* and *Shinjia*

1. Second tarsal segment reduced, and without claws. First tarsal chaetotaxy 1,0,0. Head dorsally between the eyes with 2 hairs. Processus terminalis 6.7-7.8 times as long as the base of the segment. Antennal segments I, II and the base of III pale but the rest of the antennae black. In life yellow or pale rose. On *Pteridium aquilinum* .... ***Shinjia orientalis*** (Mordvilko)
- Second tarsal segments not reduced. First tarsal chaetotaxy 3-4, 3-4, 2-4. Head dorsally between the eyes with 4 or exceptionally 3 hairs. Processus terminalis 2.5-7.1 times as long as the base of the segment. Colour of the antennae variable 2
2. Chaetotaxy of first tarsal segments 3-4, 3-4, 3-4. Processus terminalis 2.5-3.3 times as long as the base of the segment. Siphunculi 1.6-2.0 times as long as the cauda. Length of hair on abdominal tergite VIII 6-12 μ. Antennae pale, segments distally ringed. In life reddish, or sometimes (van der Goot, unpublished) green. On ferns, *Cyclophorus nummularifolius*, and (van der Goot, unpublished) *C. lanceolatus, Drymoglossum piloselloides* ..... ***Micromyzus vandergooti*** spec. nov.
- Chaetotaxy of first tarsal segments 3,3,3 or 3,3,2. Processus terminalis 3.2-7.1 times as long as the base of the segment. Siphunculi 1.9-3.6 times as long as the cauda. Lengths of hairs on abdominal tergite VIII 9-47 μ 3
3. Ultimate rostral segment with 8-14 basal hairs, 2.0-2.2 times as long as the second tarsal segment of the hind leg. Length of hairs on abdominal tergite IV 15-18 μ, on tergite VIII 29-35 μ. A small part at base and tip of antennal segment III brown, but the rest colourless. On ferns: *Platycerium* spec., *Polypodium punctatum* ..... ***Micromyzus katoi*** (Takahashi)

- Ultimate rostral segment with 4-9 basal hairs, 1.3-1.8 times as long as the second tarsal segment of the hind leg. Length of hairs on abdominal tergite IV 6-15 μ, on tergite VIII 9-47 μ 4
4. Processus terminalis 3.2-4.6 times as long as the base of the segment, and 0.8-1.2 times as long as antennal segment III. The cauda 0.5-0.8 times as long as the width of the head across the eyes, and 0.12-0.17 times as long as the body. Abdomen sometimes with a brown patch. On ferns: *Anthrophyum parvulum, Asplenium nidus, A. tenerum, Blechnum orientale, Pityrogramma tartarea, Polypodium scolopendria, P. mettenianum, P. orientale, Pteris vittata, Thelipteris* spec. ... ***Micromyzella filicis*** (van der Goot)
- Processus terminalis 5.4-7.1 times as long as the base of the segment, and 1.2-1.7 times as long as antennal segment III. The cauda 0.28-0.43 times as long as the width of the head across the eyes, and 0.07-0.11 times as long as the body 5
5. Siphunculi with 4-6 rows of reticulation at the apex. Siphunculi 6-12 times as long as the length of the reticulated part. Length of hairs on abdominal tergite VIII 35-47 μ. Ultimate rostral segment with 4 basal hairs. Length of the stylets 565-700 μ. Chaetotaxy of the first tarsal segments 3,3,3. In life yellow with black siphunculi and cauda. On fern: *Diplazium japonicum* ..... ***Macromyzella polypodicola*** (Takahashi)
- Siphunculi without reticulation, at most some ledges near the flange. Length of hairs on abdominal tergite VIII 9-12 μ. Ultimate rostral segment with 5-6 basal hairs. Length of the stylets 430-465 μ. Chaetotaxy of the first tarsal segments 3,3,2. In life shiny black. Siphunculi pale brown with black end. On ferns: *Adiantum subcordatum, Pityrogramma calomelanos, Pteris ensiformis* ..... ***Micromyzus niger*** van der Goot

Key based on alatae of *Macromyzella, Micromyzella, Micromyzus* and *Shinjia*

1. Second tarsal segments reduced, without claws. First tarsal chaetotaxy 1,0,0. Antennal segment III with 17-23 rhinaria, segment IV with 10-14 and segment V with 3-8 rhinaria ..... ***Shinjia orientalis*** (Mordvilko)
- Second tarsal segments not reduced, claws are present. First tarsal chaetotaxy 3-4, 3-4, 2-4. Other characteristics variable 2
2. Antennal segment III with 28-44 and segment IV with 17-24 rhinaria. Lengths of hairs on abdominal tergum VIII 40-50 μ, 1.3-1.7 times the diameter of antennal segment III in the middle. Siphunculi 3.1-3.7 times as long as the cauda, with 4-6 rows of reticulation at the apex ..... ***Macromyzella polypodicola*** (Takahashi)
- Antennal segment III with 17-27 and segment IV with 0-5 rhinaria. Lengths of hairs on abdominal tergum VIII 9-34 μ, 0.40-0.69 times the diameter of antennal segment III in the middle. Siphunculi 1.7-2.5 times as long as the cauda, with or without reticulation at the apex..... 3
3. Length of hairs on the middle of the head 8-9 μ long, on abdominal tergite IV 7-8 μ, and on tergite VIII 9-15 μ 4
- Length of hairs on the middle of the head 15-23 μ, on abdominal tergite IV 13-20 μ, and on tergite VIII 18-34 μ 5
4. The processus terminalis 1.3-1.5 times as long as antennal segment III and 1.6-1.9 times as long as the siphunculus. Cauda with 6 hairs. Length of the stylets 425-490 μ. Ultimate rostral segment 1.2-1.4 times as long as the second tarsal segment of the hind leg ..... ***Micromyzus niger*** van der Goot

- Processus terminalis 0.9 times as long as antennal segment III and 1.1 times as long as the siphunculus. Cauda with 4-5 hairs. Length of the stylets 640-690 μ. Ultimate rostral segment 1.4-1.7 times as long as the second tarsal segment of the hind leg ..... ***Micromyzus vandergooti*** spec. nov.

5 Ultimate rostral segment 1.5-1.7 times as long as the second tarsal segment of the hind leg. Base of the ultimate rostral segment with 4-7 hairs. Siphunculi 2.9-3.0 times as long as the body, and 1.1-1.7 times as long as the diameter of the head across the eyes. Siphunculi 13-16 times as long as its diameter in the middle. Stylets 650-800 μ long. Veins of the fore wing not bordered with black .... ***Micromyzella filicis*** (van der Goot)

- Ultimate rostral segment 2.1-2.3 times as long as the second tarsal segment of the hind leg. Base of the ultimate rostral segment with 9-13 hairs. Siphunculi 2.1-2.5 times as long as the body and 0.9-1.1 times as long as the diameter of the head across the eyes. Siphunculi 5-9 times as long as its diameter in the middle. Stylets 820-850 μ long. Veins of the forewing not bordered with black .... ***Micromyzus katoi*** (Takahashi)

Macromyzella M.R. Ghosh, R.C. Basu & D.N. Raychaudhuri, 1977 (Aphidinae: Macrosiphini)

Macromyzella polypodicola (Takahashi, 1921)
(figs 81-95)

Material.— Specimens collected in **Indonesia, Java** by D. Noordam, RMNH, Leiden: *Diplazium japonicum* Bedd., Sindanglaya (1200 m), 1.ix.1976; fern, Dieng (2000 m), 3.i.1977; *Diplazium japonicum* Bedd., Sindanglaya (1100 m), 7.xii.1977.

Diagnosis.— Apterae in life yellow or orange yellow. Antennal segments I, II, III and IV yellow, but base and distal part grey, tarsi black.

Biology.— The aphids live on the lower side of the leaves.

Etymology.— "*polypodicola*", dwelling on *Polypodium*, a genus of the Polypodiaceae.

Macrosiphoniella del Guercio, 1911 (Aphidinae: Macrosiphini)

Key based on apterae of *Macrosiphoniella* del Guercio

1. Antennal segment III with 3-6 rhinaria restricted to the basal half. Antennal segment III 0.9-1.0 times as long as antennal segment IV. Processus terminalis 3.2-3.6 times as long as the base of the segment. Length of hair basally on last rostral segment 3.3-6.7 times as long as the length of the distal hair. Primary rhinarium of antennal segment V ciliated. At most 1/5 of femora at base pale. In life orange brown with on abdomen some green with wax. On *Artemisia vulgaris* .... ***Macrosiphoniella pseudoartemisiae*** Shinji

- Antennal segment III with 15-24 rhinaria spread over basal and distal half. Antennal segment III 1.5-1.8 times as long as antennal segment IV. Processus terminalis 4.2-5.0 times as long as the base of the segment. Length of hair basally on last rostral segment 1.6-2.2 times as long as the length of the distal hair. Primary

rhinarium of antennal segment V not ciliated. Femora over basal half pale. In life, shiny dark reddish brown. On *Chrysanthemum morifolium* ..... ***Macrosiphoniella sanborni*** (Gillette)

Key based on alatae of *Macrosiphoniella* del Guercio

1. Antennal segment IV without rhinaria. Antennal segment III 1.0-1.1 times as long as antennal segment IV. Head width across the eyes 1.6-1.9 times the length of the siphunculi. Processus terminalis 3.4-3.7 times as long as the base of the segment ..... ***Macrosiphoniella pseudoartemisiae*** Shinji
- Antennal segment IV with 3-8 rhinaria. Antennal segment III 1.5-1.8 times as long as antennal segment IV. Head width across the eyes 1.1-1.2 times the length of the siphunculi. Processus terminalis 4.5-5.0 times as long as the base of the segment..... ***Macrosiphoniella sanborni*** (Gillette)

Macrosiphoniella pseudoartemisiae Shinji, 1933
(figs 96-98)

Material.— Specimens collected in **Indonesia, Java**, by F.W. Rappard BMNH, London: *Artemisia vulgaris* L., Pandasari (1600 m), 7.xi.1951; *Artemisia vulgaris* L., Malang (450 m), 17.xii.1951; *Artemisia vulgaris* L., Batoe (1000 m), 17.xii.1951; *Artemisia vulgaris* L., Tempuran (1300 m), 8.xi.1951; *Artemisia vulgaris* L., Mt Tenger (2300 m), 4.x.1951; and by D. Noordam, RMNH, Leiden: *Artemisia vulgaris* L., Nongkojajar (1400 m), 12.vi.1976.

Diagnosis.— Apterae in life orange brown with some green distally on the abdomen. Antennal segment III white, distal 0.1, and distal segments black. Siphunculi and cauda black. Head, thorax and abdomen grey due to wax, with distinct transverse lines.

Biology.— The aphids live on the lower side of leaves and on young stems with the head directed downwards.

Etymology.— "*pseudoartemisiae*", resembling *Artemisia*, a genus of the Compositae.

Macrosiphoniella sanborni (Gillette, 1908)
(figs 99-101)

Material.— Specimens collected in **Indonesia, Java**, by J. Sijpkens, BMNH, London: *Chrysanthemum* spec., Tjinjiroegu (1600 m), 4.viii.1949; by F.W. Rappard, BMNH, London: *Chrysanthemum indicum* L., Malang (450 m), 20.v.1951; and by D. Noordam, RMNH, Leiden: *Chrysanthemum morifolium* Ramatuelle, Lembang, 10.iv.1975; *Chrysanthemum morifolium* Ramatuelle, Sindanglaya (1100 m), 8.xi.1977; *Chrysanthemum morifolium* Ramatuelle, Cibodas (1400 m), 26.ii.1978.

Diagnosis.— Aptera in life shiny reddish brown.

Biology.— The aphids live on young shoots, stalks and leaves.

Etymology.— "*sanborni*": based on a person's name.

Micromyzella Eastop, 1955 (Aphidinae: Macrosiphini)

Micromyzella filicis (van der Goot, 1917)
(figs 102-114)

Material.— Specimens collected in **Indonesia, Java** (the collections are indicated by numbers between paranthesis): P. van der Goot, see van der Goot (1917: 26) (1), Wonosobo, Mt Dieng (700 m), lost; D. Noordam, RMNH, Leiden (2): *Pityrogramma tartarea* Maxon, Wonosobo (1000 m), 22.vii.1976 (2); *Thelypteris* spec., Wonosobo (1000 m), 22.vii.1976 (2); *Sphenomeris chinensis* (L.) M., Wonosobo (1000 m), 22.vii.1976 (2); *Pteris vittata* L., Tawangmangu (1000 m), 23.vii.1976 (2); *Asplenium tenerum* Forst, Puncak (1400 m), 9.viii.1976 (2); *Polypodium mettenianum* Cesati, Cibodas (1400 m), 26.ii.1978 (2); *Polypodium* spec., Cibodas (1400 m), 26.ii.1978 (2); *Polypodium* spec., Cibodas (1400 m), 26.ii.1978 (2); *Blechnum orientale* L., Cibodas (1400 m), 27.ii.1978 (2); *Polypodium scolopendria* Burm., Sindanglaya (1100 m), 2.iii.1978 (2); *Anthrophyum parvulum* Bl., Sindanglaya (1100 m), 2.iii.1978; *Asplenium nidus* L., Sindanglaya (1100 m), 2.iii.1978 (2). Apterous viviparous female from *Polypodium* spec., Cibodas, 26.ii.1978, D. Noordam, RMNH, Leiden.

Diagnosis.— Apterae in life green with black spot on abdomen. Head and cauda pale brown. Antennae black. Siphunculi black. Legs brown, but tibiae distally black. Femur almost black. Eyes black. Alatae as apterae but no black spot on abdomen, and thorax bright brown. Pterostigma grey.

Biology.— The aphids live on the lower side of leaves or in rolled up leaves.

Etymology.— "*filicis*", of ferns.

Micromyzus van der Goot, 1917 (Aphidinae: Macrosiphini)

Micromyzus katoi (Takahashi, 1925)
(figs 115-126)

Material.— Specimens collected in **Indonesia, Java** (the collectors are indicated by numbers between parenthesis): P. van der Goot, WU, Wageningen (1); F.W. Rappard, BMNH, London (2); D. Noordam, RMNH, Leiden (3). ?, 1915-1916 (1); fern, Salatiga, 26.ii.1916 (1); *Platycerium* spec., Bondowoso (850 m), 2.viii.1950 (2); *Platycerum* spec., Bogor, 11.iii.1977, leg. Ati Duriat (3); *Microsorium* spec., Bogor Keb. R., 5.iii.1978 (3).

Diagnosis.— Apterae in life shiny orange brown, in the centre paler, at the siphunculi and along the border of the abdomen darker. Head, antennal segments I and II, and cauda as the centre of abdomen. Base of antennal segment III pale brown, distal 0.1 black, rest white. Basal half of antennal segment IV white, the other parts black. Basal half of femur white, rest black. Knee of tibia and distal 0.2 black, rest white. Tarsi black. Siphunculi dark blackish brown. Eyes red.

Biology.— The aphids live on the lower side of young leaves.

Etymology.— "*katoi*" probably based on a person's name.

Micromyzus niger van der Goot, 1917
(figs 127-138)

Material.— Specimens collected in **Indonesia, Java** (the collectors are indicated by numbers between parenthesis): P. van der Goot (1) and Fr. Verbeek (2), both WU, Wageningen; D. Noordam, RMNH,

Leiden (3). Fern, Salatiga, 1914, (1); *Adiantum* spec., Bogor, 21.ii.1932 (2); *Pityrogramma calomelanos* Link, Sindanglaya (1100 m), 16.iv.1975 (3); *Pityrogramma tartarea* Maxon, Wonosobo, 22.vii.1976 (3); *Pteris ensiformis* Burm., Klungkung-Bali, 28.vii.1976 (3); *Adiantum subcordatum* L., Bogor, 22.i.1977, leg. Ati Duriat (3); *Pityrogramma calomelanos* Link, Sindanglaya, 29.i.1977 (3).

Diagnosis.— Apterae in life shiny brown black. Antennae first part pale brown, rest black. Femora basally dirty white, rest black. Basal 4/5 of tibia dirty white, rest black. Basal 3/5 of siphunculi dirty white, rest black and slightly widened. Cauda very dark grey, almost black, distal part very thin, with white wax. Eyes dark red.

Biology.— The aphids live under the lower side of leaves, also in inward curling leaves.

Etymology.— "*niger*", black.

Micromyzus vandergooti spec. nov.
(figs 139-151)

Material.— Type specimens collected in **Indonesia, Java** (the collectors are indicated by numbers between parenthesis): P. van der Goot, WU, Wageningen (1), F.W. Rappard, BMNH, London (2); D. Noordam, RMNH, Leiden (3). Fern, Wonosobo, 4.iv.1915, (1); *Cyclophorus* spec., Salatiga, 15.xii.1915 (1); fern, Soembing col, 19.iv.1916 (1); fern, Bandar, 20.viii.1916 (1); *Cyclophorus* spec., Salatiga, 1.x.1916 (1); 298 (1); *Cyclophorus* spec., Rembangan (600 m), 16.iv.1950 (2); *Cyclophorus* spec., Rembangan, Djember, 15.vii.1950 (2); *Cyclophorus nummularifolius* C. Chr., Bogor, 27.ii.1978 (3); *Cyclophorus nummularifolius* C. Chr., Bogor, 9.iii.1978 (3). Holotype (RMNH; apterous viviparous female) from *Cyclophorus nummularifolius* C. Chr., Bogor, Java, 27.ii.1978, D. Noordam, no. 1287-2. Paratypes: more than 40 apterous viviparous females and 12 incomplete alate viviparous females.

Live specimens.— Apterous viviparous female orange brown or brownish red. Antennal segments III, IV and V pale brown, each distally darker, and segment VI almost black. Head slightly paler than the thorax and abdomen. Femora and tibiae pale brown, distally darker. Tarsi black or grey. Siphunculi black, sometimes the base slightly paler. Cauda dirty yellow. Eyes red.

Macerated specimens (described from 24 specimens).— Body length 1.27-1.72 mm, about 1.6 times as long as it is wide.

Head.— Head colourless or very pale brown, smooth but the sides of the frons with some spinulae and protruding 20-50 μ; head across the eyes 370-430 μ, dorsally on each antennal tubercle 1 hair, in the middle 4 hairs, 6-8 μ long, and between the eyes 4 hairs. Antennae with 6 segments, the same colour as the head, but segment I darker, the distal part of segments III and IV darker, and segment VI completely dark, 1.57-1.97 mm long, 1.1-1.4 times as long as the body, and 4.2-5.0 as long as the width of the head across the eyes; length of the hairs on antennal segment III 6-10 μ; segment III 365-535 μ long, 1.3-1.6 times as long as segment IV, 1.5-2.0 times as long as segment V; the processus terminalis 400-460 μ long, 2.5-3.3 times as long as the base of the segment. The eyes colourless, as in the ocular tubercle. Ultimate rostral segment 119-151 μ long, 1.4-1.7 times as long as the second tarsal segment of the hind leg, with 6-9 basal hairs; stylets 670-820 μ long.

Thorax.— The thorax colourless. Femora and tibiae pale brown, distally darker. First tarsal segments with 3-4 hairs on all segments.

Abdomen.— Length of hairs on abdominal tergite IV 5-8 μ, on tergite VIII, 6-12 μ.

Siphunculi 1.6-2.0 times as long as the cauda, 4.5-7.2 times as long as the diameter in the middle. Cauda colourless, 195-260 μ long with 3-6 hairs.

Biology.— The aphids live (in one case) on the upperside of a leaf protected by a "roof".

Etymology.— "*vandergooti*", after P. van der Goot, the well-known aphidologist.

Key based on apterae of *Myzus* and *Tuberocephalus*

1. Base of the tibiae imbricated. Siphunculi 3.2-3.9 times the length of the cauda. Siphunculi 1.2-1.4 times the length of the head across the eyes, and 0.3-0.4 times the length of the body. Genital plate greatly pronounced backwards. Last rostral segment 1.4-1.5 times the length of the second tarsal segment of the hind leg. In life pale green with pale brown antennae, legs, siphunculi and cauda. On *Sigesbeckia orientalis* ..... ***Myzus siegesbeckicola*** Strand
- At most about 2 imbrications on the basal knob of the tibiae, otherwise the base is smooth. Siphunculi 1.8-2.8 times the length of the cauda. Siphunculi 0.6-1.4 times as long as the width of the head across the eyes and 0.15-0.32 as long as the body. Genital plate not distinctly pronounced. Ultimate rostral segment 0.8-1.6 times the length of the second tarsal segment of the hind leg 2
2. Antennae 0.4-0.7 times as long as the body and 2.1-2.9 times as long as the width of the head across the eyes. The processus terminalis 0.4-0.8 times as long as the width of the head across the eyes 3
- Antennae 0.8-1.1 times as long as the body and 3.7-5.9 times as long as the width of the head across the eyes. The processus terminalis 0.9-1.4 times as long as the width of the head across the eyes 5
3. Ultimate rostral segment 1.5-1.6 times the length of the second tarsal segment of the hind leg. The processus terminalis 0.6-0.8 times as long as antennal segment III. In life green with pale siphunculi and cauda. On *Artemisia vulgaris* .... ***Tuberocephalus sasakii*** (Matsumura)
- Ultimate rostral segment 0.9-1.2 times the length of the second tarsal segment of the hind leg. Processus terminalis 0.8-1.2 times as long as antennal segment III 4
4. Segmentally arranged brown patches, muscle plates on the dorsum. Processus terminalis 2.1-2.9 times as long as the base of the segment. Length of the stylets 320-400 μ. Antennae 0.5-0.7 times as long as the body. Spinulae on the distal half of the hind tibiae of larvae. In life pale brown with segmentally arranged darker spots. Polyphagous (17 plant species) ..... ***Myzus ornatus*** Laing
- Dorsum evenly pale. Processus terminalis 2.7-4.1 times as long as the base of the segment. Length of the stylets 435-580 μ. Antennae 0.4-0.5 times as long as the body. Spinulae on the distal half of the hind tibiae lacking in larvae. In life pale whitish green. On *Hemerocallis lilio-asphodelus* ..... ***Myzus hemerocallis*** Takahashi
5. Head dorsally with spinulae except in a central area. Siphunculi 0.2-0.3 times as long as the body. Ultimate rostral segment 0.8-1.2 times as long as the second tarsal segment of the hind leg. Base of antennal segment VI 4.1-6.2 times as long as the width in the middle. Distal half of the hind tibiae of larvae without spinulae. Aphids pale, siphunculi usually clavate and at the end brown. In life green, pale brownish or reddish. Polyphagous (24 plant species) ..... ***Myzus persicae*** (Sulzer)

- Head dorsally also in the central area with spinulae. Siphunculi 0.17-0.22 times as long as the body. Ultimate rostral segment 1.2-1.6 times as long as the second tarsal segment of the hind leg. Base of antennal segment VI 6.4-9.3 times as long as the width in the middle. Distal half of hind tibiae of larvae with spinulae. Aphids pale or dark. Siphunculi not clavate 6

6. Antennal tubercles diverging. Head, antennal segments I and II, abdominal dorsum, siphunculi, cauda and basal parts of the legs brown to even black. Antennae 0.9-1.0 times as long as the body. Siphunculi 0.17-0.18 times as long as the body and 0.6-0.7 times as long as the width of the head across the eyes. The cauda 0.29-0.33 times as long as the head across the eyes. Processus terminalis 2.7-2.9 times as long as the base of the segment and 1.3 times as long as the siphunculi. Stylets 620 μ long. Distance between spiracles V-VI 0.8-1.0 times of that between VI-VII. In life black. On *Aeschynanthus radicans* ..... ***Myzus duriatae*** spec. nov.
- Antennal tubercles converging. Aphids colourless except the tarsi and antennal segments III-VI. Antennae 1.1-1.2 times as long as the body and 4.5-4.9 times as long as the siphunculi. Siphunculi 0.9-1.0 times as long as the width of the head across the eyes. Cauda 0.42-0.43 times as long as the width of the head across the eyes. Processus terminalis 3.9-4.0 times as long as the base of the segment and 1.5-1.8 times as long as the siphunculi. Stylets 490-500 μ long. Distance between spiracles V-VI 1.1-1.5 times that between VI-VII. In life white. On *Debregeasia longifolia*, and according to van der Goot (unpublished) on *Wendlandia densiflora* ..... ***Myzus debregeasiae*** spec. nov.

Key based on alatae of *Myzus* and *Tuberocephalus*

1. Ultimate rostral segment 1.5-1.7 times as long as the second tarsal segment of the hind leg. Antennal segment III with 17-26 rhinaria, segment IV with 3-11. Processus terminalis 0.5-0.6 times as long as antennal segment III, 0.5-0.8 times as long as the head across the eyes and 3.1-3.8 times as long as the cauda. Abdomen dorsally with a central brown spot. Antennae, legs, siphunculi and cauda more or less brown ..... ***Tuberocephalus sasakii*** (Matsumura)
- Ultimate rostral segment 0.9-1.3 times as long as the second tarsal segment of the hind leg. Antennal segment III with 7-17 rhinaria, antennal segment IV with none. Processus terminalis 0.7-1.5 times as long as antennal segment III, 0.7-1.7 times as long as the width of the head across the eyes. The cauda 0.3-0.5 times as long as the width of the head across the eyes. Colour about the same as *Tuberocephalus sasakii*, in *M. hemerocallis* pale 2

2. Siphunculi more or less clavate, at 0.7 of their length wider than at 0.3 of their length. Antennae 4.8-5.1 times as long as the width of the head across the eyes. The processus terminalis 1.2-1.7 and the cauda 0.4-0.5 times as long as the head across the eyes. Antennal segment III 1.1-1.3 times the length of antennal segment IV ..... ***Myzus persicae*** (Sulzer)
- If siphunculi are clavate, then at 0.7 of their length not wider than at 0.3 of their length. Antennae 0.7-0.9 times as long as the body and 3.0-3.7 times as long as the width of the head across the eyes. The processus terminalis 0.7-0.8 and the cauda 0.4-0.5 times as long as the width of the head across the eyes. Antennal segment III 1.4-1.7 times as long as antennal segment IV 3

3. Processus terminalis 2.9-4.0 times as long as the base of the segment. Length of stylets 475-610 μ. Antennae 0.7-0.9 times as long as the body. Distal half of hind tibiae in larvae with spinulae ..... ***Myzus hemerocallis*** Takahashi
- Processus terminalis 1.6-2.9 times as long as the base of the segment. Length of stylets 410 μ. Antennae 0.8-0.9 times as long as the body. Distal half of hind tibiae in larvae with spinulae ..... ***Myzus ornatus*** Laing

Myzus Passerini, 1860 (Aphidinae: Macrosiphini)

Myzus debregeasiae spec. nov.
(figs 152-155)

Material.— Types: holotype (RMNH, Leiden; apterous viviparous female) on *Debregeasia longifolia* (Burm. f.) Wedd., Sindanglaya (1100 m), **Indonesia, Java**, D. Noordam, no. 887-1-3. Paratypes: 23 apterous females, the same data as the holotype. All types collected by D. Noordam. Additionally, six specimens (in unpublished notes described under the name *Myzodes wendlandiae*), P. van der Goot, damaged, lotro, *Wendlandia densiflora* (Bl.) DC., Merbaboe, 5.vi.1916, WU, Wageningen.

Diagnosis.— Apterous viviparous female yellowish white. Antennae with some brown. Legs, tibiae distally and tarsi with some brown. Eyes black.

Macerated specimens (described from eight specimens).— Body length 1.26-1.73 mm, 1.8-2.0 times as long as it is wide, colourless.

Head.— Head colourless, dorsally and ventrally with spinulae observable at about 300 times magnification. Antennal tubercles 30-40 μ high, with pustules and some hairs. Head across the eyes 320-378 μ, dorsally 4 hairs anteriorly in the middle and 4 between the eyes, 20-40 μ long. Antennae with 6 segments almost colourless or pale brown 1.71-2.00 mm long, 1.1-1.2 times as long as the body and 5.0-5.8 times as long as the width of the head across the eyes; length of hairs on antennal segment III 10-12 μ; segment III 385-510 μ long, 1.2-1.4 times as long as segment IV 1.7-2.2 times as long as segment V; the processus terminalis 515-620 μ long, 3.9-4.2 times as long as the base of the segment. The eyes colourless, as is the ocular tubercle. Ultimate rostral segment 116-126 μ long, 1.32-1.51 times as long as the second tarsal segment of the hind leg. Stylets 490-500 μ long.

Thorax.— Thorax colourless. Femora colourless, tibiae pale brown, tarsi slightly darker than tibiae. Chaetotaxy of the first tarsal segments 3,3,3.

Abdomen.— Abdomen colourless. Length of hairs on abdominal tergite IV 8-11 μ, blunt; on tergite VIII 25-31 μ, sharp. Siphunculi colourless, 320-400 μ long, 2.1-2.4 times as long as the cauda, 7.1-9.3 times as long as the width in the middle. Cauda colourless, 130-160 μ long with 4-5 hairs.

Alatae.— Not collected.

Biology.— The aphids live separately on the lower side of older leaves.

Etymology.— "*debregeasiae*", of *Debregeasia*, a genus of the Urticaceae.

Myzus duriatae spec. nov.
(figs 156-161)

Material.— Holotype (RMNH, Leiden; apterous viviparous female) on *Aeschynanthus radicans* Jack., Cibodas (1400 m), **Indonesia, Java**, 20.ii.1978, Ati Duriat, no. 1270-2. Paratypes: 2 apterous females, the same data as the holotype. Paratypes collected by D. Noordam.

Diagnosis.— Apterous viviparous female brownish black. Antennal segments III and IV pale brown, segment IV distally gradually darker, segments V and VI almost black. Femora pale brown, distally darker. Tibiae pale brown. Tarsi dark grey. Siphunculi brown, distally darker. Cauda pale brown.

Macerated specimens (described from four specimens).— Body length 1.37-1.48 mm, 1.7-2.0 as long as it is wide.

Head.— Head brown, dorsally and ventrally with spinulae observable at about 50 times magnification. Antennal tubercles 20-30 μ high with pustules and each with 1 hair. Head across the eyes 350-365 μ, dorsally 4-5 hairs anteriorly, and 4 between the eyes 8 μ long. Antennae with 6 segments, segments I and II dark brown, III and IV pale brown, but III distally, and IV, V and VI darker, 1.35-1.38 mm long, 0.9-1.0 times as long as the body and 3.8-3.9 times the width of the head across the eyes, length of hairs on antennal segment III 345-370 μ long, 1.4-1.5 times as long as segment IV, 1.8-2.0 times as long as segment V; the processus terminalis 325-335 μ long, 2.7-2.9 times as long as the base of the segment. The eyes colourless, the ocular tubercles brown. Ultimate rostral segment 121-136 μ long, 1.46-1.64 times as long as the second tarsal segment of the hind leg. Stylets 620-625 μ long.

Thorax.— Thorax brown. Femora brown, distally darker. Tibiae brown, distally paler, tarsi brown. Chaetotaxy of the first tarsal segments 3,3,3.

Abdomen.— Colourless, with an oval brown patch on the dorsal side of segments I-IV. Length of hairs on abdominal tergite IV 6-8 μ, blunt; on tergite VIII 20 μ long, sharp. Siphunculi brown, with some imbrications, 250-255 μ long, 2.1-2.5 times as long as the cauda, 6.4-6.7 times as long as they are wide in the middle. Cauda brown 100-120 μ long, with 4-5 hairs.

Alatae.— Not collected.

Biology.— The aphids were present in the flower bud covered by the calyx.

Etymology.— "*duriatae*", named after Mrs Ati Duriat, who collected the holotype.

Myzus hemerocallis Takahashi, 1921
(figs 162-166)

Material.— Specimens collected in **Indonesia, Java** by D. Noordam (RMNH, Leiden), *Hemerocallis lilio-asphodelus* L., Cipanas, 13.vi.1975.

Biology.— The aphids were present between bracts on flower buds.

Etymology.— "*hemerocallis*", of *Hemerocallis*, a genus of the Liliaceae.

Myzus ornatus Laing, 1932
(figs 167-177)

Material.— Specimens collected in **Indonesia, Java**, by D. Noordam (RMNH, Leiden), *Ageratum houstonianum* Mill., Sindanglaya (1100 m), 27.x.1975; *Sigesbeckia orientalis* L., Sindanglaya (1100 m), 5.xi.1975; *Cuphea procumbens* Cav., Pangelengan, 13.xi.1975; *Tithonia diversifolia* (Hemsley) A. Gray, Sindanglaya, 2.iii.1976; *Cuphea procumbens* Cav., Cibodas (1400 m), 23.v.1976; *Marsypianthus chamaedrys* (Vahl) O.K., Nongkojajar (1400 m), 12.vi.1976; *Gnaphalium peregrinum* Fernald, Nongkojajar (1400 m), 12.vi.1976; *Kalanchoe prolifera* (Bowie) Hamet, Tosari, 14.vi.1976; *Salvia splendens* Sello, Tosari (1800 m), 14.vi.1976; *Capsella bursa-pastoris* (L.) Medik., Tosari (1800 m), 14.vi.1976 (two samples); *Zingiber* spec., Bandung-

Cipatat, 19.vi.1976; *Fuchsia hybrida* Hort., Dieng (2000 m), 21.vii.1976; *Helichrysum bracteatum* (Vent.) Andr., Pangalengan, 15.viii.1976; *Apium graveolens* L., Sindanglaya (1100 m), 6.ix.1976; *Achillea millefolium* L., Bandung-Cisarua (1300 m), 16.ix.1976; *Ambrosia artemisifolia* L., Pangalengan (1300 m), 17.ix.1976; *Althea rosea* (L.) Cav., Dieng (2000 m), 1.i.1977; *Rostellularia obtusa* Nees, Sindanglaya (1100 m), 24.i.1977.

Biology.— The aphids live on stems, flowers and flower buds and on flower corolla hidden by the calyx, flat on hairless strips of calyx.

Etymology.— "*ornatus*", decorated.

Myzus persicae (Sulzer, 1776)
(figs 178-191)

Material.— Specimens collected in **Indonesia, Java**, by P. van der Goot 1917: 48 (1) *Nicotiana tabacum* L., *Capsicum annuum* L., *Nasturtium indicum* DC., *Solanum* spec., *Duranta plumieri* Jacq., *Raphanus sativus* L., *Centaurea* spec., at Pasoeroean, Willis (close to Modjopanggoeng, (830 m), Ngadiwono (2000 m), Salatiga (572 m), Djember (100 m), WU, Wageningen. Specimens of *Nicotiana tabacum* L., Mt Wilis, 1914, and *Solanum tuberosum*, Lembang, 4.viii.1918; F.W. Rappard, BMNH, London (2); D. Noordam, RMNH, Leiden (3); *Antirrhinum majus* L., Tjinjiroean (1600 m), 20.viii.1949, Sijpkens; *Dendrobium stratiotes* Rchb., Plantentuin, Buitenzorg, 8.vii.1950, Sijpkens; *Lantana camara* L., Tjinjiroean (1600 m), 1.viii.1949, Sijpkens; *Cinchona succirubra* Pav. ex Klotzsch Tjinjiroean (1600 m), 3.viii.1949, Sijpkens; *Raphanus sativus* L., Banjoewangi (500 m), 25.ix.1948 (2); *Eucalyptus deglupta* Bl., Bondowoso (850 m), 21.i.1950 (2); *Nicotiana* spec., Djember, 1.viii.1950 (2); *Pisum sativum* L., Blawan, Idjen plateau, 29.vi.1948 (2); *Calendula officinalis* L., Malang, 1.v.1951, R.W. v.d. Goot; *Arctotis grandis* Thunb., Malang, 1.vi.1951, R.W. v.d. Goot; *Zinnia elegans* Jacq., Malang, 14.vi.1951 (2); *Digitalis purpurea* L., Pundaklembu (2200 m), 7.xi.1951 (2); *Brassica oleracea* L., Sindanglaya (1100 m), 9.iv.1975 (3); *Youngia japonica* (L.) DC., Sindanglaya (1100 m), 19.v.1975 (3); *Ageratum houstonianum* Mill., Sindanglaya (1100 m), 27.x.1975 (3); *Daucus carota* L., Cibodas-Lembang, 11.xi.1975 (3); *Lycopersicum esculentum* L., Cisarua Bandung, 13.xi.1975 (3); *Gaillardia pulchella* Foug., Sindanglaya (1100 m), 14.ii.1976 (3); *Capsicum* spec., Sindanglaya (1100 m), 2.vi.1976 (3); *Solanum tuberosum* L., Malang-Selekta Brantas (1600 m), 10.vi.1976 (3); *Drymaria cordata* (L.) Willd., Malang-Pujon, 11.vi.1976 (3); *Oenanthe javanica* DC., Malang-Selekta, 13.vi.1976 (3); *Capsella bursa-pastoris* (L.), Medik Tosari (1800 m), 14.vi.1976 (3); *Capsicum* spec., Pasuruan, 15.vi.1976 (3); *Drymaria cordata* (L.) Willd., Malang-Punten, 16.vi.1976 (3); *Nicotiana tabacum* L., Klaten, 17.vi.1976 (3); *Cyphomandra betacea* (Cav.) Sendtn., Sindanglaya (1100 m), 28.vi.1976 (3); *Lycium chinense* Mill., Dieng (1850 m), 21.vii.1976 (3); *Prunus persica* (L.) Batsch, Dieng (1850 m), 21.vii.1976 (3); *Achillea millefolium* L., Cisarua-Bandung (1300 m), 16.ix.1976 (3); *Solanum tuberosum* L., Pangalengan (1300 m), 17.ix.1976 (3); *Ageratum houstonianum* Mill., Sindanglaya (1100 m), 3.xii.1976 (3); *Brassica chinensis* Juslenius, Sindanglaya (1100 m), 16.xii.1976 (3); *Cestrum aurantiacum* Lindl., Pangalengan, 2.viii.1977 (3); *Cleome rutidosperma* DC., Bandung, 3.viii.1977 (3); *Hediotis corymbosa* (L.) Lamk., Sindanglaya, 1.ix.1977 (3); *Brassica juncea* (L.) Czern, Sindanglaya, 6.ix.1977 (3); *Bothriospermum tenellum* (Hornem.) Fisch & Mey., Sindanglaya, 6.ix.1977 (3); *Ageratum conyzoides* L., Sindanglaya (1100 m), 15.xi.1977 (3); *Apium graveolens* L., Sindanglaya (1100 m), 28.xi.1977 (3).

Biology.— The aphids live on the lower side of young and old leaves, on flower stems, flower buds and on inward curling leaves.

Etymology.— "*persicae*", of *persica*, peach.

Myzus siegesbeckicola Strand, 1929
(figs 192-197)

Material.— Specimens collected in **Indonesia, Java** by D. Noordam, (RMNH, Leiden). *Sigesbeckia orientalis* L., Sindanglaya (1100 m), 5.xi.1975.

Biology.— The aphids live on stems, the adults especially at bifurcations.
Etymology.— "*siegesbeckicola*", dwelling on *Sigesbeckia*, a genus of Compositae.

Neotoxoptera Theobald, 1915 (Aphidinae: Macrosiphini)

Neotoxoptera oliveri (Essig, 1935)
(figs 198-201)

Material.— Specimens collected in **Indonesia, Java** by D. Noordam (RMNH, Leiden), *Rorippa indica* (L.) Hiern., Malang-Pujon, 11.vi.1976; *Stellaria media* L., Mt Bromo (2000 m), 15.vi.1976. Whether the material mentioned above really belongs to this species is uncertain, while alatae were lacking.

Diagnosis.— Apterae in life shiny brown, distally on the abdomen sometimes rather more pale. Legs, siphunculi and the hardly visible cauda somewhat paler. Antennal segment III brown, rest of the antennae black.
Biology.— The aphids live on the fruits and stems of flowers.
Etymology.— Named after a person?

Oedisiphum van der Goot, 1917 (Aphidinae: Macrosiphini)

Oedisiphum compositarum van der Goot, 1917
(figs 202-205)

Material.— Specimens collected in **Indonesia, Java** by P. v.d. Goot (1917: 125), *Gnaphalium silvaticum* L., Mt Dieng (2060 m), 2.iv.1915, 20.viii.1916, both in WU, Wageningen and BMNH, London; by R.W. Rappard, *Gnaphalium japonicum* Thunb., Tenger geb. (2300 m), 4.x.1951, *Gnaphalium luteo-album* L., Pandaklambu (2200 m), 7.xi.1951, in BMNH, London.

Diagnosis.— Body pale brownish green. Sides of the body, rarely also the dorsum somewhat waxy. Eyes black. Antennae colourless, distally black. Tarsi and tibiae distally black. Siphunculi black. Cauda brownish (van der Goot, 1917).
Macerated material.— Cauda wide dish-shaped, about as long as it is wide. Siphunculi at the base and distally equally wide. Abdominal segment VIII usually with 2 dorsal swellings. Without tubercles on the head. Siphunculi about 4 times as long as they are wide (van der Goot, 1917: 123). Antennal segment III without rhinaria.
Biology.— The aphids live on the stems of flowers and between flowers (van der Goot, 1917).
Etymology.— "*compositarum*", from Compositae.

Ovatus van der Goot, 1913 (Aphidinae: Macrosiphini)

Ovatus minutus (van der Goot, 1917)

Material.— Specimens collected in **Indonesia, Java** by P. v.d. Goot, presumably on *Coleus aromaticus* Benth. (Labiatae), Mt Tenger (2000 m), Ngadiwono.

Biology.— The aphids live between the curled up top leaves of presumably *Coleus aromaticus* Benth. (van der Goot, 1917: 44).
Etymology.— "*minutus*", small aphid, hardly attracting attention.

Pentalonia Coquerel, 1859 (Aphidinae: Macrosiphini)

Key based on apterae of *Pentalonia* Coquerel

1. Length of last rostral segment 141-171 μ, and of rostral segment II 390-500 μ. Stylets 710-1040 μ long. Siphunculi 3.7-6.9 times as long as the smallest diameter and 1.7-2.3 times the length of the last rostral segment. On *Musa* and 1 collection on *Alocasia* and *Heliconia* ..... ***Pentalonia nigronervosa*** Coquerel
- Length of last rostral segment 106-139 μ and of rostral segment II 240-385 μ. Stylets 520-760 μ long. Siphunculi 5.7-10.1 times the smallest diameter and 2.1-3.1 times the length of the last rostral segment. On *Alocasia*, *Caladium*, *Colocasia*, *Dieffenbachia*, *Elettaria*, *Hedychium*, *Xanthosoma*, *Zingiber*, *Costus* ..... ***Pentalonia nigronervosa*** f. ***caladii*** van der Goot

Key based on alatae of *Pentalonia* Coquerel

1. Only one specimen available. Length of last rostral segment 83 μ and of rostral segment II 150 m. Stylets 315 μ long. Diameter of head across the eyes 3.9 times the length of the last rostral segment. Last rostral segment 1.4 times as long as hind tarsus II. Antennal segment III 1.3 times as long as antennal segment IV and 1.4 times as long as antennal segment V. Length of siphunculi 10.4 times the smallest diameter. Not known from Java ..... ***Pentalonia gavarri*** Eastop
- Length of last rostral segment 108-164 μ and of rostral segment II 250-460 μ. Stylets 500-880 μ long. Diameter of head across the eyes 2.5-3.4 times the length of the last rostral segment. Last rostral segment 1.5-2.0 times as long as hind tarsus II. Antennal segment III 1.5-1.8 times as long as antennal segment IV and 1.5-2.4 times as long as antennal segment V. Length of siphunculi 4.1-9.6 times the smallest diameter 2
2 Length of last rostral segment 139-164 μ and of rostral segment II 380-460 μ. Stylets 745-880 μ long. Siphunculi 4.1-7.8 times as long as smallest diameter and 1.6-2.5 times the length of the last rostral segment ..... ***Pentalonia nigronervosa*** Coquerel
- Length of last rostral segment 108-128 μ and of rostral segment II 250-350 μ. Stylets 500-675 μ long. Siphunculi 5.4-9.6 times their smallest diameter and 2.0-3.1 times the length of the last rostral segment ..... ***Pentalonia nigronervosa*** f. ***caladii*** van der Goot

Pentalonia nigronervosa Coquerel, 1859
(figs 206-210)

Material.— Specimens collected in **Indonesia, Java**, by P. van der Goot, BMNH, London: *Musa* spec., Salatiga, 28.vi.1916; *Caladium* spec., Djocja, 1916; J. Spijkens, BMNH, London: *Caladium bicolor* (Ait.) Vent., Batavia Stad, 3.ix.1950; F.W. Rappard, BMNH, London: *Canna* spec., Malang, 4.vii.1951; D. Noordam, RMNH, Leiden: *Musa paradisiaca* L., Sindanglaya (1100 m), 14.v.1975; *Centotheca lappacea* (L.) Desv., Bogor Keb. R., 29.ii.1976; *Musa* spec., Tegal, 9.vi.1977; *Musa* spec., Sindanglaya (1100 m), 10.viii.1977; *Heliconia metallica* Planch et Linden, Sindanglaya (1100 m), 17.xi.1977.

Diagnosis.— Apterae in life see *Pentalonia nigronervosa* f. *caladii*. Macerated material, see keys.

Biology.— The aphids live on the outside of inwardly rolled top leaves, hidden on the outside of the leaf stalk of not yet unfolded leaves, on the outside of leaves which are hidden by bracts of older leaves.

Etymology.— "*nigronervosa*", with black veins on the wing.

Pentalonia nigronervosa f. *caladii* van der Goot, 1917
(figs 211-213)

Material.— Specimens collected in **Indonesia, Java**, by P. van der Goot (1917: 57): *Caladium* spec., Gereng Redjo, Djember (25 m), IX-1914; *Hedychium* spec., Bogor, 8.ii.1921; by J. Sijpkens BMNH, London: *Dieffenbachia* spec., Batavia Stad, 12.vii.1950 and 28.ii.1950; Tjikope B 29, 25.vi.1949; *Paphiopedilum* spec., Buitenzorg, 5.vi.1951; *Dieffenbachia* spec., Batavia Stad, 28.x.1950; D. Noordam, RMNH, Leiden: *Costus afer* Ker-Gawl., Bogor Keb. R., 2.iv.1975; *Hedychium coronarium* Koenig, Bogor, 8.iv.1975; *Costus afer* Ker-Gawl., Bogor Keb. R., 8.v.1975; *Caladium bicolor* (Ait.) Vent., Bogor, 8.v.1975; *Centotheca lappacea* (L.) Desv., Sindanglaya, 29.ii.1976; *Zingiber* spec., Bandung, 19.vi.1976; *Xanthosoma nigrum* (Vell.) Mansf., Sindanglaya, 9.viii.1977; *Colocasia esculenta* (L.) Schott, Dasinga, 15.viii.1977; *Caladium bicolor* (Ait.) Vent., Bogor, 3.ix.1977; *Costus afer* Ker-Gawl., Bogor Keb. R., 4.ix.1977; *Colocasia esculenta* (L.) Schott, Bogor Keb. R., 4.ix.1977; *Costus malortieanus* Wendl., Bogor, 16.xi.1977.

Diagnosis.— Apterae in life brown, larvae more reddish brown. Eyes dark red. Siphunculi brown, distally black. Cauda short, white. Legs white or pale brown. Femur and tarsi almost black. Antennae white to pale brown, anterior to the processus terminalis somewhat darker. Macerated material, see keys.

Biology.— The aphids live at the base of the top leaf and young stem, on inwardly rolled top leaves, at the base of leaves surrounded by bracts, on young stems hidden by grass, on corolla.

Etymology.— "*caladii*", of *Caladium*, a genus of the Araceae.

Rhodobium Hille Ris Lambers, 1947 (Aphidinae: Macrosiphini)

Rhodobium porosum (Sanderson, 1900)
(figs 214-218)

Material.— Specimens collected in **Indonesia, Java**, by P. van der Goot (1917: 31): Poespo (Mt Tenger), Prigen (Mt Ardjuno), Songoriti (Mt Kawi); WU, Wageningen: *Rosa* spec., Salak, 10.viii.1918; by F.W. Rappard, BMNH, London: *Rosa* spec., Banowoso (300 m), 16.iv.1948; *Rosa* spec., Bandowoso (300 m), 18.vi.1948; *Rosa* spec., Malang (450 m), 20.i.1951 and 8.iii.1951; by D. Noordam, RMNH, Leiden: *Rosa* spec., Cibodas (1400 m), 23.v.1976.

Diagnosis.— Apterae in life abdomen green with blue green small spots. Head, antennae, rostrum, cauda and legs pale brownish yellow. Antennal segments III, IV, V and VI distally black, processus terminalis grey. Siphunculi distal border darker. Rostrum distally black. Eyes black. Knees and tibiae distally black.

Macerated material.— Apterae with antennae 0.9 times as long as the body. Siphunculi 0.23-0.25 times as long as the body and 1.7-1.9 times as long as the cauda. Hairs blunt, on tergite IV 8 μ long, on tergite VIII 10 μ long. Antennal segment III with 6-11 rhinaria. Cauda with 4 hairs on basal part and 2-3 blunt hairs distally.

Biology.— The aphids live on the lower side of young leaves and on young stems.
Etymology.— "*porosum*", full of holes.

Semiaphis van der Goot, 1913 (Aphidinae: Macrosiphini)

Key based on apterae of *Semiaphis* van der Goot

1. Length of the longest hair on abdominal tergum VIII 10-24 μ. Length of hairs on posterior part of genital plate 13-35 μ, 4 out of 52 specimens with hairs of 23 μ long or longer. The hairs on the posterior part of the genital plate are rigid, and nearly always without a bend. Not known on Java ..... ***Semiaphis dauci*** (Fabricius)
- Length of the longest hair on abdominal tergum VIII 20-40 μ, but 62 out of 68 specimens with hairs longer than 25 μ. Length of hairs on posterior part of genital plate 18-45 μ, but 68 out of 69 specimens with this hair longer than 23 μ. Nearly always hairs present on the posterior part of the genital plate with a distinct bend. On *Apium graveolens*, *A. leptophyllum*, *Daucus carota*, *Foeniculum vulgare*, *Oenanthe javanica* ..... ***Semiaphis heraclei*** (Takahashi)

Key based on alatae of *Semiaphis* van der Goot

1. Antennal segment III with 13-26 rhinaria, antennal segment IV with 1-9 rhinaria. Abdominal tergum VIII with longest hair 10-18 μ long. Length of longest hair on posterior part of genital plate 12-23 μ. Hairs on posterior part of the genital plate rigid, and nearly always without a bend. Not known on Java ..... ***Semiaphis dauci*** (Fabricius)
- Antennal segment III with 25-48 rhinaria, antennal segment IV with 4-12 rhinaria. Abdominal tergum VIII with longest hair 20-40 μ long. Length of longest hair on posterior part of the genital plate 19-40 μ long but 4 out of 85 specimens with this hair 23 μ long or shorter. Nearly always hairs present on the posterior part of the genital plate with a distinct bend ..... ***Semiaphis heraclei*** (Takahashi)

Semiaphis heraclei (Takahashi, 1921)
(figs 219-222)

Material.— Specimens collected in **Indonesia, Java**, by P. van der Goot, WU, Wageningen: *Foeniculum vulgare*, Selok, 2.x.1916; by F.W. Rappard BMNH, London: *Apium tenuifolium* (Moench) Thell., Idjen plateau (1550 m), 5.ix.1950; *Foeniculum* spec., Soranga-Lawu hellingen (1200 m), 10.ix.1951; by D. Noordam, RMNH, Leiden: *Apium graveolens* L., Sindanglaya (1100 m), 14.v.1975, 19.v.1975, 14.x.1975; *Daucus carota* L., Cibodas Lembang, 11.xi.1975; *Daucus carota* L., Sindanglaya (1100 m), 15.v.1976; *Apium leptophyllum* (Pers.) F.v.M., Malang-Punten, 10.vi.1976; *Oenanthe javanica* DC., Malang Selekta, 13.vi.1976; *Apium leptophyllum* (Pers.) F.v.M., 16.vi.1976; Malang-Punten, *Apium graveolens* L., Sindanglaya (1100 m), 6.ix.1976; *Foeniculum vulgare* Mill., Sindanglaya (1100 m), 6.ix.1977; *Apium graveolens* L., Sindanglaya (1100 m), 28.xi.1977; *Foeniculum vulgare* Mill., Sindanglaya (1100 m), 3.xii.1977.

Diagnosis.— Apterae in life green, slightly pruinose, the head and last abdominal segment greenish brown. Siphunculi and cauda pale brown. Legs pale brown, the femur slightly darker. Tarsi black. Antennae white, segment V distally grey, base of segment VI dark grey, processus terminalis grey, towards the end darker. Alatae head

and thorax dark brown, abdomen green. Antennal segments I, II and base of III brown, other parts black. Femur smoky brown, tibiae slightly paler, but distally black. Tarsi black. Eyes black. Siphunculi and cauda dirty greenish brown. Siphunculi short and curved, 0.05 times as long as the body and 0.5 times as long as the cauda.

Biology.— The aphids live on pedicels of flower buds and leaf stalks, between stalks of flowers and fruits, between fruits on fruit stalks, between inward cruling young leaves.

Etymology.— "*heraclei*", of *Heracleum*, a genus of the Umbelliferae.

Shinjia Takahashi, 1938 (Aphidinae: Macrosiphini)

Shinjia orientalis (Mordvilko, 1929)
(figs 223-226)

Material.— Specimens collected in **Indonesia, Java** by D. Noordam, RMNH, Leiden; *Pteridium aquilinum* (L.) Kuhn, Dieng (1850 m), 21.vii.1975.

Diagnosis.— Apterae in life yellow. Antennal segments I and II yellow, the other segments black. Siphunculi also yellow, but the end somewhat darker. Legs colourless to pale brown. Older specimens black. Siphunculi also yellow, but the end somewhat darker. Legs colourless to pale brown. Older specimens are pale rose or flesh-coloured.

Macerated material.— The head with distinct antennal tubercles and a small mesal tubercle. Antennal segment VI 2.0-2.6 times as long as segment III. Siphunculi 0.25 times the length of the body and 2.5-2.7 times as long as the cauda. See also the keys to aphids of ferns.

Biology.— The aphids live on leaves with sporangia or on younger leaves without sporangia.

Etymology.— "*orientalis*", eastern.

Sitobion Mordvilko, 1914 (Aphidinae: Macrosiphini)

Key based on apterae of *Sitobion* Mordvilko

1. Longest hairs of antennal segment III 7-12 µ. Basal hairs of the cauda tapering gradually to a very fine point, but 1-4 apical hairs usually more or less blunt. Cauda pale. Abdomen pale without brown pleural or dorsal spots 2
- Longest hairs of antennal segment III 10-40 µ. All hairs of the cauda tapering gradually to a very fine point, only exceptionally the tip blunt 4
2. The siphunculi 7-11 times longer than the reticulated part of the tip. Second tarsal segments ventrally with 4-6 hairs, as mean 5, the distal ones not included. In life greyish green with orange between the siphunculi, head pale. On grasses: *Digitaria timorensis, Setaria plicata, Themeda arguens* ..... ***Sitobion lambersi*** David
- The siphunculi 2.5-4.0 times as long as the reticulated part of the tip. Second tarsal segments ventrally with 2-6 hairs, as a mean 3, the distal ones not included. On Euphorbiaceae 3

3. The siphunculi 1.9-2.2 times as long as the cauda. The cauda 0.50-0.67 times as long as the head across the eyes. Ultimate rostral segment 0.71-0.83 times as long as the second tarsal segment of the hind leg. In life green, the head pale brown. On *Phyllanthus niruri*, *P. urinaria* ..... ***Sitobion takahashii*** (Eastop)
- The siphunculi 1.3-1.5 times as long as the cauda. The cauda 0.67-0.77 times as long as the head across the eyes. Ultimate rostral segment 0.85-0.94 times as long as the second tarsal segment of the hind leg. Colour in life the same as *S. takahashii*. On *Breynia microphylla* ..... ***Sitobion breyniae*** spec. nov.
4. Siphunculi 0.13-0.17 times as long as the body and 0.59-0.83 times as long as the head across the eyes. Antennae 0.71-0.83 times as long as the body and 3.0-4.2 times as long as the head across the eyes. Cauda colourless or pale brown. Abdominal tergum pale brown, without distinct spots. In life pinkish with green near the siphunculi and in a line in the middle of the abdomen. On *Pennisetum purpureum*, *Setaria geniculata*, *S. splendida*, *Eleusine indica* ..... ***Sitobion pauliani*** Remaudière
- Siphunculi 0.19-0.29 times as long as the body and 0.71-1.40 times as long as the head across the eyes. Antennae 0.91-1.7 times as long as the body and 4.2-6.7 times the length of the head across the eyes 5
5. Length of the siphunculi 1.1-1.3 times the length of the cauda. Siphunculi 7-10 times longer than the reticulated part of the tip 6
- Length of the siphunculi 1.4-2.3 times the length of the cauda. Siphunculi 3.4-5.9 times longer than the reticulated part of the tip 7
6. Antennal segment III outer and inner side in the middle not smooth, somewhat imbricated. Length of antennal segment III 1.4-1.5 times the length of segment V. Processus terminalis 1.2-1.7 times the length of segment III. In life shiny black with dark red around the siphunculi. On Orchidaceae: *Coelogine miniata*, *Dendrobium mutabile* ..... ***Sitobion orchidacearum*** (Franssen & Tiggelovend)
- Length of antennal segment III 1.6-1.7 times the length of segment V. Processus terminalis 1.0-1.2 times the length of antennal segment III. On grasses: *Themeda arguens* ..... ***Sitobion javanicum*** spec. nov.
7. Ultimate rostral segment 0.67-0.74 times as long as the second tarsal segment of the hind leg. Posterior dorsal hairs of the head 13-20 μ long. Antennal segment III with 1-4 rhinaria. Cauda dark. Intersegmental muscle plates and pleural spots, and usually 2 clearly defined brown spots dorsally on each segment of thorax and abdomen. In life with white wax and shiny blackish patches in between. On grasses: *Brachiaria ramose* ..... ***Sitobion graminis*** Takahashi
- Ultimate rostral segment 0.8-1.2 times as long as the second tarsal segment of the hind leg. Posterior dorsal hairs of the head 10-53 μ long. Antennal segment III with 1-9 rhinaria. Cauda pale or sometimes brown 8
8. Antennal segment III imbricated. Abdominal dorsum with a brown central patch. Brown siphuncular spot, but pleura of abdominal segments I-IV colourless or with a small brown spot. Longest hair of antennal segment III 10-15 μ. Antennal segment III with 1-4 rhinaria. In life yellow or pale green, abdomen with greyish brown spot. On Orchidaceae: *Coelogyne miniata*, *Dendrobium* spec., *Epidendrum radicans*, *Polystachya flavescens* ..... ***Sitobion luteum*** (Buckton)
- Antennal segment III smooth. Abdominal dorsum and pleura nearby evenly brown or pale brown. Longest hair of antennal segment III 18-38 μ. Antennal segment III with 1-9 rhinaria 9

9. Processus terminalis 0.8-1.1 times as long as antennal segment III. Ultimate rostral segment 1.0-1.1 times as long as the second tarsal segment of the hind leg. Longest hair of antennal segment III 18-25 μ, of hair dorsally on the head 17-25 μ. Antennal segment III with 1-12 rhinaria. Cauda with 7-11 hairs. In life orange green. On *Rosa* ..... ***Sitobion ibarae*** (Matsumura)
- Processus terminalis 1.1-1.5 times as long as antennal segment III. Ultimate rostral segment 0.8-0.9 times the length of the second tarsal segment of the hind leg. Longest hair of antennal segment III 18-38 μ, of hair dorsally on the head 22-53 μ. Antennal segment III with 1-6 rhinaria, cauda with 6-9 hairs. On 13 species of grasses and on *Cyperus flabelliformis*, *Lactuca laevigata*, *Thalia geniculata* ..... ***Sitobion miscanthi*** (Takahashi)

Key based on alatae of *Sitobion* Mordvilko

1. Longest hairs of antennal segment III 6-8 μ, of the head dorsally posteriorly 7-11 μ and on abdominal tergum VIII 7-15 μ. Number of rhinaria on antennal segment III 4-9. Basal hairs of cauda tapering gradually to a very fine point, but usually 1-2 apical hairs more or less blunt. Cauda pale. Antennal segment III imbricated 2
- Longest hairs of antennal segment III 7-33 μ, of the head dorsally posteriorly 15-48 μ, and on abdominal tergum VIII 19-65 μ. Number of rhinaria on antennal segment III 6-42. All hairs of the cauda tapering gradually to a very fine point 4
2. The siphunculi 6.4 times as long as the reticulated part of the tip. Second tarsal segment of the hind leg ventrally with 4-6 hairs, the distal hairs not included ..... ***Sitobion lambersi*** David
- The siphunculi 2.2-3.2 times as long as the reticulated part of the tip. Second tarsal segment of the hind leg ventrally with 2-5 hairs, the distal hairs not included 3
3. Length of the siphunculi 2.0-2.4 times the length of the cauda. The cauda 0.43-0.53 times as long as the head across the eyes. Ultimate rostral segment 0.73-0.83 times as long as the second tarsal segment of the hind leg. Siphunculi 2.2-2.7 times as long as the reticulated part of the tip ..... ***Sitobion takahashii*** (Eastop)
- Length of the siphunculi 1.6-1.8 times the length of the cauda. The cauda 0.55 times the length of the head across the eyes. Ultimate rostral segment 0.85-0.98 times as long as the second tarsal segment of the hind leg. Siphunculi 2.8-3.2 times as long as the reticulated part of the tip ..... ***Sitobion breyniae*** spec. nov.
4. The siphunculi 0.13-0.15 times as long as the body and 0.59-0.71 times as long as the head across the eyes. The antennae 0.71-0.91 times as long as the body, and 0.33-0.43 as long as times the head across the eyes ..... ***Sitobion pauliani*** Remaudière
- Siphunculi 0.17-0.25 times as long as the body and 0.77-1.4 times as long as the head across the eyes. The antennae 1.0-1.4 times as long as the body and 0.53-0.71 times as long as the head across the eyes 5
5. Siphunculi 6.6-7.6 times as long as the reticulated part at the tip. Siphunculi 0.8-1.0 times as long as the head across the eyes and 0.17-0.19 times the length of the body. Cauda brown ..... ***Sitobion javanicum*** spec. nov.
- Siphunculi 2.1-2.4 times as long as the reticulated part at the tip. Siphunculi 0.8-1.4 times as long as the head across the eyes and 0.18-0.25 times the length of the body. Cauda pale or dark..... 6

6. Ultimate rostral segment 0.73 times as long as the second tarsal segment of the hind leg. Longest hair of antennal segment III 15 μ. Cauda dark ..... ***Sitobion graminis*** Takahashi
- Ultimate rostral segment 0.8-1.2 times as long as the second tarsal segment of the hind leg. Longest hair of antennal segment III 12-33 μ. Cauda pale 7
7. Antennal segment III imbricated. Longest hairs on antennal segment III 12-18 μ, dorsally on the head 15-20 μ and on abdominal tergum VIII 19-28 μ. Antennal segment III with 8-15 rhinaria. Cauda with 7-8 hairs ..... ***Sitobion luteum*** (Buckton)
- Antennal segment III smooth. Longest hairs on antennal segment III 15-33 μ, dorsally on the head 18-48 μ and on abdominal tergum VIII 25-65 μ. Antennal segment III with 7-45 rhinaria. Cauda with 7-10 hairs 8
8. Antennal segment III with 35-45 rhinaria. Processus terminalis 0.9-1.0 times the length of antennal segment III. Siphunculi 4.0 times as long as the reticulated part of the tip. Siphunculi 0.25 times as long as the body and 1.4 times as long as the head across the eyes. Cauda with 10 hairs ..... ***Sitobion ibarae*** (Matsumura)
- Antennal segment III with 7-16 rhinaria. Processus terminalis 1.1-1.6 times as long as antennal segment III. Siphunculi 2.1-3.1 times as long as the reticulated part of the tip. Siphunculi 0.18-0.24 times as long as the body and 1.0-1.2 times as long as the head across the eyes. Cauda with 6-9 hairs ..... ***Sitobion miscanthi*** (Takahashi)

Sitobion breyniae spec. nov.
(figs 227-239)

Material.— Holotype (RMNH Leiden; apterous viviparous female) on *Breynia microphylla* (Kurz) M.A., Sindanglaya (1100 m), **Indonesia, Java**, 28.vi.1976, D. Noordam, no. 674-2-4. Paratypes (RMNH Leiden): 41 apterous viviparous females and 16 alate viviparous females, the same data as the holotype, and 11.vii.1977, no. 980, and 8.xi.1977, no. 1104. Collected by D. Noordam.

Diagnosis.— Apterous viviparous female. Head, antennal segments I and II and cauda black. Antennal segment III 1/5 of the base paler than segments I and II, the rest of the antennae black. Body green, dull. Legs pale brown, towards the knees darker. Tibia 1/6 and tarsi black. Siphunculi black. Cauda pale brownish yellow. Eyes black. In front of the cauda a paler patch with wax. Alate viviparous female. Head and thorax brown, abdomen shiny, somewhat dirty green. Pterostigma grey. Other parts as apterae.

Macerated specimens (figs 227-231; described from 13 specimens).— Body length 1.77-2.27 mm, 2.0-2.1 times as long as its wide.

Head.— Very pale brown, dorsally smooth, with an antennal tubercle about 40 μ high, the head across the eyes 425-460 μ wide, dorsally on each antennal tubercle 1 hair, in the middle anteriorly 2 hairs and 4 hairs in the middle between the eyes; the hairs with widened tips 7-8 μ long. Antennae (fig. 228) with 6 segments, segments I and II and base of III pale brown, the rest dark brown; the antennae 2.02-2.27 mm long, 0.98-1.17 times as long as the body, usually with a rhinarium at the base of segment III, imbricated and with hairs with blunt tips, 8 μ long; segment III 415-500 μ long, 1.04-1.31 times as long as segment IV and 1.27-1.48 times as long as segment V; segment VI 750-870 μ long; the processus terminalis 5.2-6.5 times as long as the base.

Thorax.— Colourless. The legs pale brown, the femora and tibiae darker at the end, as the second tarsal segments brown.

Abdomen.— Colourless, length of hair on tergite IV 6-8 μ, on tergite VIII 12 μ. Siphunculi brown, 420-500 μ long, 1.3-1.5 times as long as the cauda, with imbrications, the siphunculi 3.1-3.3 times as long as the reticulated distal part. The cauda colourless, the head across the eyes 1.3-1.4 times as long as the cauda; with 6-8 hairs, the basal hairs of the cauda with a sharp point, the distal 2-4 hairs shorter and with blunt tips.

Macerated alate viviparous specimens (figs 232-239; described from four specimens).— Body 1.85-2.11 mm.

Head (fig. 232).— Brown, width of the head across the eyes 415-440 μ. Antennae (fig. 233) brown, segments I, II, the base of III and the processus terminalis paler, with 6 segments 2.27-2.40 mm long, 1.12-1.20 times as long as the body; segment III 445-467 μ long 1.02-1.09 times as long as segment IV and 0.52-0.54 times as long as segment VI with 4-9 rhinaria, length of the hairs 7-8 μ; segment VI 830-880 μ long, the processus terminalis 5.8-6.2 times as long as the base of the segment. The ultimate rostral segment 96-104 μ long, 0.85-0.98 times as long as the second tarsal segment of the hind leg.

Thorax.— Second tarsal segment of the hind leg with 3-5 hairs, the distal hairs not included.

Abdomen.— Length of the hairs on tergite IV 9-10 μ, on tergite VIII 13-15 μ. Siphunculi brown, 385-420 μ long 2.8-3.2 times as long as the distal reticulated part, 1.6-1.8 times as long as the cauda. Cauda colourless 228-245 μ long, with 7-8 hairs, distally 1-2 usually blunt.

Etymology.— "*breyniae*", of *Breynia*, a genus of the Capparidae.

Sitobion graminis Takahashi, 1950
(figs 240-242)

Material.— Specimens collected in **Indonesia, Java** by A. Everaarts (RMNH Leiden, BMNH London): *Brachiaria ramosa* (L.) Stapf, Sindanglaya (1100 m), 2.iii.1978.

Diagnosis.— Apterae dark brown and partly covered with wax. Siphunculi not surrounded with wax and black. Cauda and rostrum black.

Biology.— The aphids live on flower stems.

Etymology.— "*graminis*", from grasses.

Sitobion ibarae (Matsumura, 1917)
(figs 243-249)

Material.— Specimens collected in **Indonesia, Java**, by D. Noordam, RMNH, Leiden: *Rosa* spec., Bogor, 6.iv.1975, 7.xii.1975, and Bandung, 2.viii.1977; by J. Sijpkens, BMNH, London: *Rosa* spec., Tjnjiroean (1600 m), 2.viii.1949; by F.W. Rappard, BMNH, London: *Rosa*, Bondowoso (300 m), 16.iv.1948; *Rosa* spec., Bondowoso, 18.vi.1948; *Rosa* spec., Sabrang (60 m), 26.v.1950; *Rosa* spec., Malang, 22.ii.1951 and 6.iii.1951; *Rosa* spec., Blawan. Idjen plateau, 29.vi.1948.

Diagnosis.— Apterae shiny with orange brown head. Abdomen orange green to orange. Cauda whitish. Antennae, siphunculi and tarsi black. Red eyes.

Biology.— The aphids live on the buds, the stems of the buds and on young sprouts.

Etymology.— "*ibarae*", named after person?

Sitobion javanicum spec. nov.
(figs 250-256)

Material.— Holotype (RMNH Leiden; apterous viviparous female) on *Themeda arguens* (L.) Hack., **Indonesia, Java**, Purwodadi, 13.vi.1976, D. Noordam, no. 635-2-1. Paratypes (BMNH London) three apterous viviparous females, on *Themeda arguens* (L.) Hack., Goenoeng Rajap (650 m), 2.x.1949, and one alate viviparous female on *Themeda arguens* (L.) Hack., Goenoeng Rajap (550 m), 1.i.1950, on *Themeda arguens* (L.) Hack., Rembangan, 3.viii.1950, all three collected by F.W. Rappard.

Diagnosis.— Apterae shiny brownish red. Red eyes. Siphunculi brown to blackish (Rappard).

Macerated specimens (fig. 250; described from three specimens).— Body length 2.00-2.25 mm.

Head.— Head across the eyes 425-465 μ wide, length of hairs dorsally posteriorly 40-45 μ. Antennae with 6 segments 2.57-2.67 mm long, 1.14-1.28 times as long as the body and 5.6-6.0 times as long as the head across the eyes. Segment III with 1-2 rhinaria; segment III 650-685 μ long, 1.6-1.7 times as long as segment V. Processus terminalis 1.0-1.2 times the length of antennal segment III and 5.0-5.8 times as long as the base of the segment.

Abdomen.— Length of hair on tergite IV 40-43 μ, on tergite VIII 55-58 μ. Siphunculi 430-450 μ long, 1.2-1.3 times as long as the cauda, 8.6-9.0 times longer than the reticulated part of the tip, 0.19-0.21 times as long as the body and 0.9-1.0 times as long as the head across the eyes. Cauda all hairs tapering gradually to very fine points.

Diagnosis.— Alate viviparous female. Body brown. Antennae black but segments I and II brownish grey and the basal 0.1 of segment III white. Eyes red. Siphunculi black. Cauda brown. Basal 0.7 of tibia brown, the rest black.

Macerated specimens (figs 251-256; described from two specimens).— Body length 1.78-2.43 mm.

Head (fig. 251).— Brown, width of the head across the eyes 405-475 μ. Antennae (fig. 252) brown, segments I, II and the base of III paler, with 6 segments 2.13-2.77 mm long 1.14-1.20 times as long as the body; segment III 455-610 μ long, 1.13-1.27 times as long as segment IV and 0.54-0.61 times as long as segment VI with 7-11 rhinaria, length of hairs 15-23 μ; segment VI 840-1000 μ long, the processus terminalis 5.7-6.0 times as long as the base of the segment. The ultimate rostral segment 103-118 μ long, 0.82-0.97 times as long as the second tarsal segment of the hind leg.

Abdomen.— Length of hairs (fig. 256) on tergite IV 33-38 μ, on tergite VIII 45-55 μ. Siphunculi brown 305-460 μ long, 6.6-7.6 times as long as the distal reticulated part, 1.5-1.6 times as long as the cauda. Cauda almost colourless 185-310 μ long, with 7-8 hairs, all pointed.

Biology.— The aphids live between spikelets.

Etymology.— "*javanicum*", of Java.

Sitobion lambersi David, 1956
(figs 257-262)

Material.— Specimens collected in **Indonesia, Java**, by D. Noordam, RMNH, Leiden: *Setaria plicata* (Lamk.) T. Cooke, Bogor, 30.v.1976; *Axonopus compressus* (Schwartz) Beauv., Bogor, 30.v.1976; *Themeda*

arguens (L.) Hack., Banjoewangi, 10.ix.1949 and 12.viii.1949, Nat. Park Baloeran (60 m), both collected by F.W. Rappard, BMNH, London.

Diagnosis.— Apterae light brown. Head light brown. Abdomen greyish green. Antennal segments I, II and base of III light brown and antennal segments III and IV distally black. Prothorax and mesothorax brown. Base of siphunculi and in between siphunculi more or less orange. Cauda white. Dark red eyes.

Biology.— The aphids live on the stems, leaves and between spikelets.

Etymology.— "*lambersi*", named after D. Hille Ris Lambers, the well-known aphidologist.

Sitobion luteum (Buckton, 1876)
(figs 263-265)

Material.— Specimens collected in **Indonesia, Java**, by P. van der Goot, WU, Wageningen: orchid, Wonosobo, 20.iv.1916; by D. Noordam, RMNH, Leiden: *Dendrobium* spec., Bogor, 26.v.1975; *Epidendrum radicans* Pav., Sindanglaya (1100 m), 14.ii.1976, RMNH, Leiden; *Coelogyne miniata* Lindl., Cibodas (1400 m), 11.vii.1976, RMNH, Leiden; by Spijkers, BMNH, London: *Dendrobium mutabile* Lindl., Tjikopo Zuid, 25.xi.1949 and 24.ix.1950.

Diagnosis.— Apterae yellowish green with a typical greyish brown patch on the abdomen. Antennal segment I grey and other antennal segments black. Siphunculi dark brown and cauda somewhat darker than abdomen. Red eyes.

Biology.— The aphids live on the stems of the leaves.

Etymology.— "*luteum*", because of the yellowish colour.

Sitobion miscanthi (Takahashi, 1921)
(figs 266-273)

Material.— Specimens collected in **Indonesia, Java**, by P. van der Goot (1917: 13): *Paspalum*, grass, *Macrosiphum granarum* Kirby, Pasoeroean, III-1914; *Songorti,* Mt Kawi (980 m), *Panicum* spec.?; by Spijkers, BMNH, London: *Hierochloe horsfieldii* Maxim., Tjinjiroean (1600 m), 4.viii.1949; F.W. Rappard, BMNH, London: *Briza minor*, Pundaklembu, 7.xi.1951; by D. Noordam, RMNH, Leiden: *Paspalum commersonii* Lamk., Bogor Keb. R., 30.iii.1975; *Setaria plicata* (Lamk.) T. Cooke, Bogor Keb. R., 30.iii.1975; *Thalia geniculata* L., Bogor Keb. R., 30.iii.1975; *Setaria geniculata* (Lamk.) Beauv., Sindanglaya (1100 m), 22.iv.1975; *Setaria plicata* (Lamk.) T. Cooke, Bogor Keb. R., 22.iv.1975; *Setaria geniculata* (Lamk.) Beauv., Sindanglaya, 24.iv.1975; *Paspalum commersoni* Lamk., Sindanglaya, 24.iv.1975; *Themeda villosa* (Poir.) Durand & Jacks, Bogor Keb. R., 11.v.1975; *Paspalum conjugatum* Berg., Bogor Keb. R., 11.v.1975; *Setaria geniculata* (Lamk.) Beauv., Sindanglaya (1100 m), 30.x.1975; *Eleusine indica* (L.) Gaertn., Bandung, 11.xi.1975; *Rorippa indica* (L.) Hiern., Bandung, 14.xi.1975; grass, Sindanglaya (1100 m), 2.iii.1976; *Cyperus flabelliformis* Rottb., Sindanglaya (1100 m), 2.iii.1976; *Brachiaria ramosa* (L.) Stapf, Sindanglaya (1100 m), 10.v.1976; *Pennisetum purpureum* Schumach., Sindanglaya (1100 m), 15.v.1976; *Brachiaria ramosa* (L.) Stapf, Sindanglaya (1100 m), 15.v.1976; *Coix lacrima-jobi* L., Cibodas (1400 m), 23.v.1976; *Setaria palmifolia* (Willd.) Stapf, Sindanglaya (1100 m), 29.v.1976; grass, Nongkojajar, 12.vi.1976; *Lactuca laevigata* (Bl.) DC., Wonosobo (1100 m), 22.vii.1976; *Themeda arguens* (L.) Hack, Kaliurang Merapi (900 m), 5.viii.1976; *Sacciolepis indica* (L.) Chase, Sindanglaya (1100 m), 11.vii.1977; *Paspalum conjugatum* Berg., Salak (800 m), 22.vii.1977; *Cleome rutidosperma* DC., Bandung, 3.viii.1977; *Setaria geniculata* (Lamk.) Beauv., Sindanglaya (1100 m), 7.xi.1977; *Eleusine indica* (L.) Gaertn., Sindanglaya (1100 m), 8.xi.1977; *Paspalum conjugatum* Berg., Sindanglaya (1100 m), 9.xi.1977; *Brachinaria ramosa* (L.) Stapf, Sindanglaya (1100 m), 2.iii.1978.

Diagnosis.— Apterae shiny dark brown. Antennal segments and siphunculi black. Cauda light brown. Red eyes.

Biology.— The aphids live between the spikelets.

Etymology.— "*miscanthi*", of *Miscanthus*, a genus of the Poaceae.

Sitobion orchidacearum (Franssen & Tiggelovend, 1935)
(figs 274-276)

Material.— Specimens collected in **Indonesia, Java**, by P. van der Goot, WU, Wageningen: Orchidaceae, Merbaboe, 4.i.1915, 15.v.1916 and Wonosobo, 20.iv.1916.

Live specimens.— I have never found any material of this species.

Etymology.— "*orchidacearum*", from Orchidaceae.

Sitobion pauliani Remaudière, 1957
(figs 277-282)

Material.— Specimens collected in **Indonesia, Java**, by D. Noordam, RMNH, Leiden: *Pennisetum purpureum* Schumach., Bogor, 13.iv.1975, 20.iv.1975, 12.vi.1975; *Eleusine indica* (L.) Gaertn., Sindanglaya (1100 m), 30.x.1975; *Setaria geniculata* (Lamk.) Beauv., Sindanglaya (1100 m), 30.x.1975; *Pennisetum purpureum* Schumach, Sindanglaya (1100 m), 15.v.1976; *Setaria splendida* Stapf, Sindanglaya (1100 m), 15.v.1976; *Pennisetum purpureum* Schumach., Bogor, 24.xii.1976; *Setaria geniculata* (Lamk.) Beauv., Sindanglaya (1100 m), 13.ix.1977; 7.xi.1977.

Diagnosis.— Apterae pink with pale green longitudinal line and a green transverse line near and surrounding the siphunculi. The antennal segments and the end of the siphunculi black. Cauda pale green. Black eyes.

Biology.— The aphids live between the spikelets.

Etymology.— "*pauliani*", named after Mr Paulian.

Sitobion takahashii (Eastop, 1959)
(figs 283-288)

Material.— Specimens collected in **Indonesia, Java**, by F.W. Rappard, BMNH, London: *Phyllanthus urinaria* L., Banjoewangi, 9.v.1949 and 26.viii.1949; *Phyllanthus urinaria* L., Djember, 28.ix.1949 and 18.x.1949; *Phyllanthus niruri* L., Malang (450 m), 7.vii.1951; and by D. Noordam, RMNH, Leiden: *Phyllanthus niruri* L., Bogor, 30.v.1976; *Phyllanthus urinaria* L., Bogor, 24.xii.1976.

Diagnosis.— Apterae green. Head, antennal segments I and II and cauda pale brown. Antennal segment III 1/10 pale. Rest of antennal segment III and segments IV, V, VI and siphunculi black. Cauda pale. Eyes black red.

Biology.— The aphids live on the stems, leaves and flowers in big colonies.

Etymology.— "*takahashii*", named after Dr R. Takahashi, the well-known aphidologist.

Trichosiphonaphis Takahashi, 1922 (Aphidinae: Macrosiphini)

Trichosiphonaphis polygoni (van der Goot, 1917)
(figs 289-294)

Material.— Specimens collected in **Indonesia, Java**, by van der Goot (1917: 44-46) from *Polygonum* spec., Garoeng Mt Dieng (800 m), material presumably lost; *Polygonum* spec., Garoeng, 2.iv.1916, WU, Wageningen.

Diagnosis.— Body dirty dark grey green. Antennae black, but segment III yellowish white. Legs grey green, tarsi black. Siphunculi black. Cauda pale yellowish green (van der Goot, 1917: 45).

Macerated material.— Antennal tubercles present. The head with spinulae, the abdomen with a network with spinulae and minute hairs with blunt tips. See also Miyazaki (1971) and Tao (1963).

Biology.— The aphids live on the lower side of leaves.

Etymology.— "*polygoni*", of *Polygonum*, a genus of the Polygonaceae.

Tuberocephalus Shinji, 1929 (Aphidinae: Macrosiphini)

Tuberocephalus sasakii (Matsumura, 1917)
(figs 295-307)

Material.— Specimens collected in **Indonesia, Java** by D. Noordam, RMNH, Leiden. *Artemisia vulgaris* L., Tosari (1800 m), 14.vi.1976, Majalayar-Bandung (1300 m), 22.iv.1977.

Diagnosis.— Apterae in life green, somewhat dull due to granular structure. Antennae white, but last segment grey to black. Siphunculi white, the end grey or black. Cauda white or grey. Legs colourless, femur distally and tarsi black. Alatae head, mesothorax, antennae, siphunculi, femur distally, tarsi black. Rest of legs almost colourless. Abdomen green with in front, 2 grey transverse lines and behind a grey spot on 4 segments.

Macerated material.— Apterae head with pustules (fig. 296), abdomen dorsally wrinkled, processus terminalis 2.0-2.4 times as long as the base of the segment.

Biology.— The aphids live on young shoots or on the lower side of older leaves.

Etymology.— "*sasakii*", of Mr Sasaki, an aphidologist.

Uroleucon Mordvilko, 1914 (Aphidinae: Macrosiphini)

Key based on apterae of *Uroleucon* Mordvilko

1. Cauda pale. Siphunculi 1.4-1.6 times the length of the cauda. Antennal segment III 1.0-1.2 times the length of antennal segments IV plus V. Processus terminalis 3.9-4.7 times the length of the base. Genital plate with 18-22 hairs, 7-10 of which in the anterior part. Last rostral segment 1.4-1.6 times the length of tarsus 2 of hind leg. Unidentified species of Compositae ..... ***Uroleucon picridis*** (Fabricius)

- Cauda black. Siphunculi 1.6-2.1 times the length of the cauda. Antennal segment III 0.7-1.1 times the length of antennal segments IV plus V. Processus terminalis 4.9-7.4 times the length of the base of the segment. Genital plate with 11-19 hairs 2-4 of which in the anterior part. Last rostral segment 1.2-1.8 times the length of tarsus 2 of hind leg spots 2

2. Last rostral segment 1.2-1.3 times the length of tarsus 2 of hind leg. Antennal segment III with 46-82 rhinaria. Antennal segment III 2.1-2.4 times the length of antennal segment V. Not known on Java ..... ***Uroleucon compositae*** (Theobald)

- Last rostral segment 1.4-1.8 times the length of tarsus 2 of hind leg. Antennal segment III with 14-57 rhinaria. Antennal segment III 1.5-2.1 times the length of antennal segment V spots 3

3. Cauda with 19-30 hairs, 2 out of 51 with less than 22. Processus terminalis 1.0-1.1 times as long as antennal segment III. Antennal segment III 0.75-0.91 times (6 out of 28 more than 0.83 times) the length of the antennal segments IV plus V. Abdominal dorsal scleroites pale brown or colourless. Cauda brown. On *Blumea balsaminifera* ..... ***Uroleucon orientale*** (van der Goot)

- Cauda with 15-23 hairs, 53 out of 60 less than 22. Processus terminalis 0.9-1.0 times as long as antennal segment III. Antennal segment III 0.80-0.98 times (38 out of 47 more than 0.83 times) the length of antennal segments IV plus V. Abdominal dorsal scleroites brown or pale brown. Cauda brown to black. On *Arctotis stoechadifolia*, *Elephantopus scaber*, *Emilia sonchifolia*, *Gynura sarmentosa*, *Pseudoelephantopus spicatus*, *Vernonia cinerea*, *V. patula* ..... ***Uroleucon vernoniae*** (van der Goot)

Key based on alatae of *Uroleucon* Mordvilko

1. Last rostral segment 1.2-1.3 times as long as tarsus 2 of hind leg. Antennal segment III with 74-95 rhinaria. Processus terminalis 6.9-7.5 times as long as the base of the segment. Antennal segment III 2.1-2.2 times as long as antennal segment V. Cauda with 12-16 hairs. Not known from Java ..... ***Uroleucon compositae*** (Theobald)

- Last rostral segment 1.5-1.9 times as long as tarsus 2 of hind leg. Antennal segment III with 48-66 rhinaria. Processus terminalis 5.7-6.8 times as long as the base of the segment. Antennal segment III 1.5-1.9 times as long as antennal segment V. Cauda with 16-28 hairs spots 2

2. Processus terminalis 1.0-1.2 times as long as antennal segment III. Cauda with 19-28 hairs, but exceptionally with less than 22. Antennal segment III 0.7-0.8 times as long as antennal segments IV plus V, and 1.4-1.6 times as long as antennal segment IV ..... ***Uroleucon orientale*** (van der Goot)

- Processus terminalis 0.9-1.0 times as long as antennal segment III. Cauda with 16-25 hairs, usually with 22 or more hairs. Antennal segment III 0.8-0.9 times as long as antennal segments IV plus V, and 1.6-1.8 times as long as antennal segment IV ..... ***Uroleucon vernoniae*** (van der Goot)

Uroleucon orientale (van der Goot, 1912)
(figs 308-310)

Material.— Specimens collected in **Indonesia, Java**, by E. Jacobson, Semarang 1909: *Blumea balsamifera* (L.) DC., XII-1909 and by P. van der Goot, RMNH, Leiden and WU, Wageningen: *Senecio* spec., Lawang, 26.xii.1912.

Live specimens.— I have never found any material of this species.
Biology.— The aphids live on the leaves.
Etymology.— "*orientale*", eastern.

Uroleucon picridis (Fabricius, 1775)
(figs 311-314)

Material.— Specimens collected in **Indonesia, Java** by P. van der Goot, WU, Wageningen: Compositae, reddish brown, Hata, 27.iv.1916.

Live specimens.— I have never found any material of this species.
Biology.— The aphids live on the stalks, inflorescences and lower side of the leaves of *Picris hieracioides*.
Etymology.— "*picridis*", of *Picris*, a genus of the Compositae.

Uroleucon vernoniae (van der Goot, 1915)
(figs 315-318)

Material.— Specimens collected in **Indonesia, Java**, by P. van der Goot 1917: 18, WU, Wageningen: *Senecio* spec., Nongkodjadjer, 3.vii.1913; Nok, Dieng, 22.iv.1916; Sembong (*Veronica* or *Blumea*), Batoer, 22.iv.1919; by R.W. Rappard, BMNH, London: *Gynura sarmentosa* DC., Rembangan, 8.x.1950; *Vernonia patula* Mart. ex DC., Bekol, 8.vi.1950; *Veronica cinerea* (L.) Less., Rembangan, 1.x.1950; *Elephantopus scaber* L., Rayap (500 m), 19.xi.1950; *Arctotis stoechadifolia* Berg., Malang (450 m), 20.v.1951; by D. Noordam, RMNH, Leiden: *Pseudelephantopus spicatus* (Juss.) C.F. Baker, Malang-Pujon, 11.vi.1976; *Synedrella nodiflora* (L.) Gaertn, Malang Pujon, 11.vi.1976; *Emilia sonchifolia* (L.) DC., Cibodas (1400 m), 27.vi.1976; *Veronica cinerea* (L.) Less., Mt Kawi, 30.vii.1976; *Pseudelephantopus spicatus* (Juss.) Glaeson, Lembang (1400 m), 24.ii.1977.

Diagnosis.— Apterae shiny black. Alatae as apterae but base of processus terminalis white. Larvae dark brown.
Biology.— The aphids live on the stems and under side of the leaves. Almost all plants were settled.
Etymology.— "*vernoniae*", of *Vernonia*, a genus of Asteraceae.

Cinara Curtis, 1835 (Lachninae: Cinarini)

Cinara tujafilina (del Guercio, 1909)
(figs 319-320)

Material.— Specimens collected in **Indonesia, Java**, by P. van der Goot, WU, Wageningen (1); by D. Noordam, RMNH, Leiden (2). No. 145, without the name of plant, place or date (1); *Thuja orientalis* L.,

Goroet, 10.viii.1916 (1); conifer, branchlet, Lembang, 2.viii.1918 (1); *Thuja orientalis* L., Bogor, 13.iii.1976 (2); *Widdringtonia dracomontana* Staf, Cibodas (1400 m), 23.v.1976 (2); *Widdringtonia whytei* M. Wood., Cibodas (1400 m), 27.vi.1976 (2); *Juniperus chinensis* L., Cibodas (1400 m), 11.vii.1976 (2); *Thuja orientalis* L., Bogor, 5.xii.1977 (2); *Widdringtonia whytei* M. Wood., Cibodas (1400 m), 18.xii.1977 (2).

Diagnosis.— Apterae in life brown head. The rest of the body covered with white wax, except two brown lines from the head running backwards, parallel to the sides, and a brown straight line connecting the two siphunculi, and a curved line more posterior. Siphunculi black. Legs pale but tarsi black. Antennae pale but distally black. Seen under the microcsope, hind tibiae dark only at the apex, the proximal 3/4 pale (Eastop, 1966).

Biology.— The aphids live on green needles, and on brown needles that have been covered by mosses and lichens; also on branches of two or more years old, and on young stems between the needles.

Etymology.— "*tujafilina*", presumably from "thujaphilina", thuja-loving.

Eulachnus del Guercio, 1909 (Lachninae: Cinarini)

Eulachnus thunbergii (Wilson, 1919)
(figs 321-322)

Material.— Specimens collected in **Indonesia, Java** by D. Noordam, RMNH, Leiden: *Thuja orientalis* L., Bogor, 13.iii.1976, one specimen; *Pinus merkusii* Jungh. & De Vriese, Bogor, 20.vi.1976; *Pinus merkusii* Jungh. & De Vriese, Cibodas (1400 m), 27.vi.1976; *Pinus luchuensis* Mayr., Cibodas (1400 m), 27.vi.1976

Diagnosis.— Apterae in life head pale brown. Thorax and abdomen olive green with transverse rows of black spots, which are at the bases of hairs. Siphunculi at magnification of 40-60 a black ring. Legs pale green brownish, tarsi slightly darker. Eyes red. Rostrum pale brown with distal end black. Lower side and upper side, except the black spots, lightly covered with wax. Alatae as apterae, also with wax. The pterostigma very pale, on the wings fine dots.

Biology.— The aphids live on the needles.

Etymology.— "*thunbergii*", after the botanist and entomologist Dr C.P. Thunberg.

Lachnus Burmeister, 1835 (Lachninae: Lachnini)

Lachnus tropicalis (van der Goot, 1916)

Note.— I have never found any material of this species.

Tuberolachnus Mordvilko, 1909 (Lachninae: Lachnini)

Tuberolachnus salignus (J.F. Gmelin, 1790)
(figs 323-324)

Material.— Specimens collected in **Indonesia, Java** by D. Noordam, RMNH, Leiden: *Salix japonica* Thb., Dieng (2000 m), 31.xii.1976.

Diagnosis.— Apterae in life dark brown or black. Abdomen grey due to wax, with five transverse rows of black spots, in the middle of the third row a black elevation, in the fourth row slightly lower siphunculi. Last segment and cauda without wax, black. Femora base brown, distally black. Antennae black, base of segment III slightly paler.

Macerated material.— Apterae and alatae body dorsally densely covered with hairs 70-90 μ long; on the middle of tergite V a dark conical tubercle.

Biology.— The aphids live on the branches of sprouting shoots.

Etymology.— "*salignus*", of *Salix*, a genus of the Salicaceae.

Tuberolachnus scleratus Hille Ris Lambers & A.N. Basu, 1966
(figs 325-329)

Material.— Specimens collected in **Indonesia, Java** by D. Noordam, RMNH, Leiden, *Eriobotrya japonica* (Thunb.) Lindl., Sindanglaya (1200 m), 1.xii.1977.

Diagnosis.— Apterae in life grey due to dense short hairs and wax in between, on each segment six small pits, the two median small, black. Legs reddish brown, femur border near knee black, tibia distal about 1/6 black, tarsi black. Siphunculi black. Cauda colour as of abdomen. Antennal segments I and II same as the head dark greyish brown. Antennal segment III reddish brown, distal 1/6 black; other parts of antennae black. Rostrum long, black. Eyes black.

Macerated material.— Apterae body dorsally densely covered with hairs 70-90 μ long, a dark conical tubercle on the middle of tergite V is lacking.

Biology.— The aphids live on the under side of the leaves, petioles and young shoots of *Eriobotrya* spec.

Etymology.— "*scleratus*", tergum more or less sclerotic.

Neophyllaphis Takahashi, 1920 (Neophyllaphidinae: Phyllaphidini)

Key based on apterae of *Neophyllaphis* Takahashi

1. Antennae with 5 segments. Body 2.8-3.4 times as long as the antennae. Hairs on abdominal tergites III and IV 3-5 μ long. Stylets 460-550 μ long. In life yellow. On *Araucaria cunninghamii* ..... ***Neophyllaphis araucariae*** Takahashi
- Antennae with 6 segments. Body 1.8-2.3 times as long as the antennae. Hairs on abdominal tergites III and IV 10-15 μ long. Length of the stylets 575-770 μ 2
2. Antennal segment III 0.67-0.79 times as long as antennal segments IV+V+VI (Hille Ris Lambers, 1967; Takahashi, 1921), but specimens from Java 0.73-1.03 times as long. In specimens from Java, tibia I 0.94-1.26 times as long as antennal segment III. On *Podocarpus macrophyllus, P. neriifolius* ..... ***Neophyllaphis podocarpi*** Takahashi
- Antennal segment III 0.87-0.94 times as long as antennal segments IV+V+VI (Hille Ris Lambers, 1967) but in other collections antennal segment III is 0.73-0.99 times as long as antennal segments IV+V+VI and tibia I is 1.00-1.20 times as long as antennal segment III (23 specimens of 32 1.15 or less). On *Podocarpus koordersii, P. neriifolius* ..... ***Neophyllaphis fransseni*** Hille Ris Lambers

Key based on alatae of *Neophyllaphis* Takahashi

1. Length of hairs on abdominal tergites III and IV 4-5 μ. Body 1.9-2.3 times as long as the antennae. Antennal segment III with 18-28 rhinaria. Length of stylets 475-510 μ. In life abdomen yellow. Oviparous and viviparous ..... ***Neophyllaphis araucariae*** Takahashi
- Length of hairs on abdominal tergites III and IV 12-16 μ. Body 1.2-1.7 times as long as the antennae. Antennal segment III with 29-54 rhinaria. Length of stylets 590-665 μ. In life abdomen reddish brown 2
2. Antennal segment III 1.44-1.73 times as long as antenal segments IV+V+VI. Body 1.2-1.3 times as long as the antennae .... ***Neophyllaphis fransseni*** Hille Ris Lambers
- Antennal segment III 0.94-1.18 times as long as antennal segments IV+V+VI. Body 1.6-1.7 times as long as the antennae ..... ***Neophyllaphis podocarpi*** Takahashi

Neophyllaphis araucariae Takahashi, 1937
(fig. 330)

Material.— Specimens collected in **Indonesia, Java**, by P. van der Goot, WU, Wageningen, *Araucaria* spec., Bogor, 4.vi.1918 and 10.vii.1918; by J.H. Fransen, BMNH, London, *Araucaria Bidwillii* Hook., Buitenzorg; and by D. Noordam, RMNH, Leiden, *Araucaria cunninghamii* G. Don., Bogor Keb. R., 12.iii.1976 and 25.xii.1976.

Diagnosis.— Apterae in life yellow. Antennae, legs and cauda white. Cauda with wax. Eyes black. Alatae abdomen yellow, thorax pale brown. Antennae, head and legs grey. Cauda with wax. Eyes black. Macerated material, see keys.

Biology.— The aphids live on the base of needles of young sprouts.

Etymology.— "*araucariae*", of *Araucaria*, a genus of Araucariaceae.

Neophyllaphis fransseni Hille Ris Lambers, 1967
(figs 331-332)

Material.— Specimens collected in **Indonesia, Java**, by P. van der Goot, WU, Wageningen, Bogor, 15.viii.1918; by C. Franssen, WU, Wageningen, *Podocarpus* spec., Bogor, 13.xii.1931, 3.i.1932, and VIII-1933, (BMNH, London); by D. Noordam, RMNH, Leiden, *Podocarpus neriifolius* G. Don., Bogor Keb. R., 30.i.1976, 25.xii.1976; *Podocarpus koordersii* Pilg., Bogor Keb. R., 3.ix.1976.

Diagnosis.— Apterae in life violet brown or reddish brown pruinose with wax, and consequently wisteria blue. Antennae grey, but segment I red. Legs grey, the segments distally darker. Eyes black. Siphunculi black. Cauda reddish brown. Sides of the last three or four abdominal segments with pillars of wax.

Biology.— The aphids live on developing shoots and on the lower side of the youngest needles.

Etymology.— "*fransseni*", named after Dr C.J.H. Franssen who sent the aphids in alcohol to Dr Hille Ris Lambers.

Neophyllaphis podocarpi Takahashi, 1920
(figs 333-336)

Material.— Specimens collected in **Indonesia, Java**, by P. van der Goot, WU, Wageningen, *Podocarpus* spec., Bogor, 15.viii.1918; by C. Franssen, WU, Wageningen, *Podocarpus* spec., Bogor, 13.xii.1931, 3.i.1932; by D. Noordam, RMNH, Leiden, *Podocarpus neriifolius* G. Don., K. Tjibodas, 15.ii.1976; *Podocarpus macrophyllus* G. Don. Bogor Keb. R., 12.iii.1976.

Diagnosis.— Apterae in life about the same as *Neophyllaphis fransseni*. Macerated material, see keys.

Biology.— The aphids live on developing shoots and on the lower side of the youngest leaves.

Etymology.— "*podocarpi*", of *Podocarpus*, a genus of Podocarpaceae.

Geoica Hart, 1894 (Pemphiginae: Fordini)

Geoica lucifuga (Zehntner, 1897)
(figs 337-341)

Material.— Specimens collected in **Indonesia, Java,** by P. van der Goot have presumably got lost.

Diagnosis.— Apterae in life pale yellow, slightly pruinose. Body oval, the dorsal side with numerous short, and at the tip, widened hairs. Sides of the body with long hairs, usually dorsal hairs shorter and frequently with widened tips with some hairs.

Biology.— The aphids live on the roots of *Saccharum officinale* L.

Etymology.— "*lucifuga*", of lucifugous, light-shunning.

Tetraneura Hartig, 1841 (Pemphiginae: Eriosomatini)

Tetraneura javensis van der Goot, 1917
(figs 342-347)

Material.— Specimens collected in **Indonesia, Java**, by P. van der Goot (1917: 260); by D. Noordam, RMNH, Leiden: water trap, Sindanglaya (1100 m), 20.i.1977; Bogor, 14.iii.1978.

Diagnosis.— Apterae in life yellowish to whitish. Eyes black. Antennae and legs brown. Siphunculi with a brown border (van der Goot, 1917). Alatae black, the abdomen with yellow. Cauda black.

Macerated material.— Dorsal hairs of apterae in the middle of the abdomen 10-40 μ long, marginal hairs 30-80 μ. Wax glands on abdomen consisting all or partly of one large cell, and many small cells in a group (Hille Ris Lambers, 1970). Marginal hairs of apterae 150-180 μ long. Wax glands of one cell or composed of cells, with or without a small group of equally large cells (Hille Ris Lambers, 1970).

Biology.— The aphids live on the roots of its food plant.

Etymology.— "*javensis*", of Java.

Tetraneura nigriabdominalis (Sasaki, 1899)
(figs 348-349)

Material.— Specimens collected in **Indonesia, Java**, by P. van der Goot, WU, Wageningen: *Poa* roots, Salatiga, 20.iii.1916; *Oryza sativa* L. roots, Bogor, viii.1916.

Diagnosis.— Marginal hairs of apterae 150-180 μ long. Wax glands composed from one cell, or from a group of about equally large cells, with or without a small group of equally large cells (Hille Ris Lambers, 1970).

Live specimens.— I have never found any material of this species.

Biology.— The aphids live on the roots of its food plant.

Etymology.— "*nigriabdominalis*", black abdomen.

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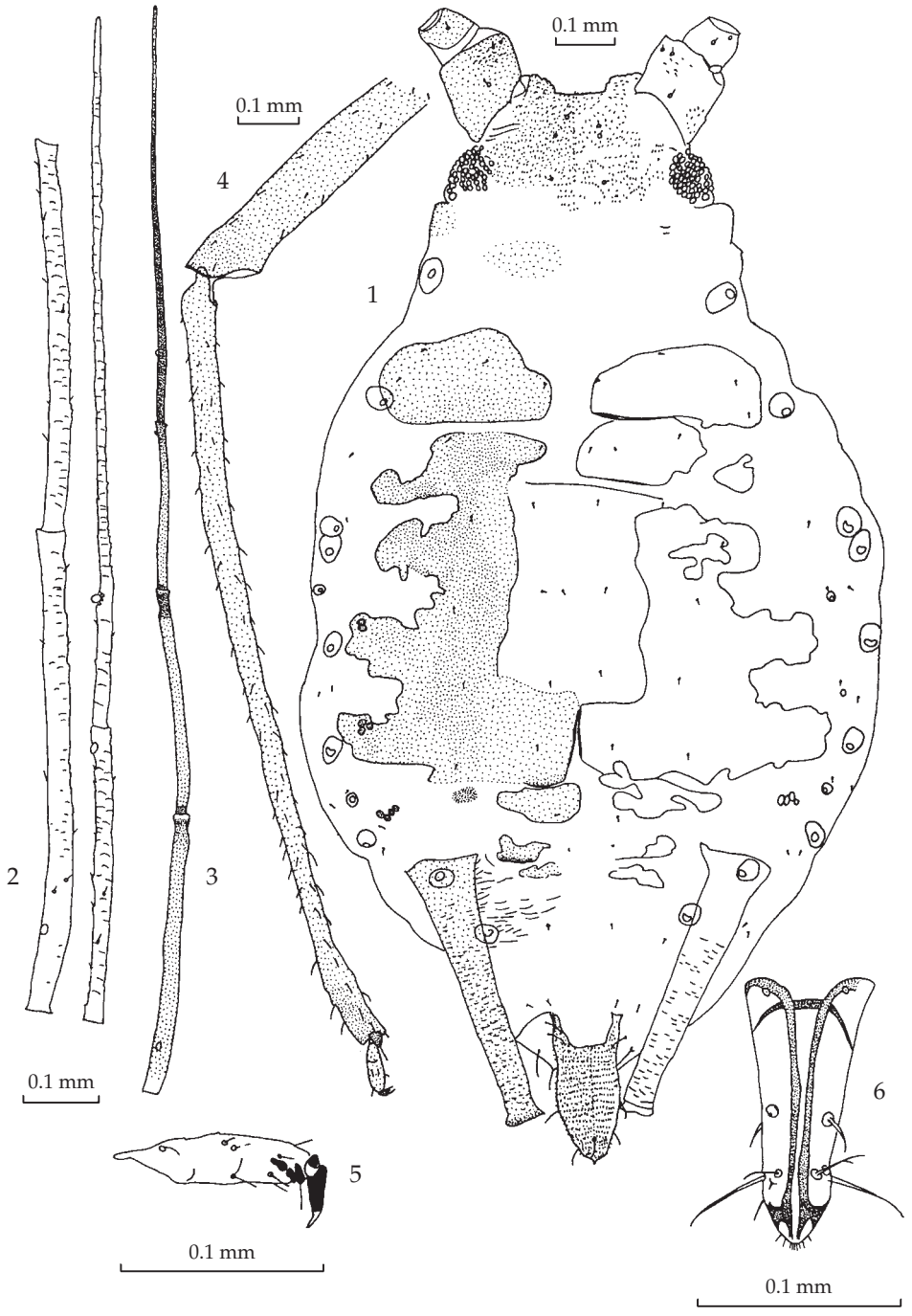


Figs 1-6. *Aulacorthum circumflexum* (Buckton), apterous viviparous ♀. Fig. 1, dorsal side of the body and ventral spiracles. Fig. 2, antennal segments III-VI. Fig. 3, colour indication of the antenna. Fig. 4, hind leg. Fig. 5, second tarsal segment of the hind leg. Fig. 6, last rostral segment.

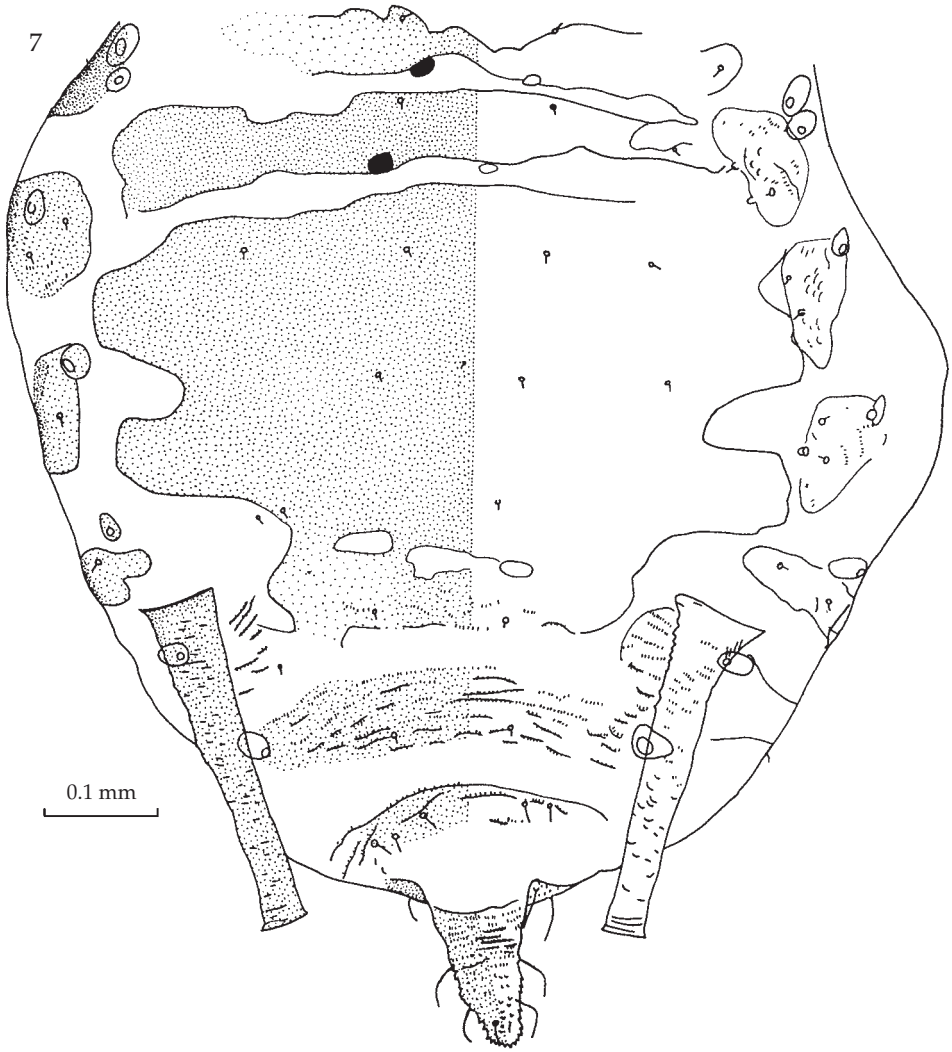
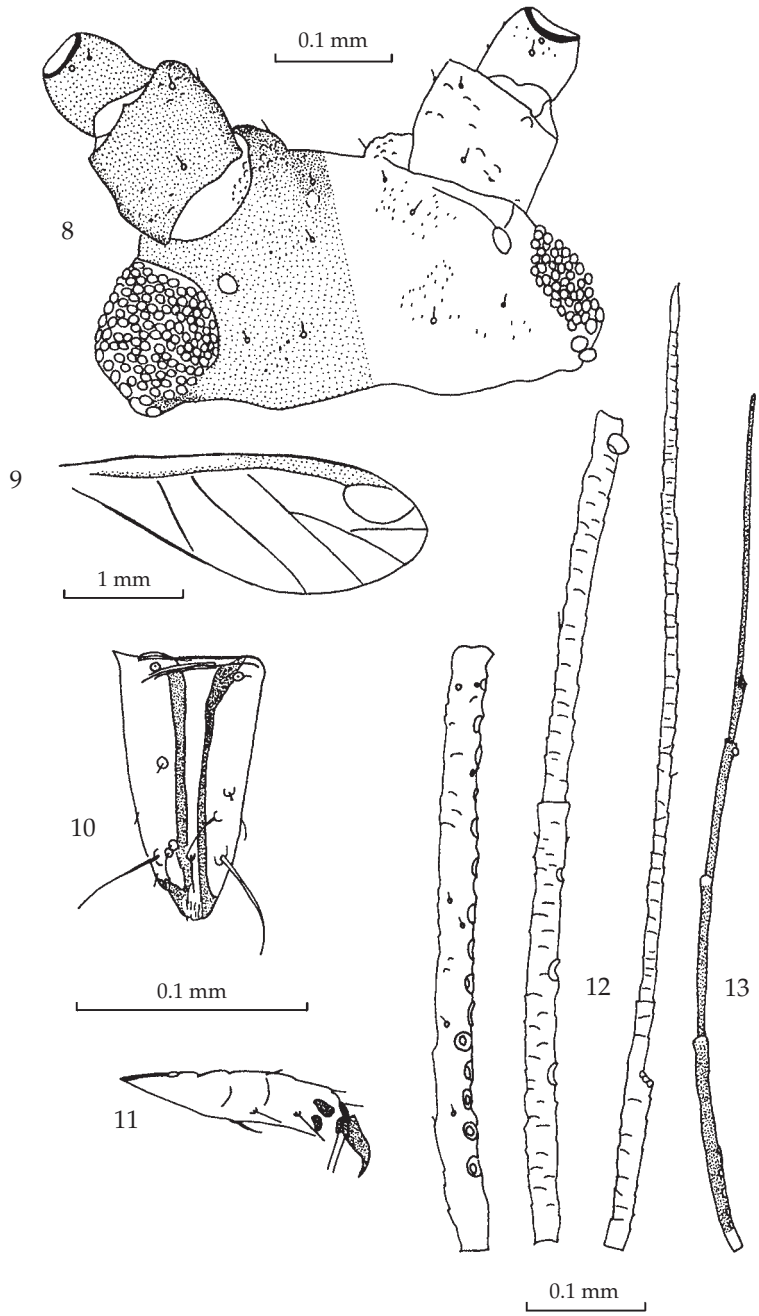
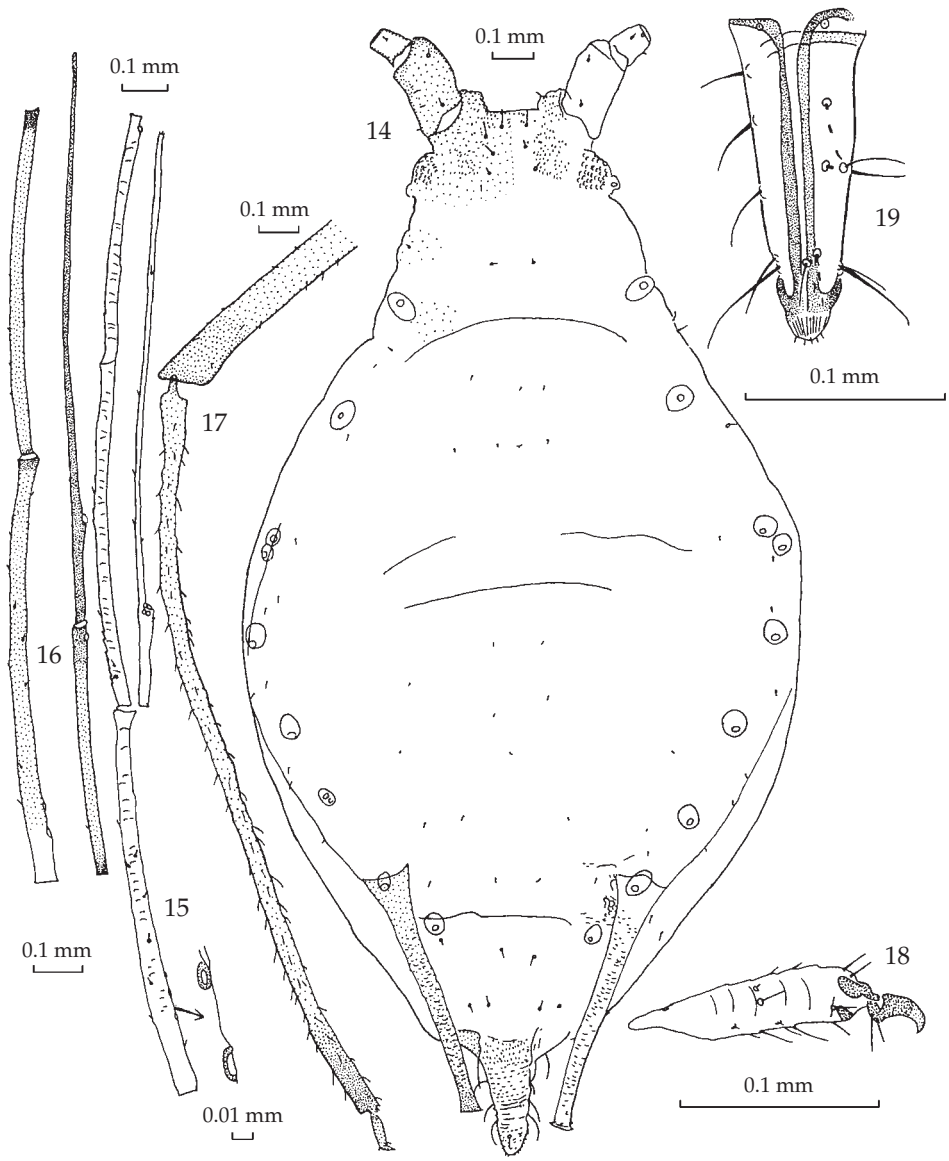


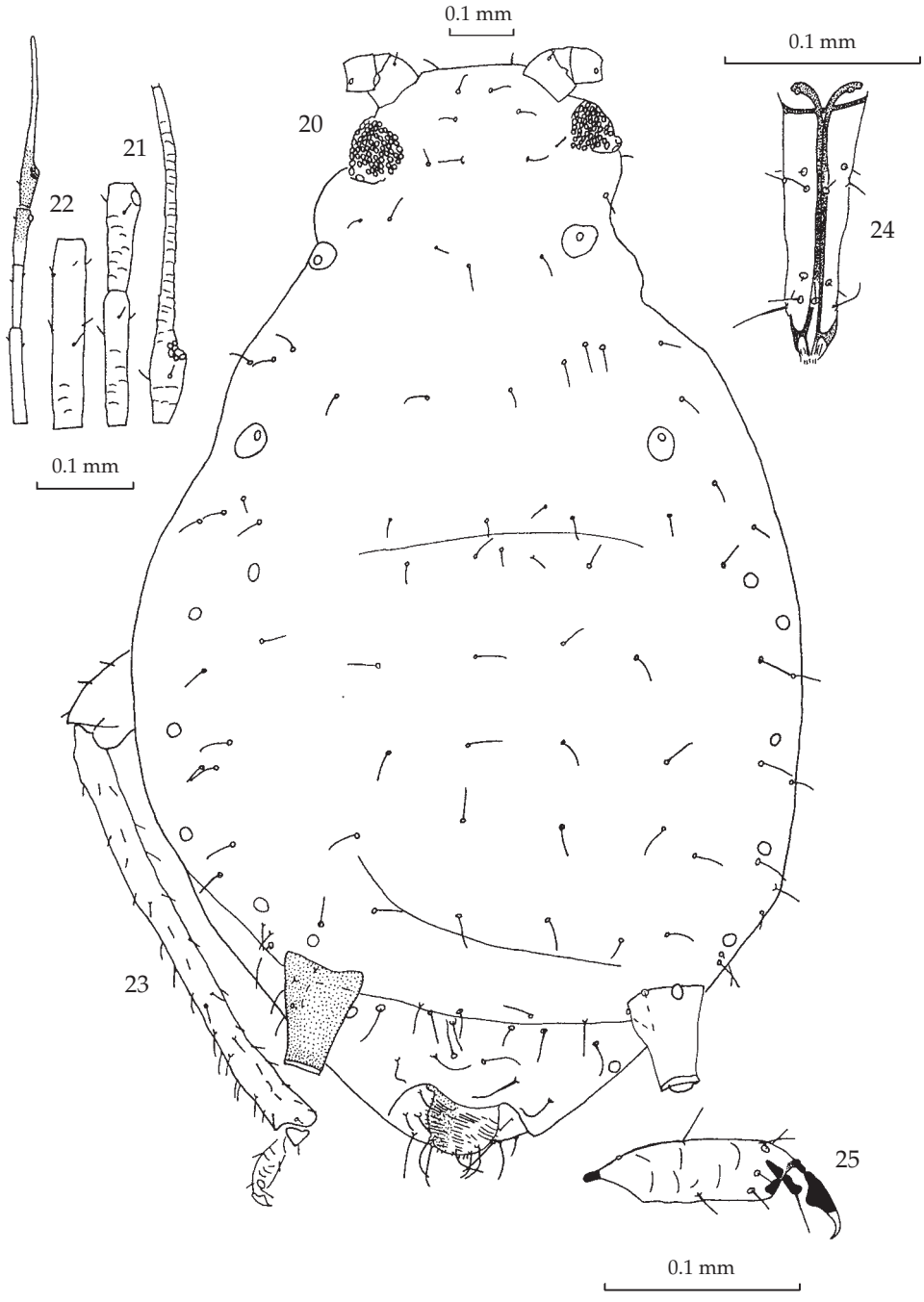
Fig. 7. *Aulacorthum circumflexum* (Buckton), dorsal side of the body of the alate.



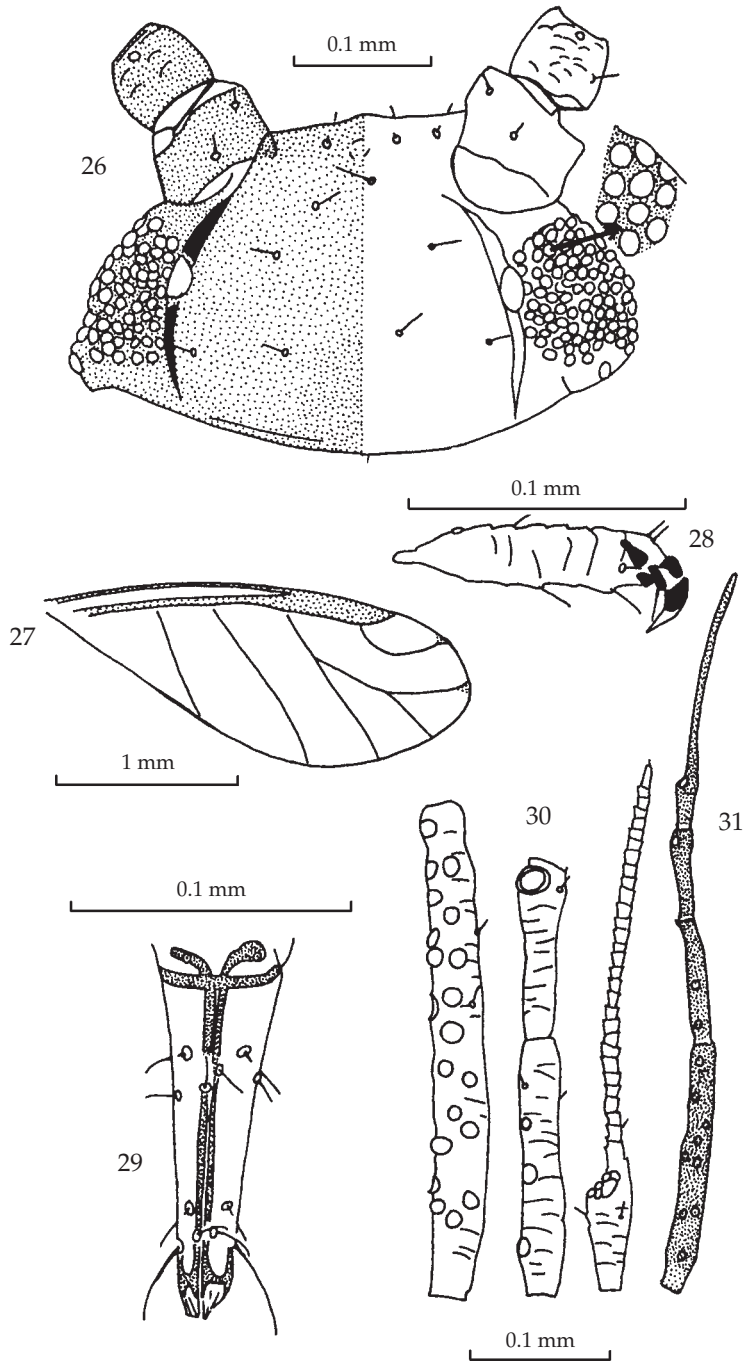
Figs 8-13. *Aulacorthum circumflexum* (Buckton), alate. Fig. 8, head. Fig. 9, wing. Fig. 10, last rostral segment. Fig. 11, second tarsal segment of the hind leg. Fig. 12, antennal segments III-VI. Fig. 13, colour indication of the antenna.



Figs 14-19. *Aulacorthum solani* (Kaltenbach), apterous viviparous ♀. Fig. 14, dorsal side of the body and ventral spiracles. Fig. 15, antennal segments III-VI. Fig. 16, colour indication of the antenna. Fig. 17, hind leg. Fig. 18, second tarsal segment of the hind leg. Fig. 19, last rostral segment.

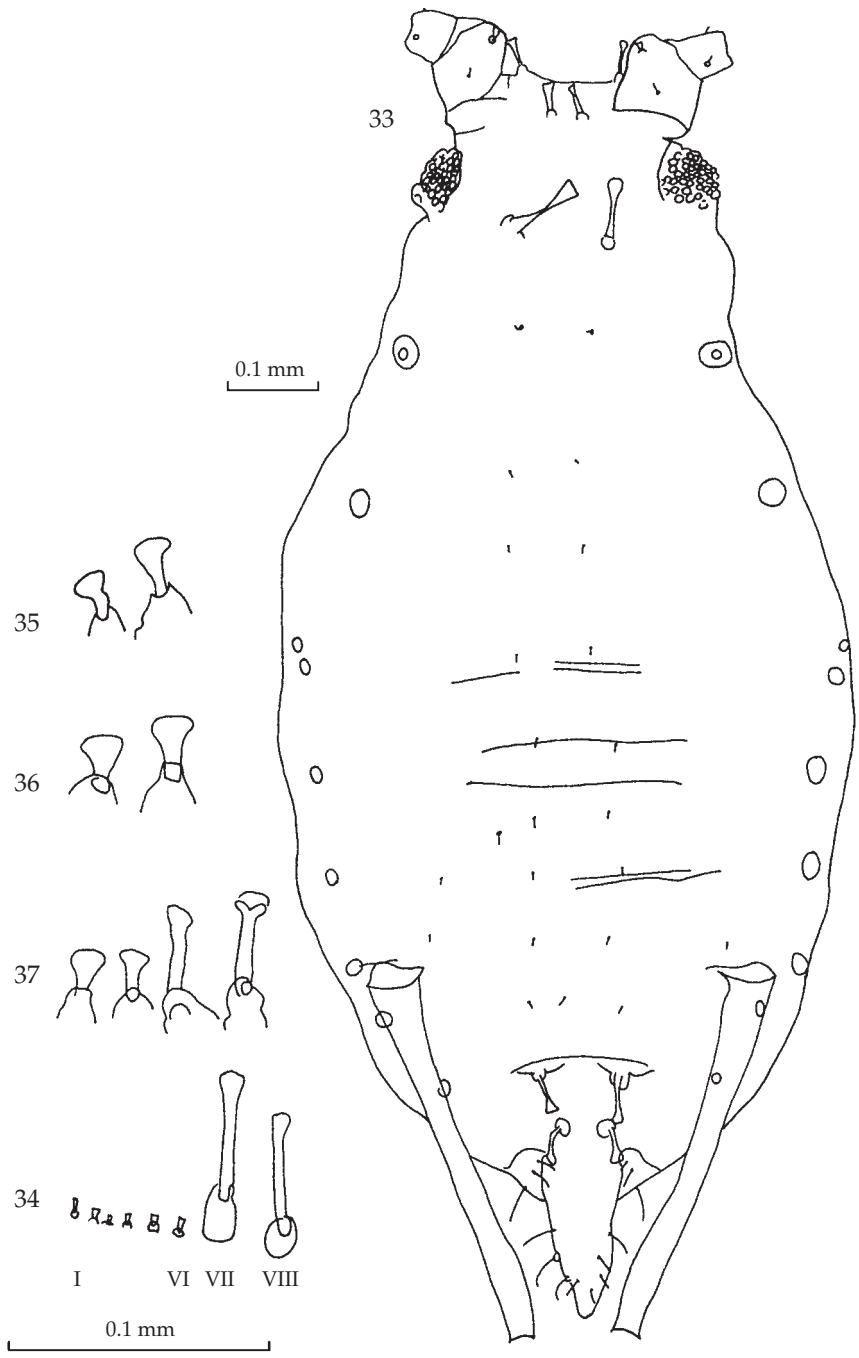


Figs 20-25. *Brachycaudus helichrysi* (Kaltenbach), apterous viviparous ♀. Fig. 20, dorsal side of the body and ventral spiracles. Fig. 21, antennal segments III-VI. Fig. 22, colour indication of the antenna. Fig. 23, hind leg. Fig. 24, last rostral segment. Fig. 25, second tarsal segment of the hind leg.

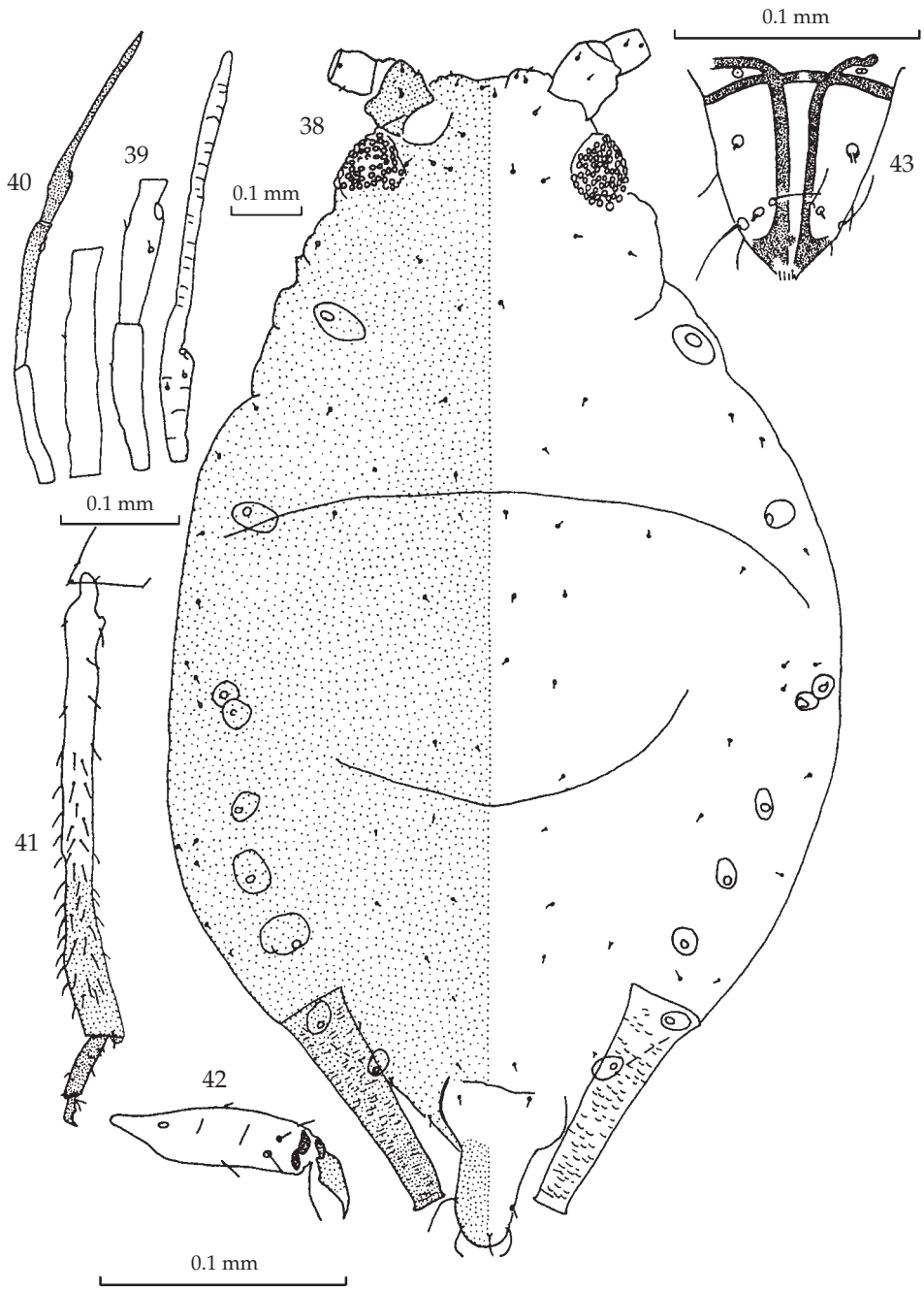


Figs 26-31. *Brachycaudus helichrysi* (Kaltenbach), alate. Fig. 26, head. Fig. 27, wing. Fig. 28, second tarsal segment of the hind leg. Fig. 29, last rostral segment. Fig. 30, antennal segments III-VI. Fig. 31, colour indication of the antenna.

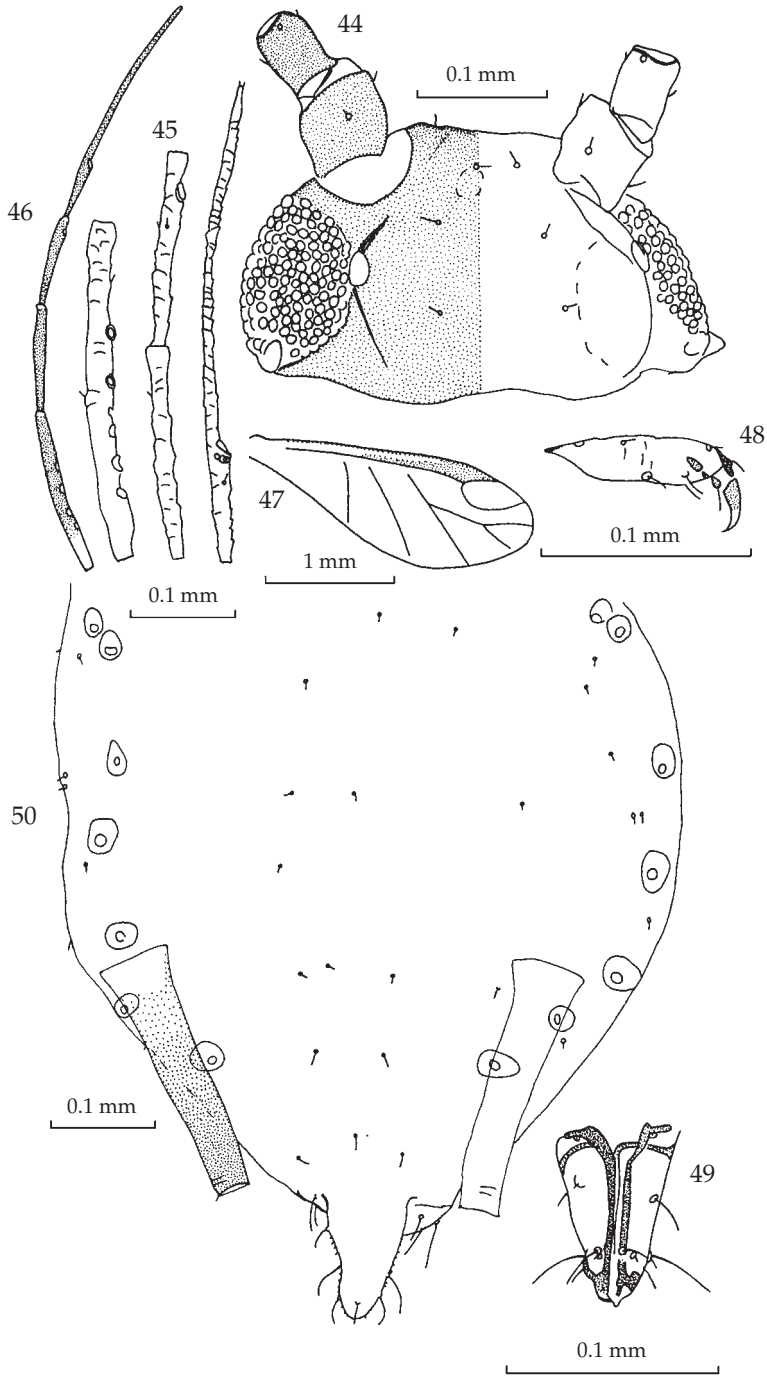
Fig. 32. *Brachycaudus helichrysi* (Kaltenbach), alate. Dorsal side of the abdomen.



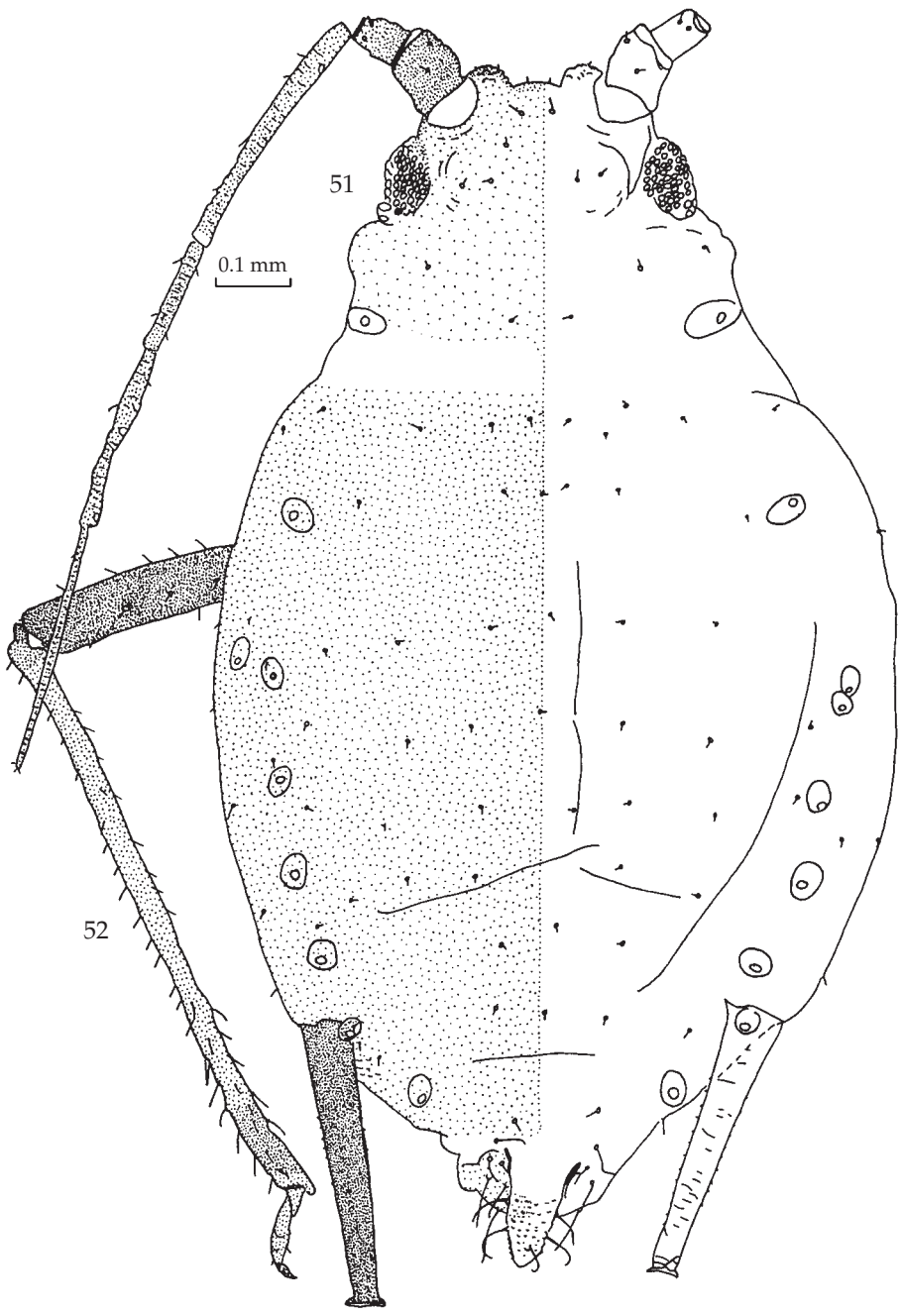
Figs 33-37. *Capitophorus hippophaes* subspec. *javanicus* Hille Ris Lambers, apterous viviparous ♀. Fig. 33, dorsal side of the body and ventral spiracles. Fig. 34, hairs of tergites I-VIII. Figs 35-37, hairs of tergites I-VIII of a slide from the Netherlands.



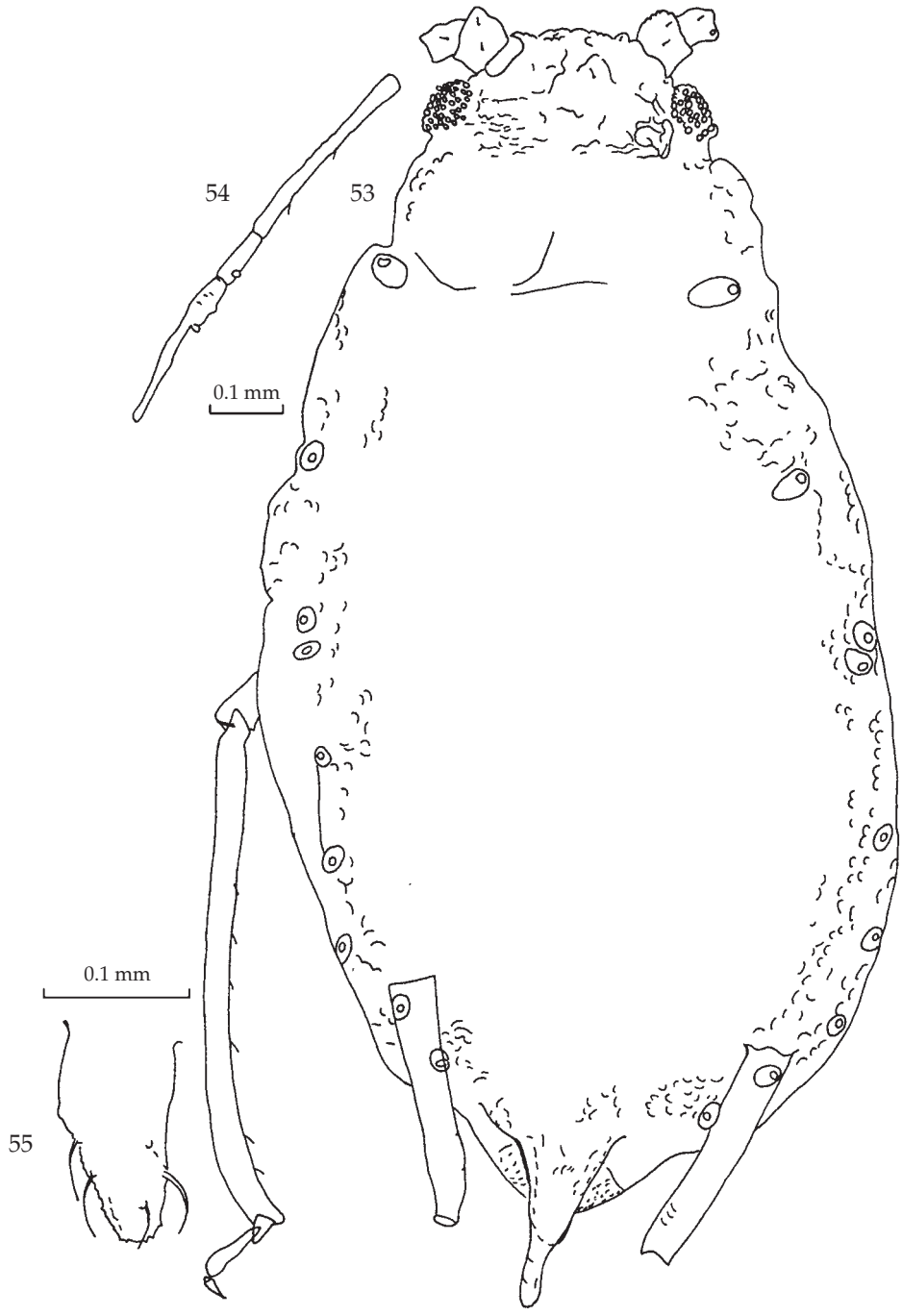
Figs 38-43. *Carolinaia javanica* spec. nov., apterous viviparous ♀. Fig. 38, dorsal side of the body and ventral spiracles. Fig. 39, antennal segments III-VI. Fig. 40, colour indication of antennal segments IV-VI. Fig. 41, hind leg. Fig. 42, second tarsal segment of the hind leg. Fig. 43, last rostral segment.



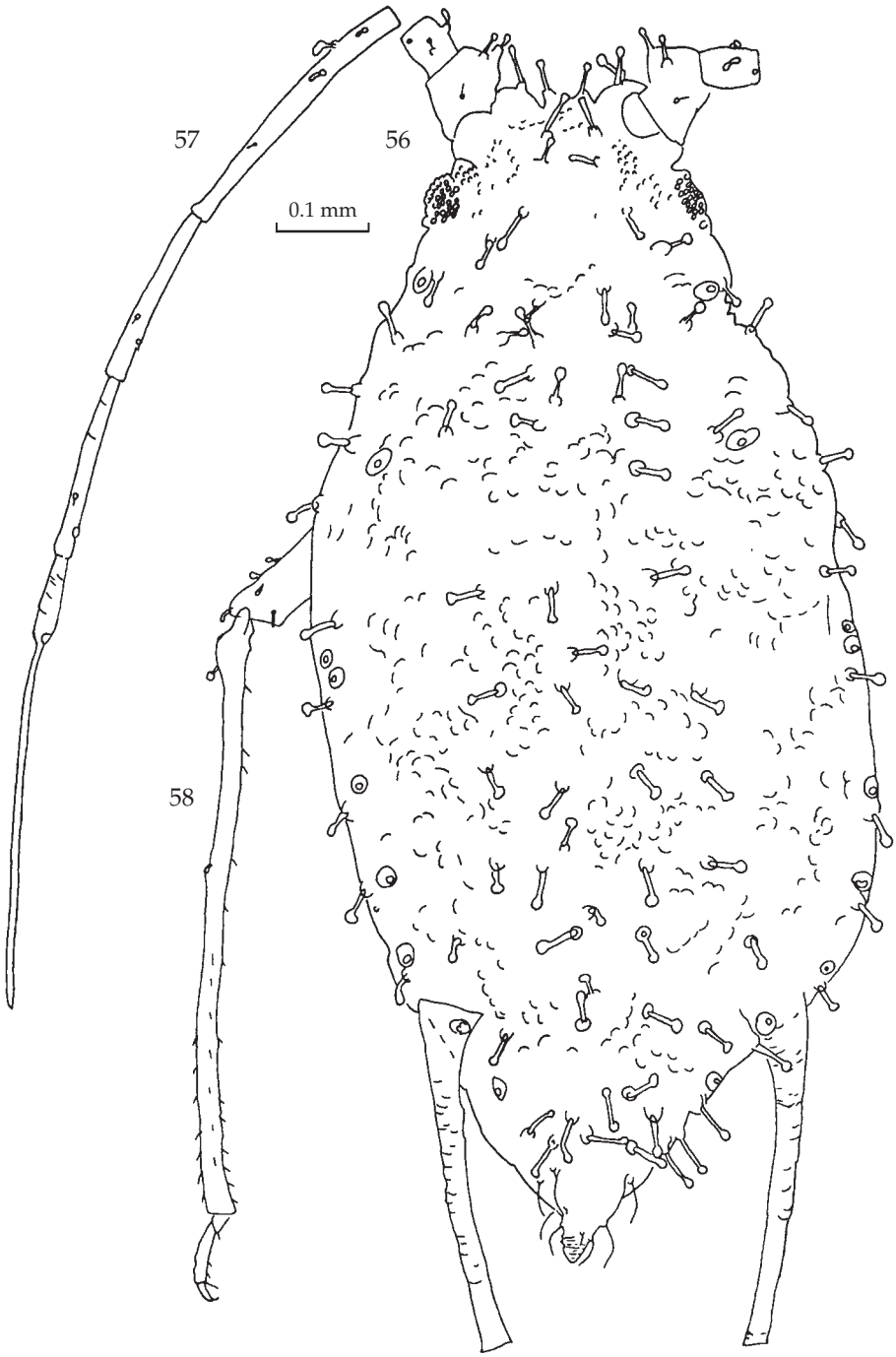
Figs 44-50. *Carolinaia javanica* spec. nov., alate. Fig. 44, head. Fig. 45, antennal segments III-VI. Fig. 46, colour indication of antennal segments III-VI. Fig. 47, wing. Fig. 48, second tarsal segment of the hind leg. Fig. 49, last rostral segment. Fig. 50, dorsal side of the body and ventral spiracles.



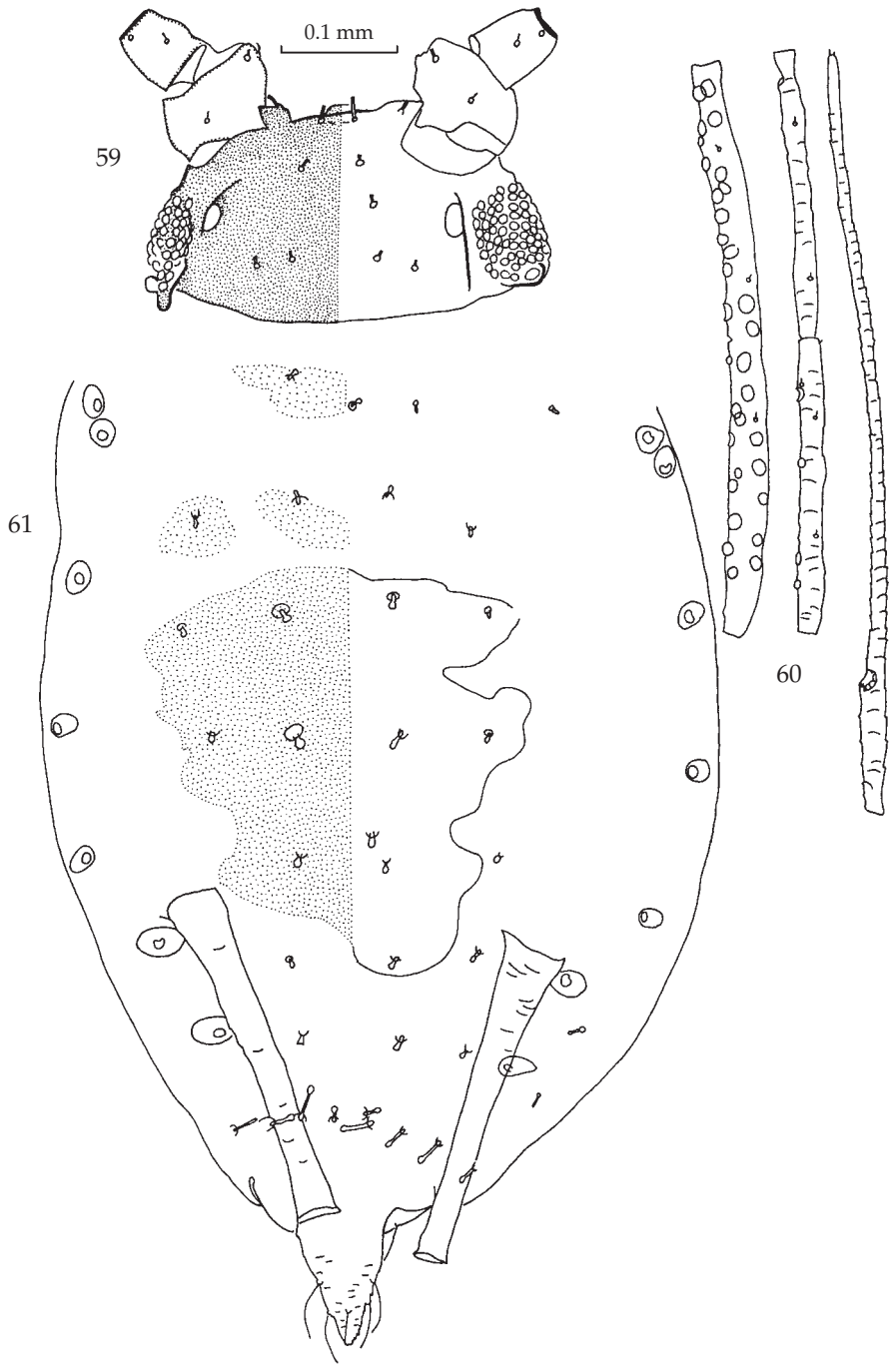
Figs 51-52. *Carolinaia scirpi* (van der Goot), apterous viviparous ♀. Fig. 51, dorsal side of the body and ventral spiracles. Fig. 52, hind leg.



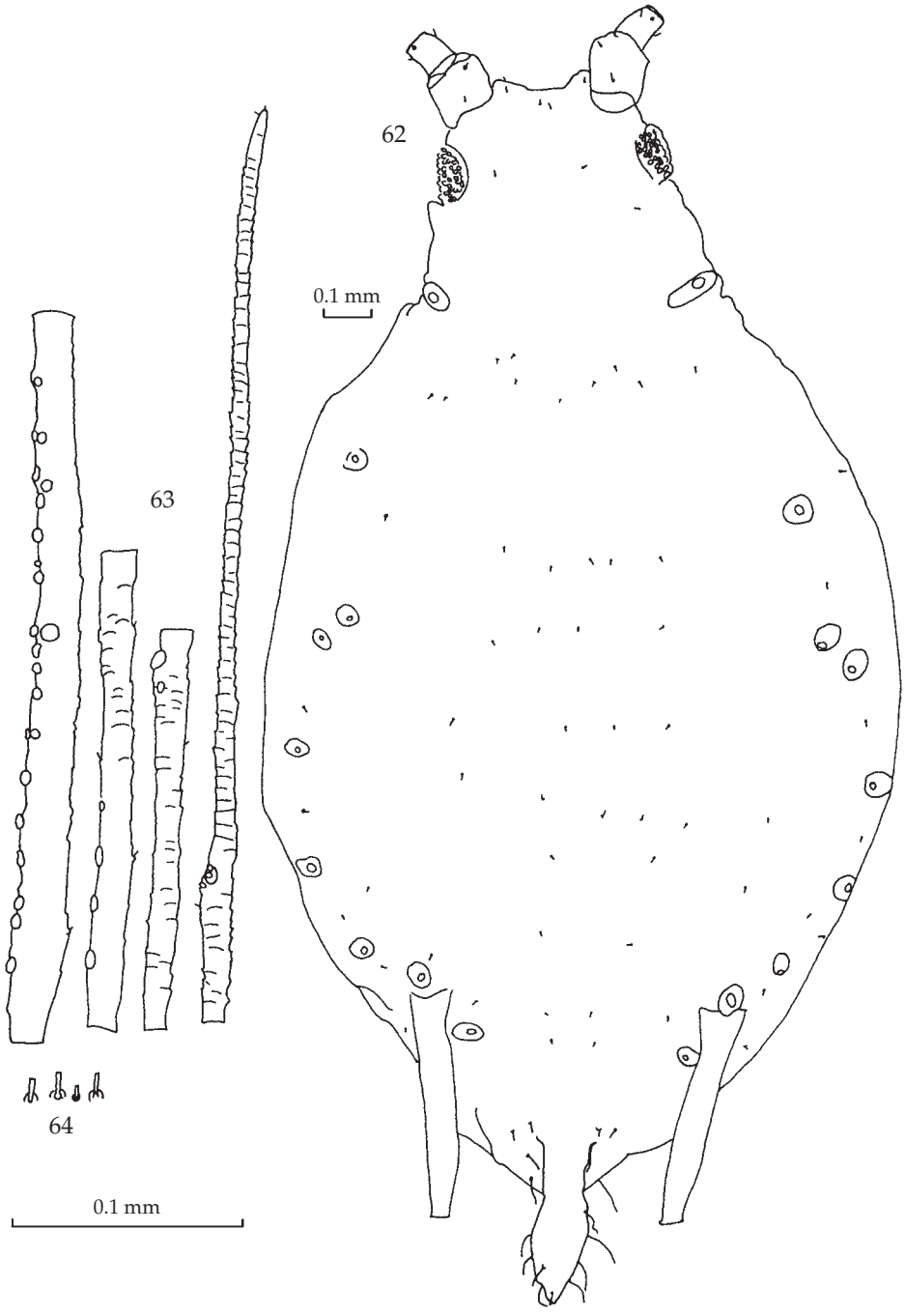
Figs 53-55. *Cavariella araliae* Takahashi, apterous viviparous ♀. Fig. 53, dorsal side of the body and ventral spiracles. Dorsal hairs on the slide not observable. Fig. 54, antennal segments III-V. Fig. 55, cauda.



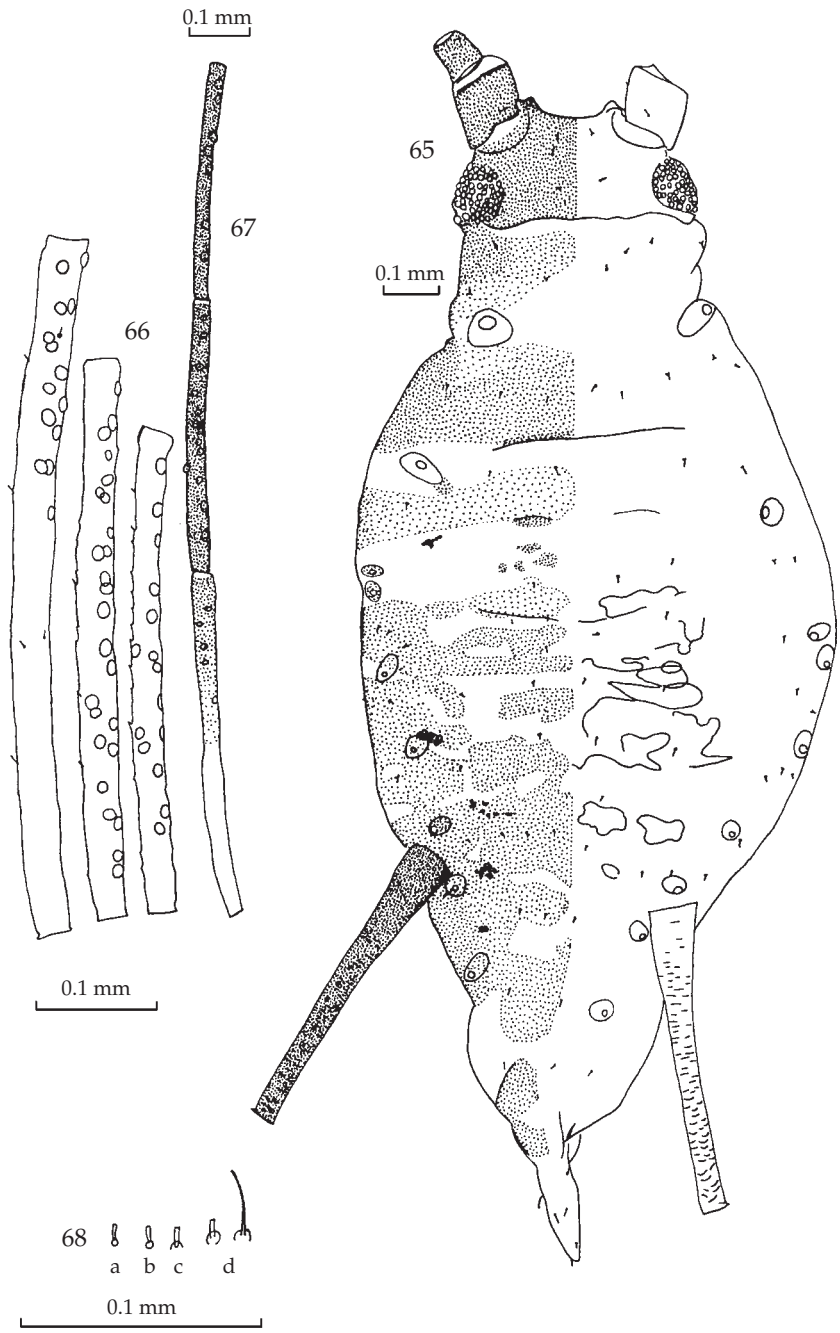
Figs 56-58. *Chaetosiphon fragaefolii* (T.D.A. Cockerell), apterous viviparous ♀. Fig. 56, dorsal side of the body and ventral spiracles. Fig. 57, antennal segments III-VI. Fig. 58, hind leg.



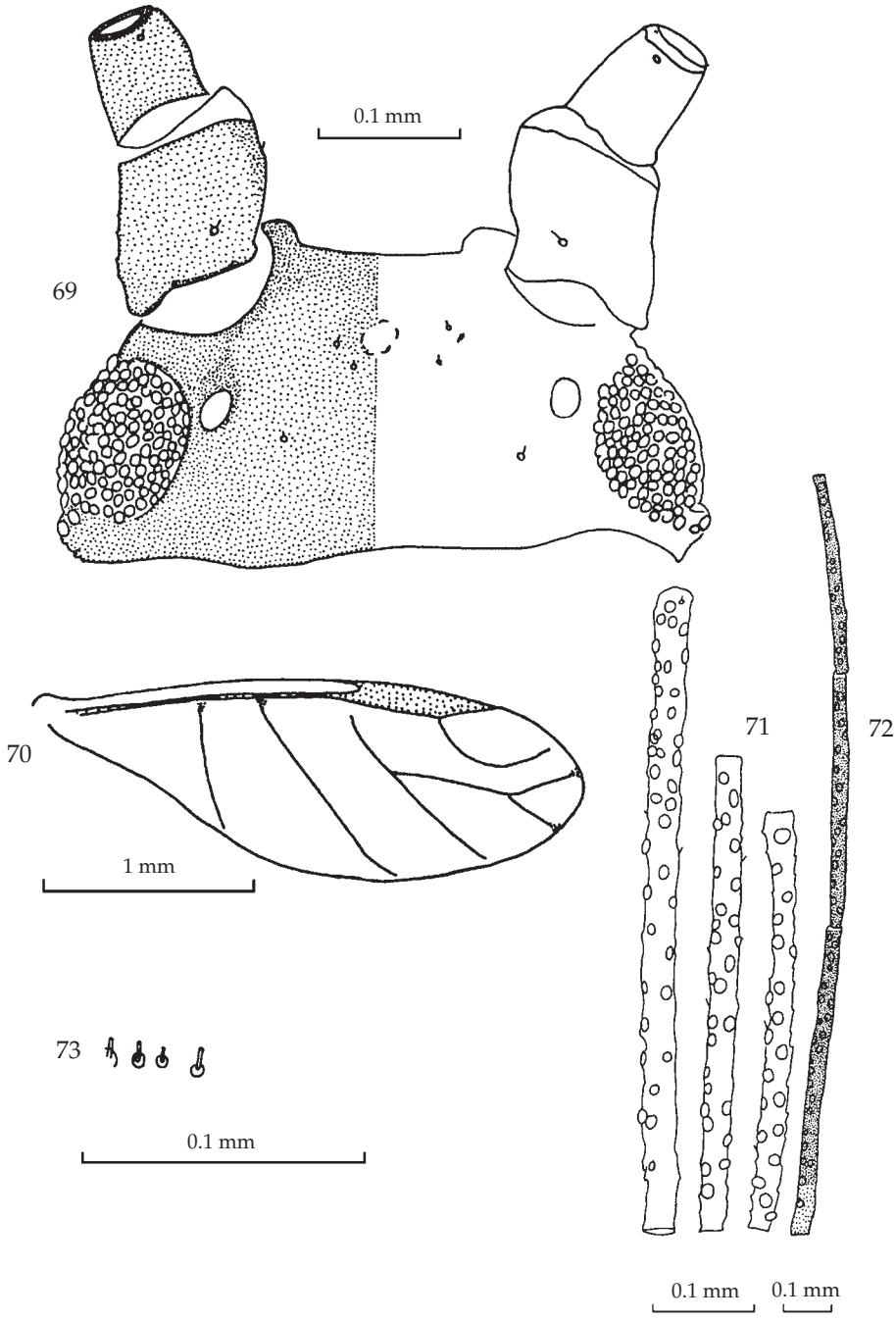
Figs 59-61. *Chaetosiphon fragaefolii* (T.D.A. Cockerell), alate. Fig. 59, head. Fig. 60, antennal segments III-VI. Fig. 61, dorsal side of the abdomen and ventral spiracles.



Figs 62-64. *Hyperomyzus carduellinus* (Theobald), apterous viviparous ♀. Fig. 62, dorsal side of the body and ventral spiracles. Fig. 63, antennal segments III-VI. Fig. 64, dorsal hairs.



Figs 65-68. *Ipuka dispersum* (van der Goot), apterous viviparous ♀. Fig. 65, dorsal side of the body and ventral spiracles. Fig. 66, antennal segments III-V. Fig. 67, colour indication of antennal segments III-V. Fig. 68, dorsal hairs of: **a** the head; **b** abdominal tergite IV; **c** abdominal tergite VIII; **d** cauda.



Figs 69-73. *Ipuka dispersum* (van der Goot), alate. Fig. 69, head. Fig. 70, wing. Fig. 71, antennal segments III-V. Fig. 72, colour indication of antennal segments III-V. Fig. 73, dorsal hairs of (from left to right): antennal segment III, the head, abdominal tergite IV and abdominal tergite VIII.

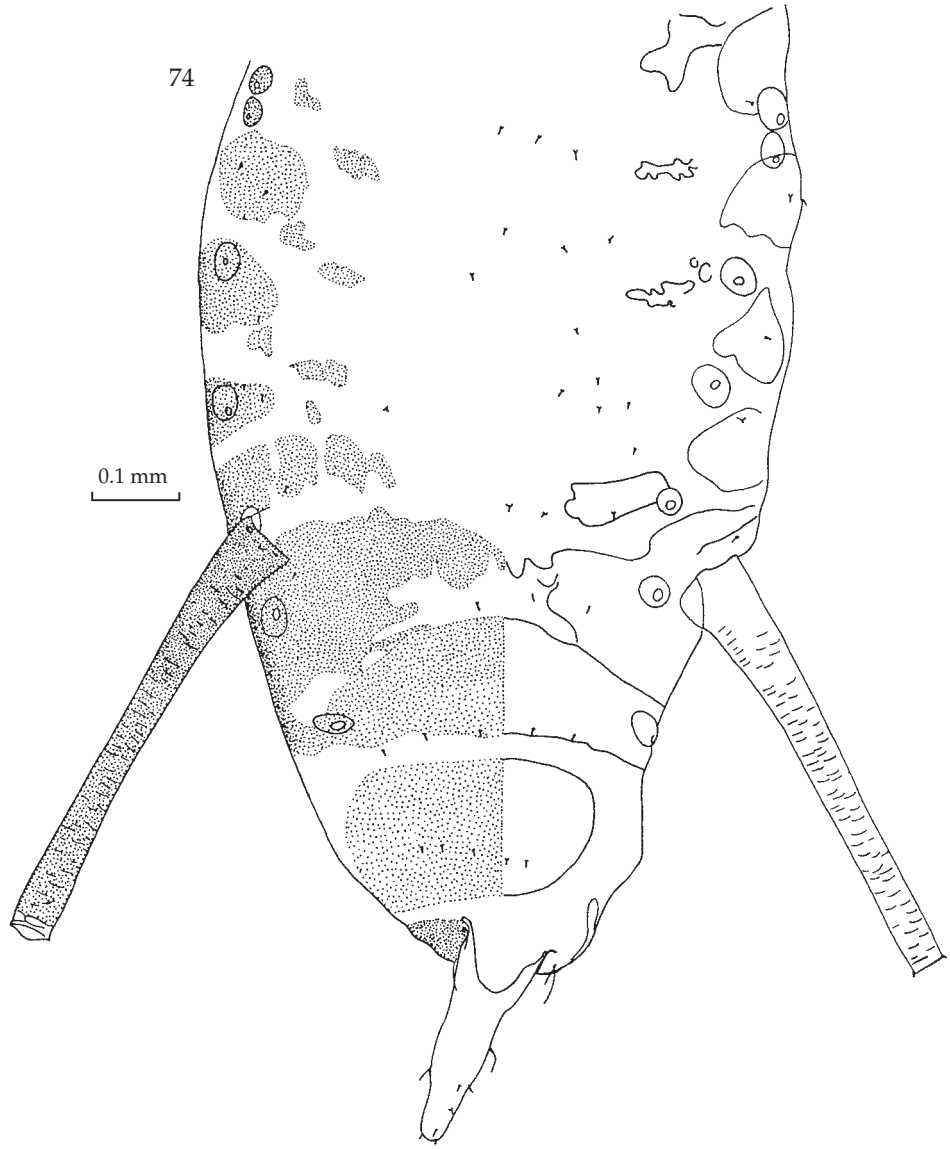
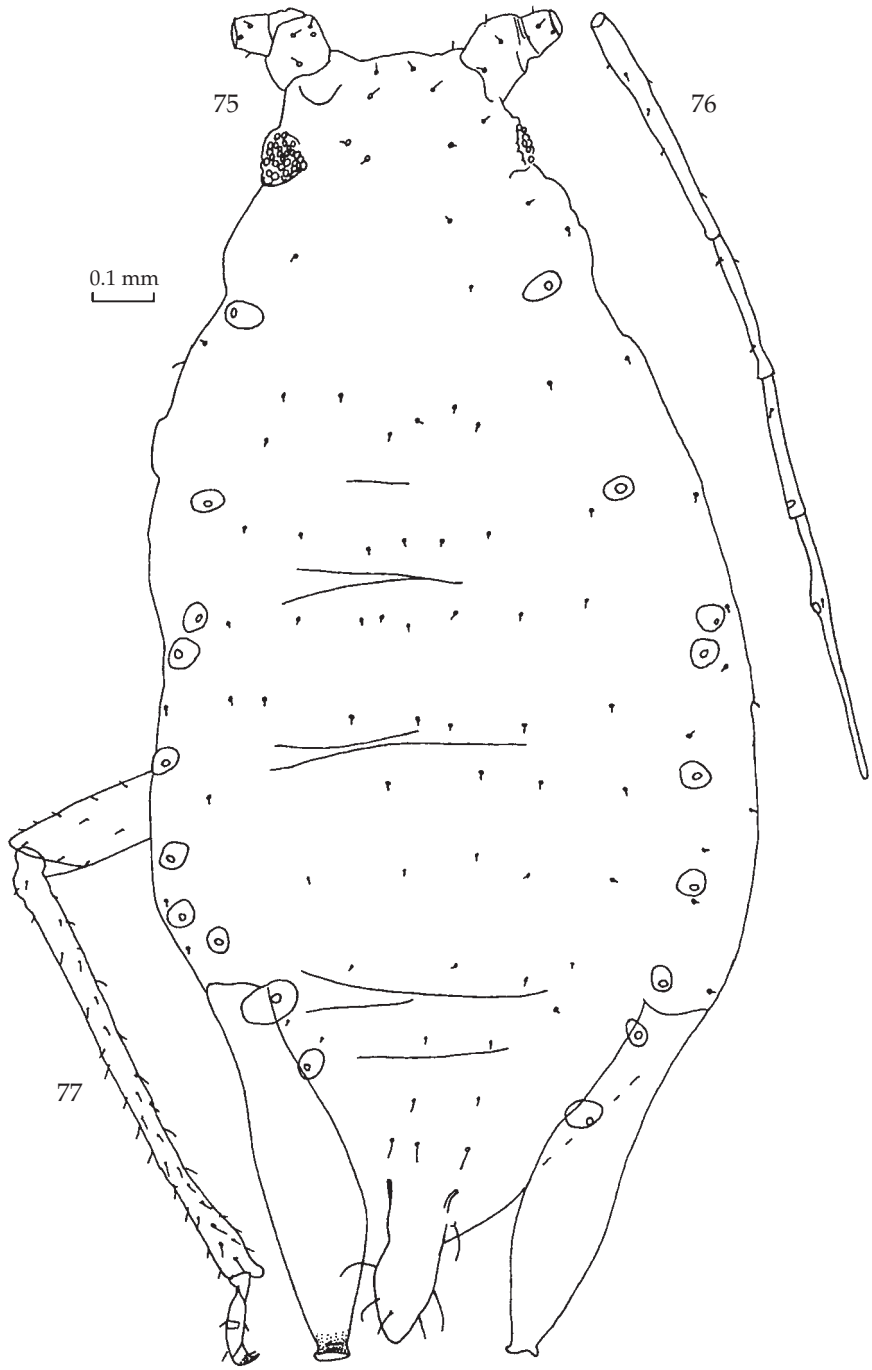


Fig. 74. *Ipuka dispersum* (van der Goot), alate. Dorsal side of the body and ventral spiracles.



Figs 75-77. *Liosomaphis himalayensis* A.N. Basu, apterous viviparous ♀. Fig. 75, dorsal side of the body and ventral spiracles. Fig. 76, antennal segments III-VI. Fig. 77, hind leg.

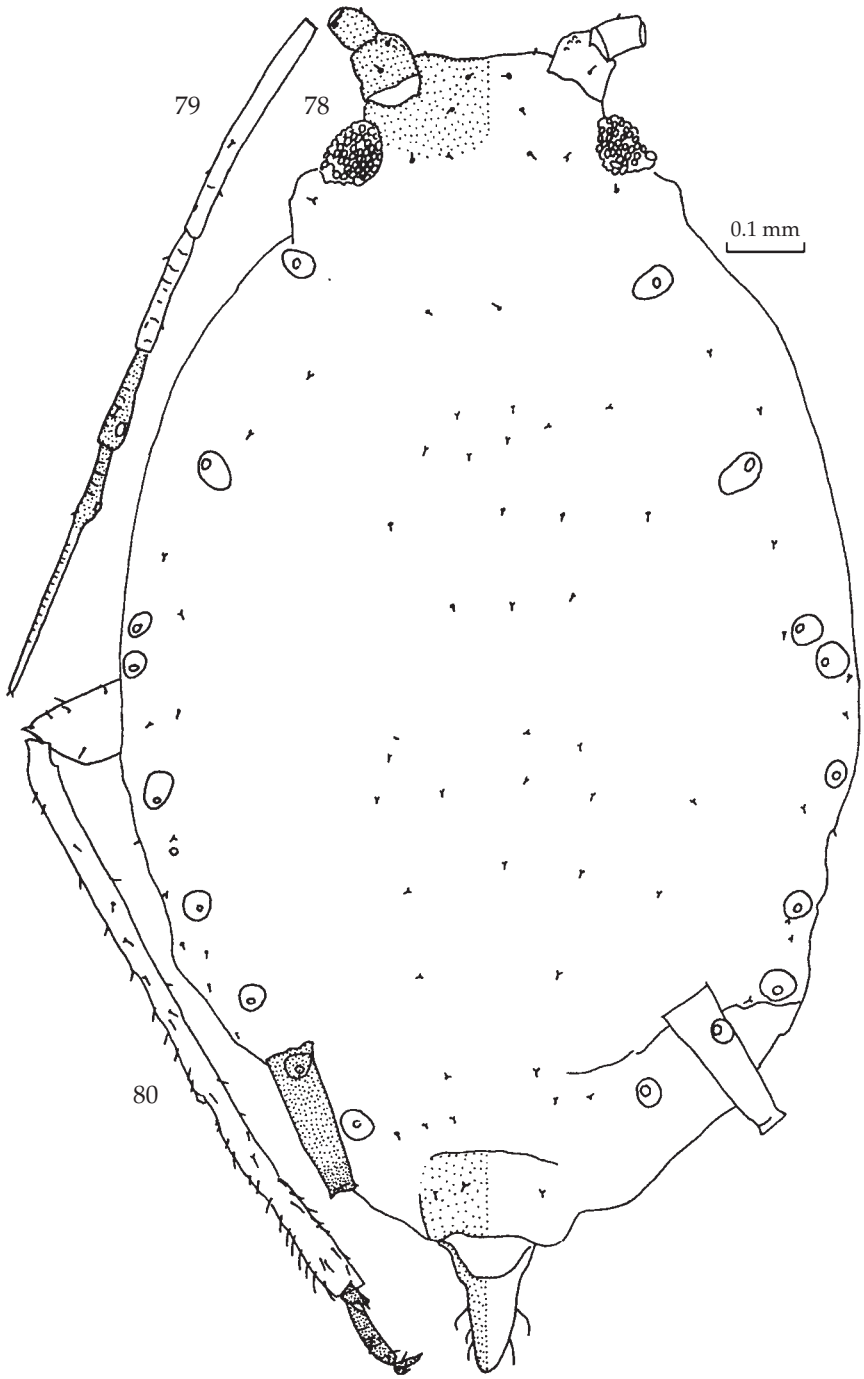
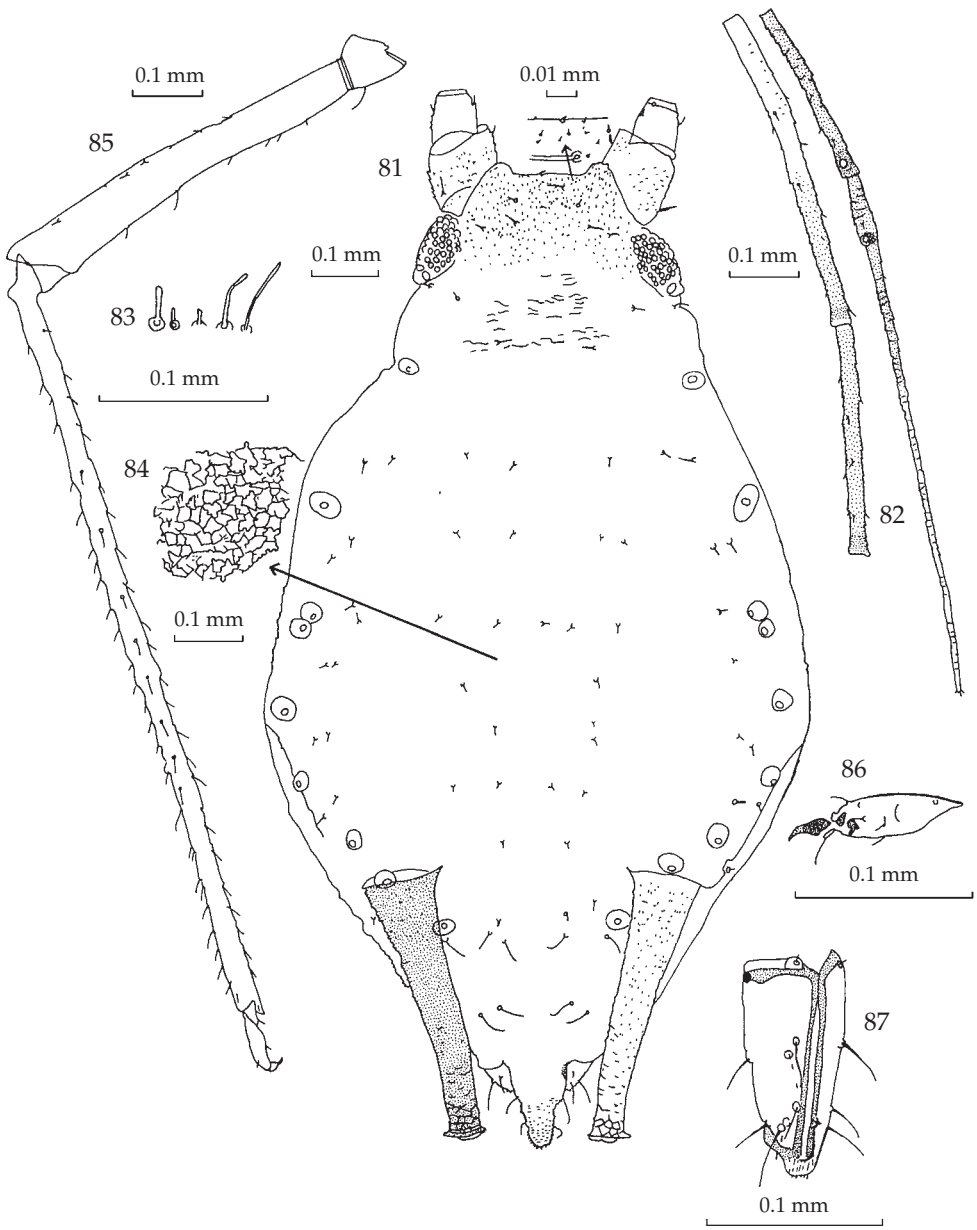
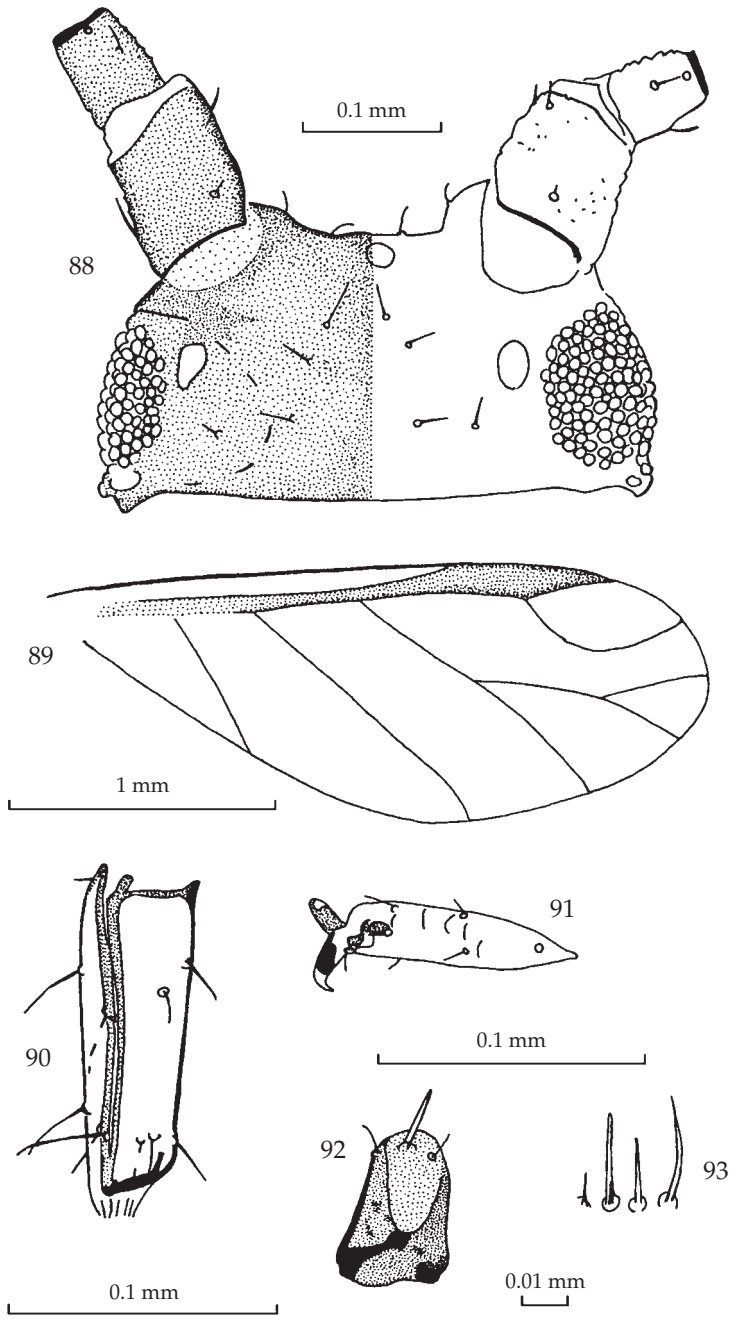


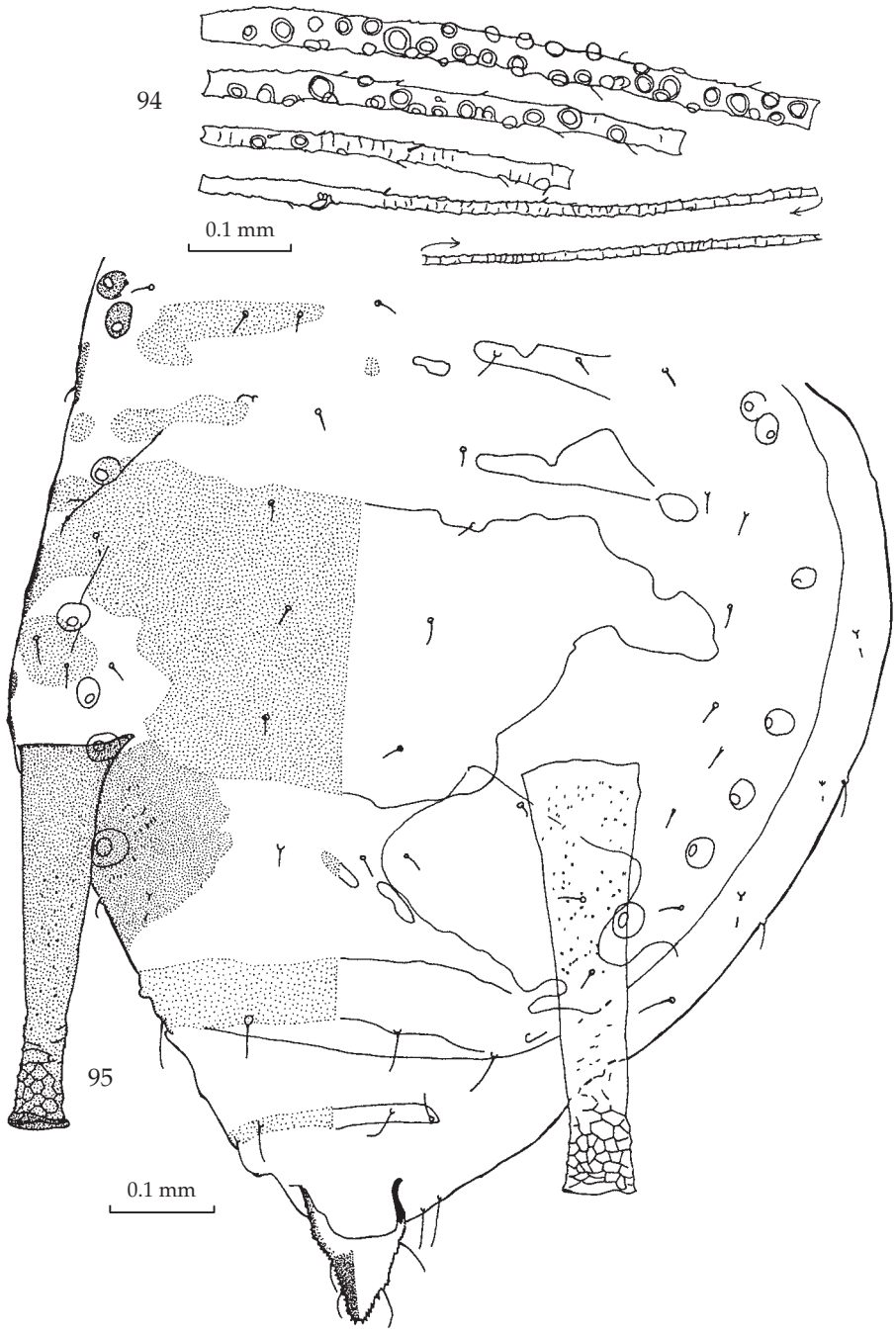
Fig. 78-80. *Lipaphis erysimi* (Kaltenbach), apterous viviparous ♀. Fig. 78, dorsal side of the body and ventral spiracles. Fig. 79, antennal segments III-VI. Fig. 80, hind leg.



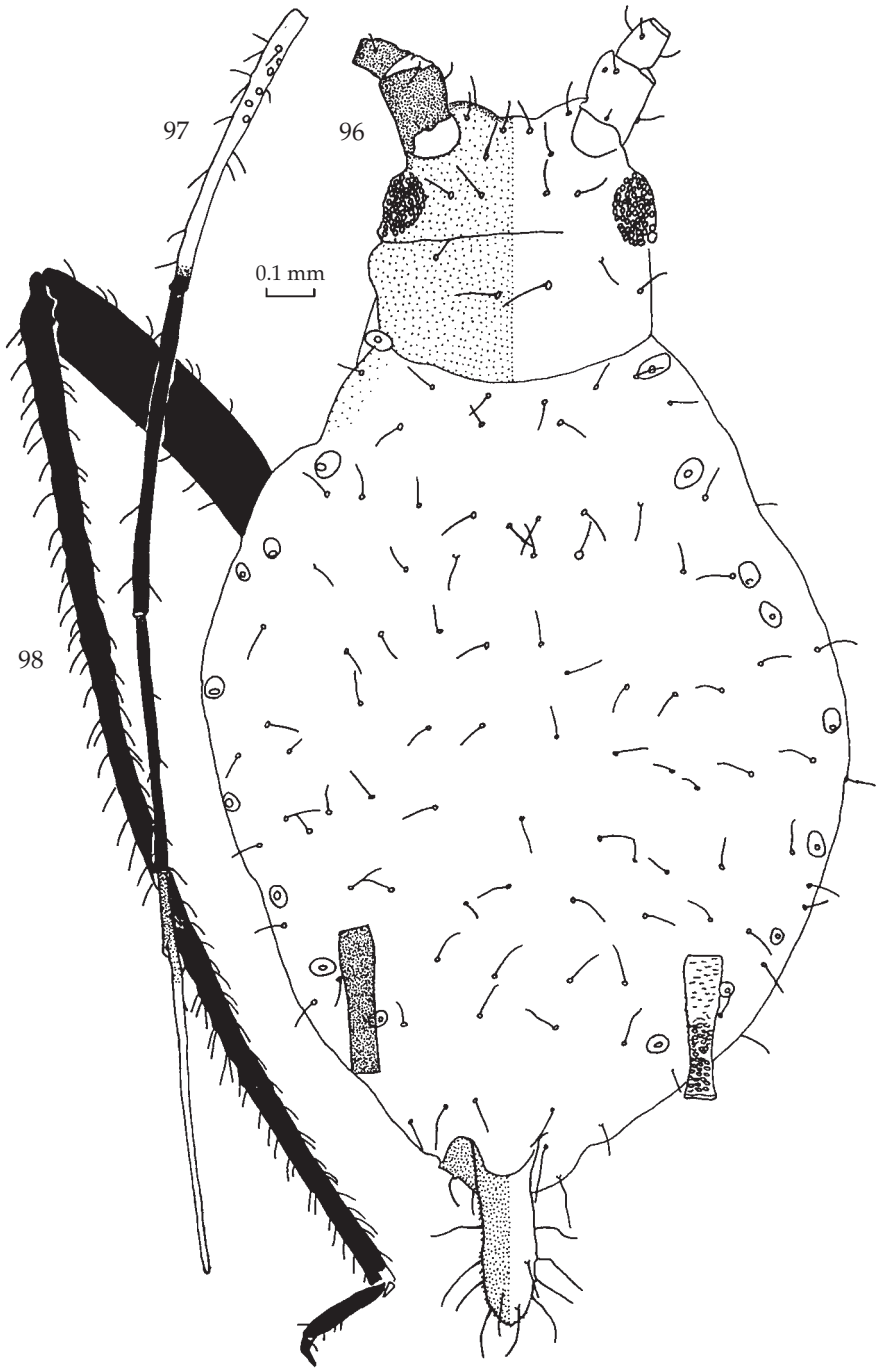
Figs 81-87. *Macromyzella polypodicola* (Takahashi), apterous viviparous ♀. Fig. 81, dorsal side of the body and ventral spiracles. Fig. 82, antennal segments III-VI. Fig. 83, dorsal hairs of the body. Fig. 84, reticulation of head, thorax and abdomen I-VI. Fig. 85, hind leg. Fig. 86, second tarsal segment of the hind leg. Fig. 87, last rostral segment.



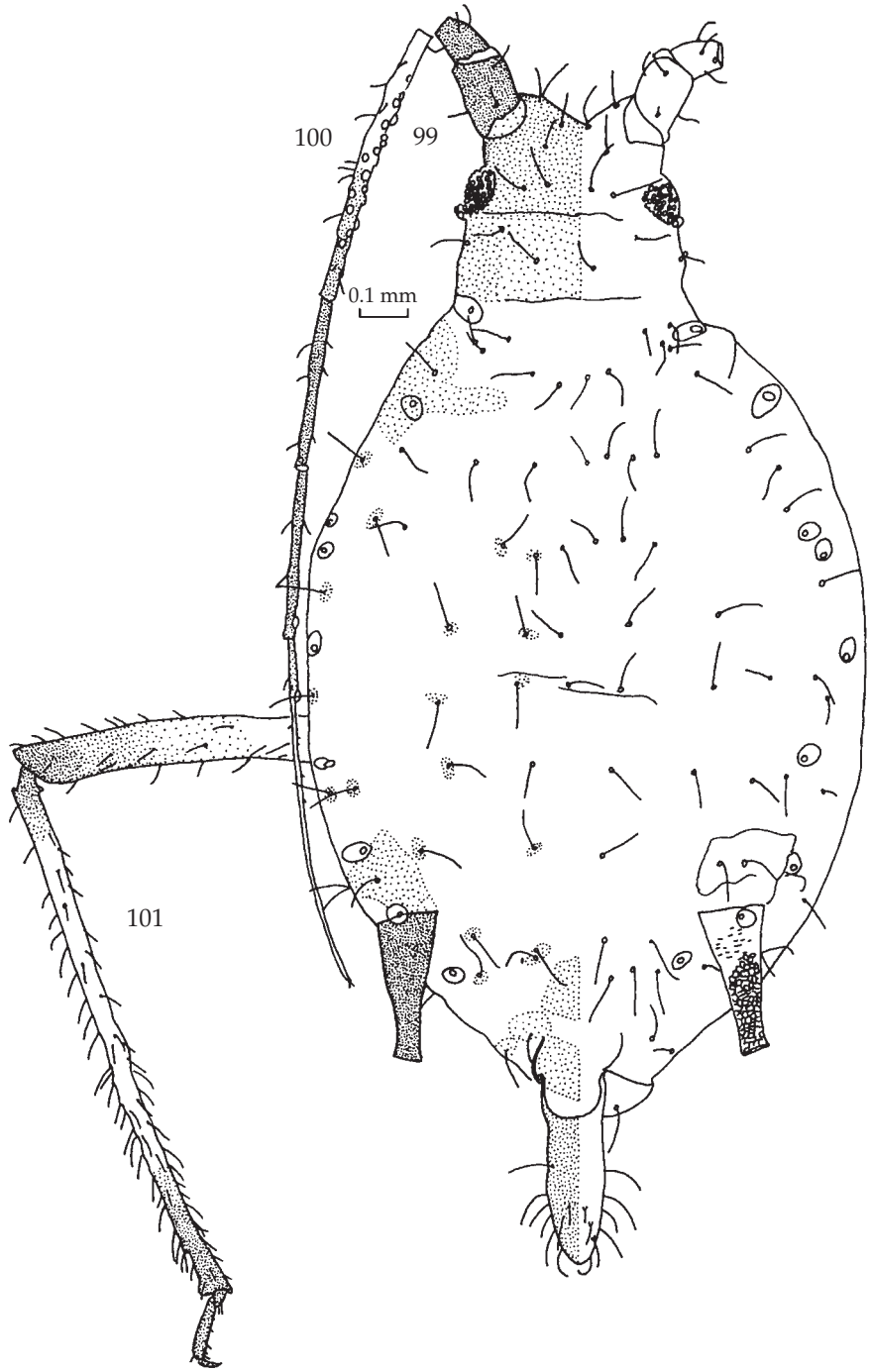
Figs 88-93. *Macromyzella polypodicola* (Takahashi), alate. Fig. 88, head. Fig. 89, wing. Fig. 90, last rostral segment. Fig. 91, second tarsal segment of the hind leg. Fig. 92, first tarsal segment of the hind leg. Fig. 93, hairs of (from left to right): antenna, head, and abdominal tergites IV and VIII.



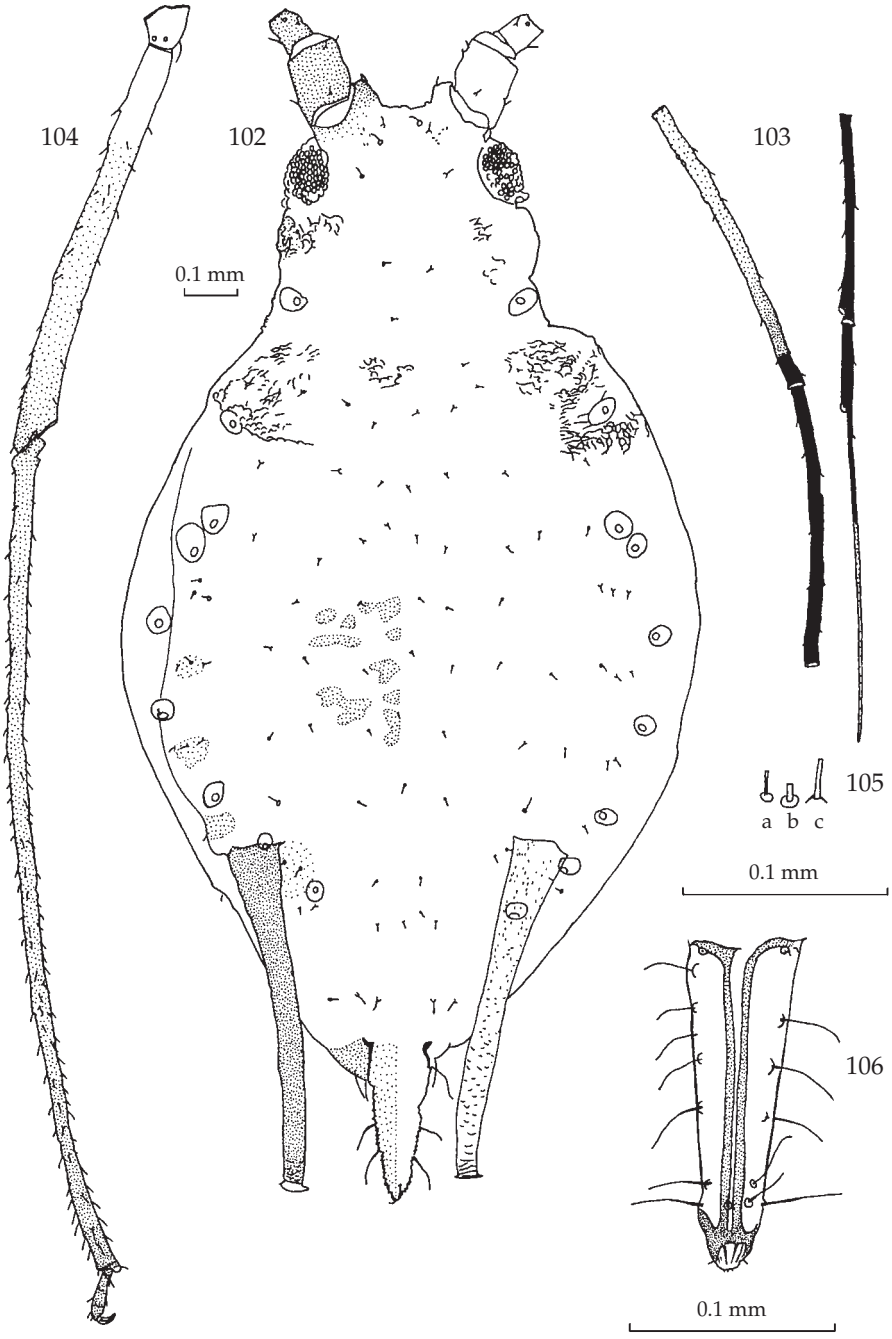
Figs 94-95. *Macromyzella polypodicola* (Takahashi), alate. Fig. 94, antennal segments III-VI. Fig. 95, dorsal side of the abdomen.



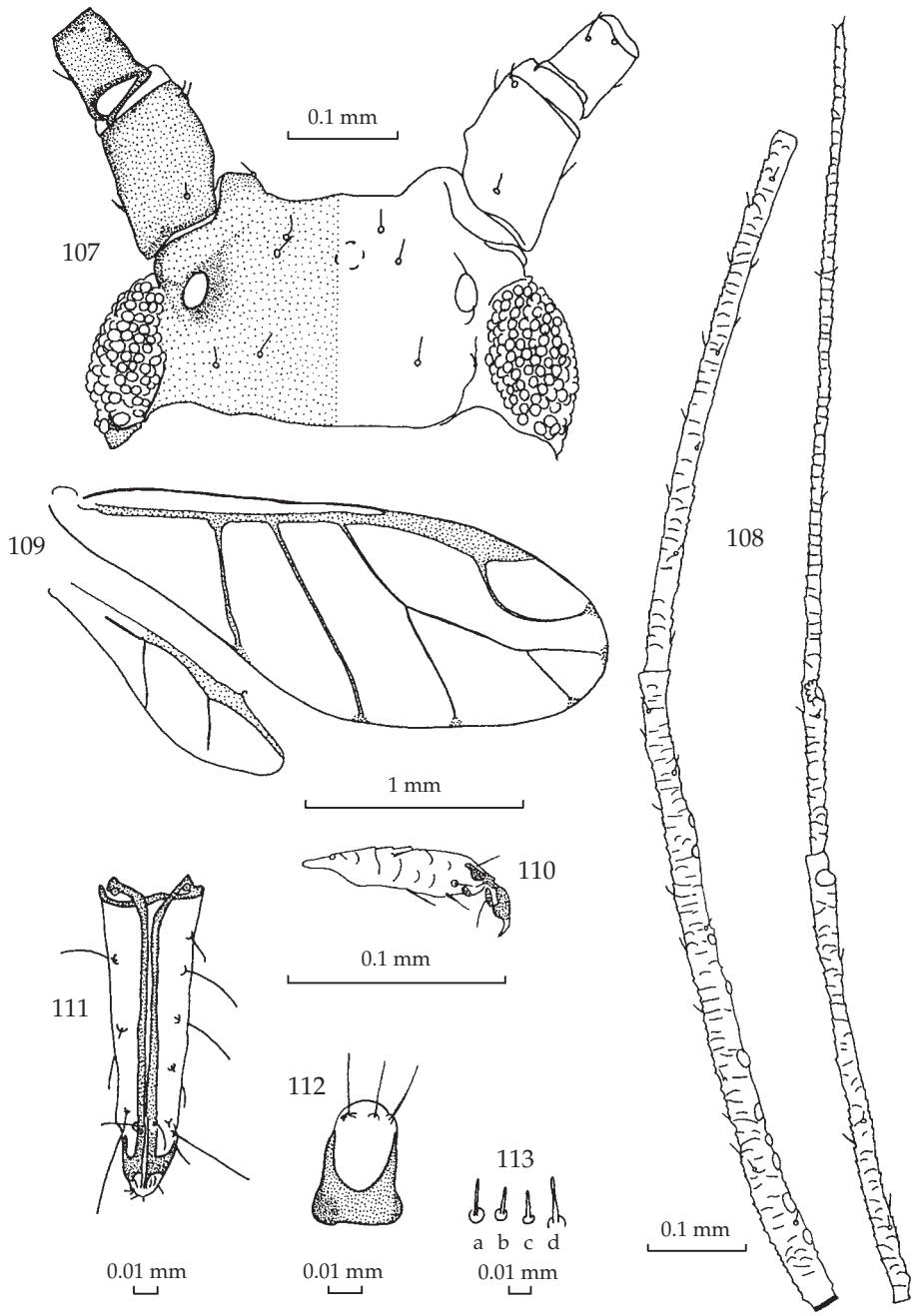
Figs 96-98. *Macrosiphoniella pseudoartemisiae* Shinji, apterous viviparous ♀. Fig. 96, dorsal side of the body. Fig. 97, antennal segments III-VI. Fig. 98, hind leg.



Figs 99-101. *Macrosiphoniella sanborni* (Gillette), apterous viviparous ♀. Fig. 99, dorsal side of the body and ventral spiracles. Fig. 100, antennal segments III-VI. Fig. 101, hind leg.



Figs 102-106. *Micromyzella filicis* (van der Goot), apterous viviparous ♀. Fig. 102, dorsal side of the body and ventral spiracles. Fig. 103, antennal segments III-VI. Fig. 104, hind leg. Fig. 105, hairs: of **a** the head; **b** abdominal tergum IV; **c** abdominal tergum VIII. Fig. 106, last rostral segment.



Figs 107-113. *Micromyzella filicis* (van der Goot), alate. Fig. 107, head. Fig. 108, antennal segments III-VI. Fig. 109, wings. Fig. 110, second tarsal segment of the hind leg. Fig. 111, last rostral segment. Fig. 112, first tarsal segment of the hind leg. Fig. 113, hairs of: **a** the head; **b** abdominal tergum IV; **c** abdominal tergum VII; **d** abdominal tergum VIII.

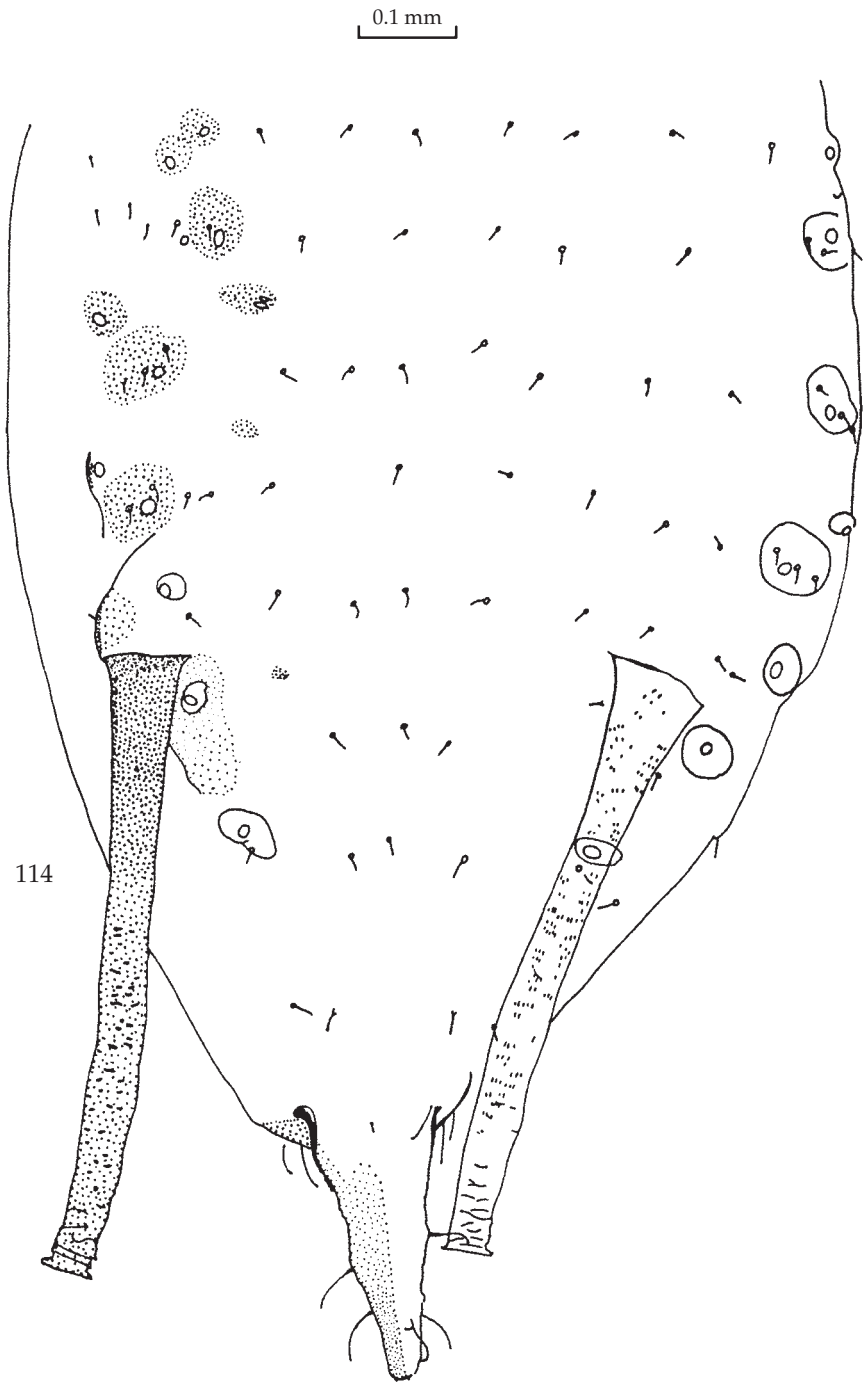
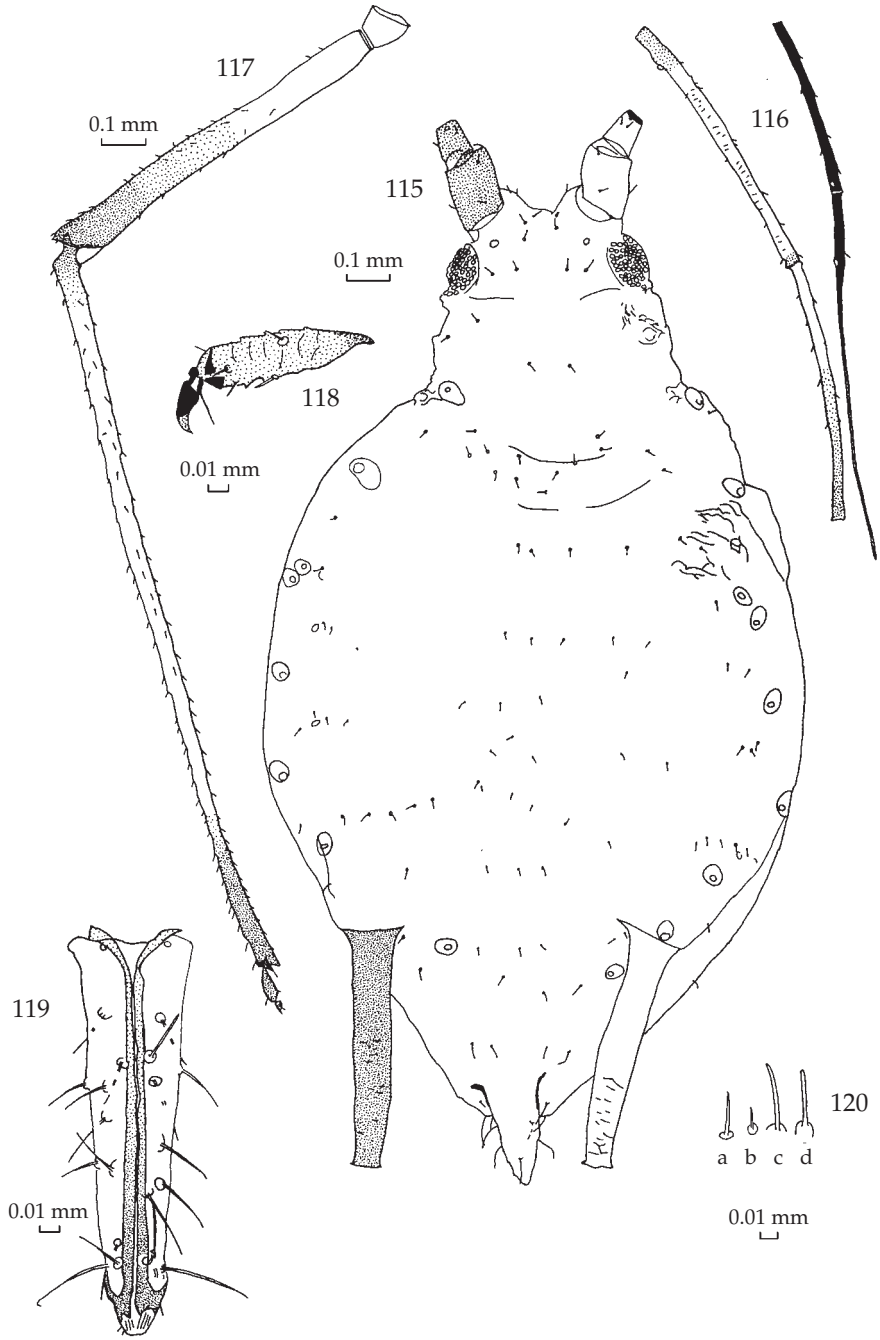
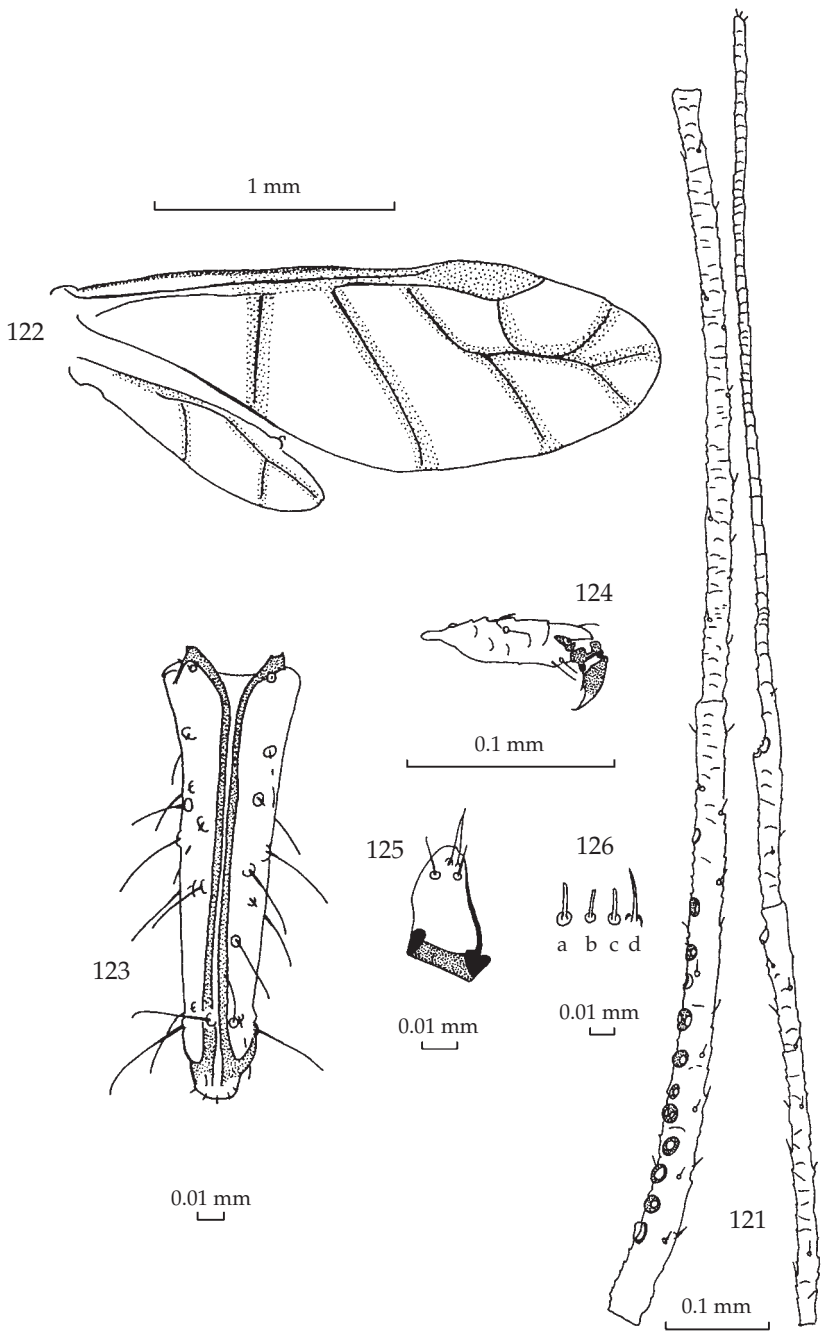


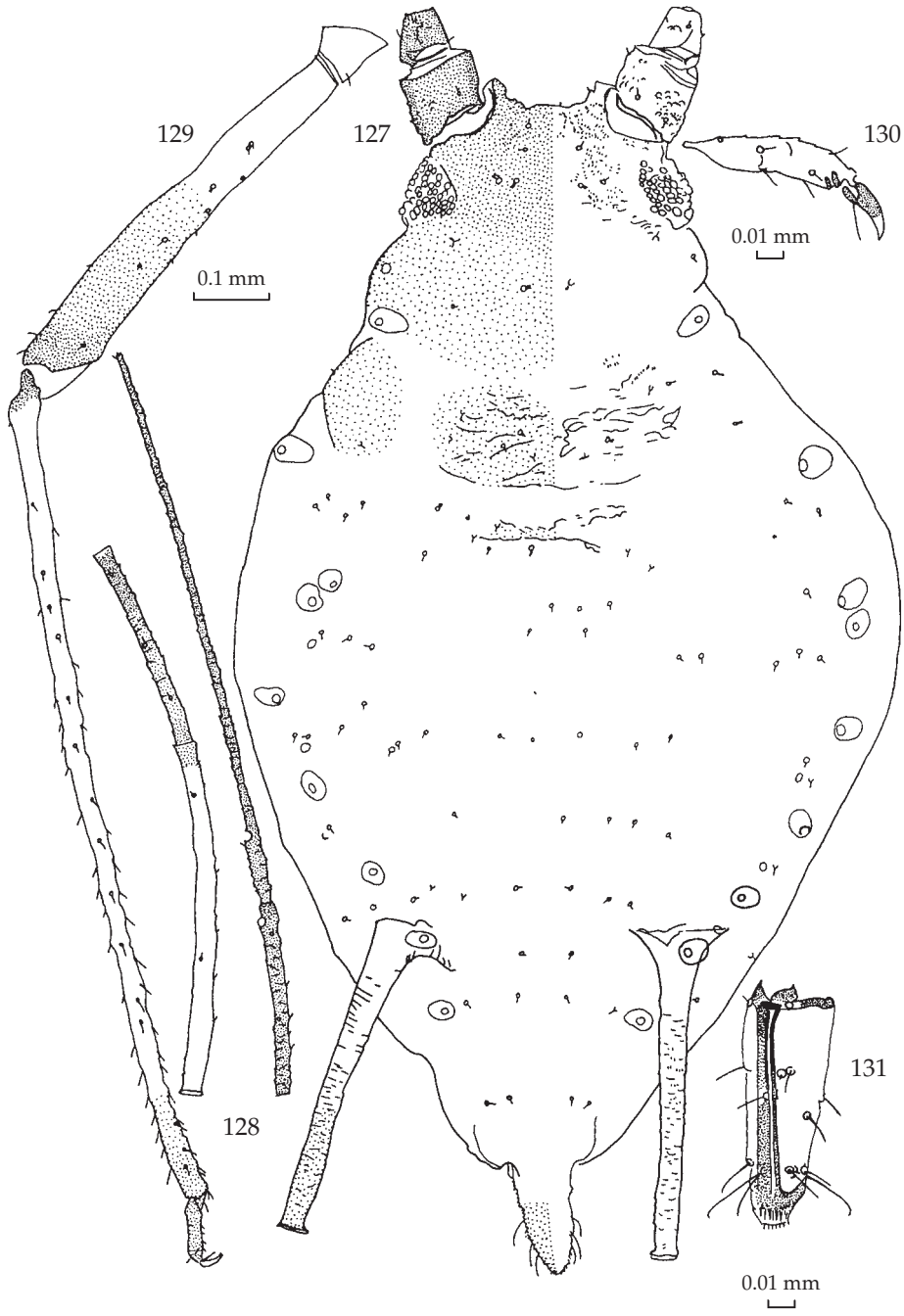
Fig. 114. *Micromyzella filicis* (van der Goot), alate. Dorsal side of the abdomen.



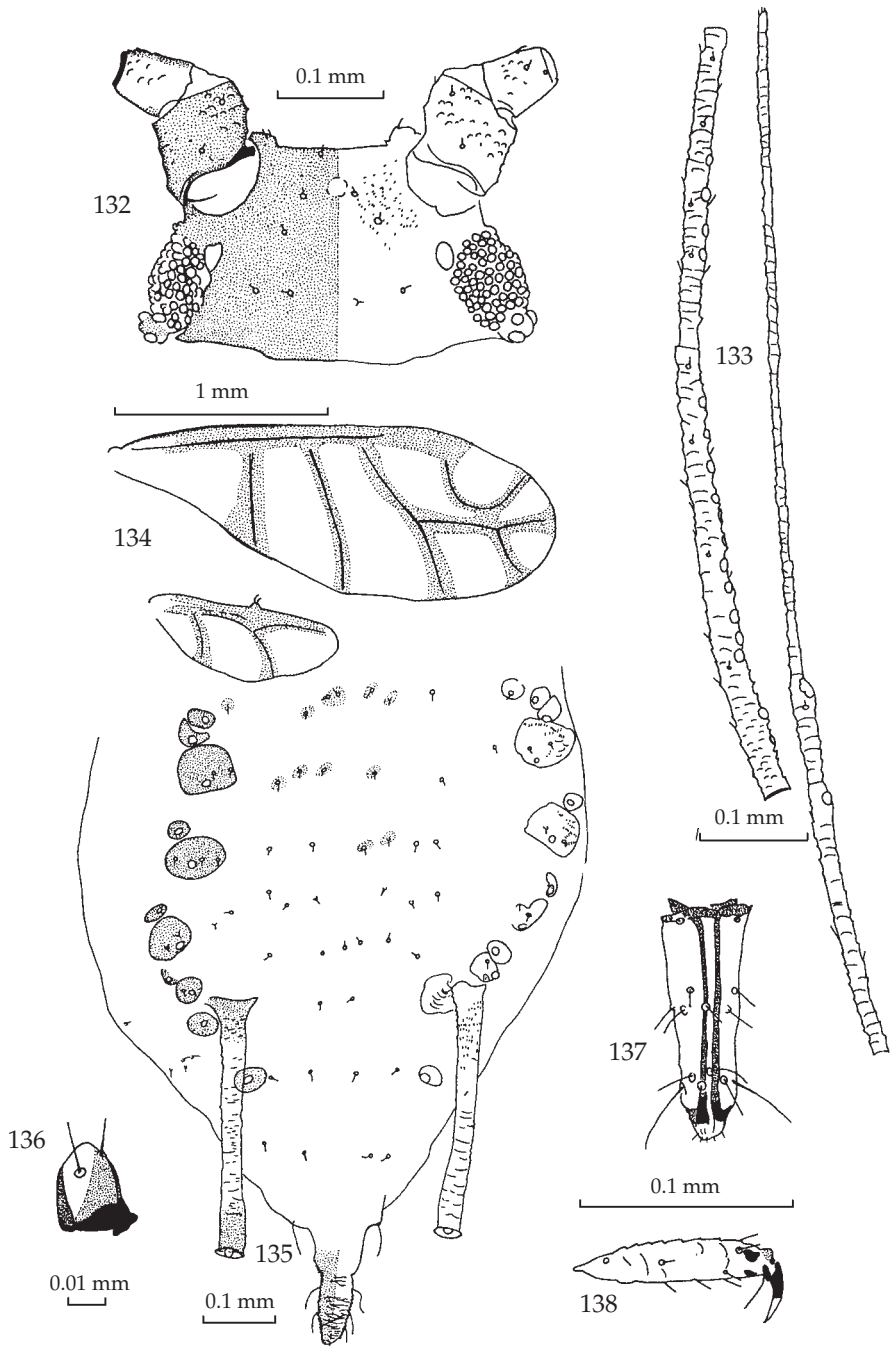
Figs 115-120. *Micromyzus katoi* (Takahashi), apterous viviparous ♀. Fig. 115, dorsal side of the body and ventral spiracles. Fig. 116, antennal segments III-IV and V-VI. Fig. 117, hind leg. Fig. 118, second tarsal segment of the hind leg. Fig. 119, last rostral segment. Fig. 120, hairs of: **a** the head; **b** abdominal tergum IV; **c** abdominal tergum VII; **d** abdominal tergum VIII.



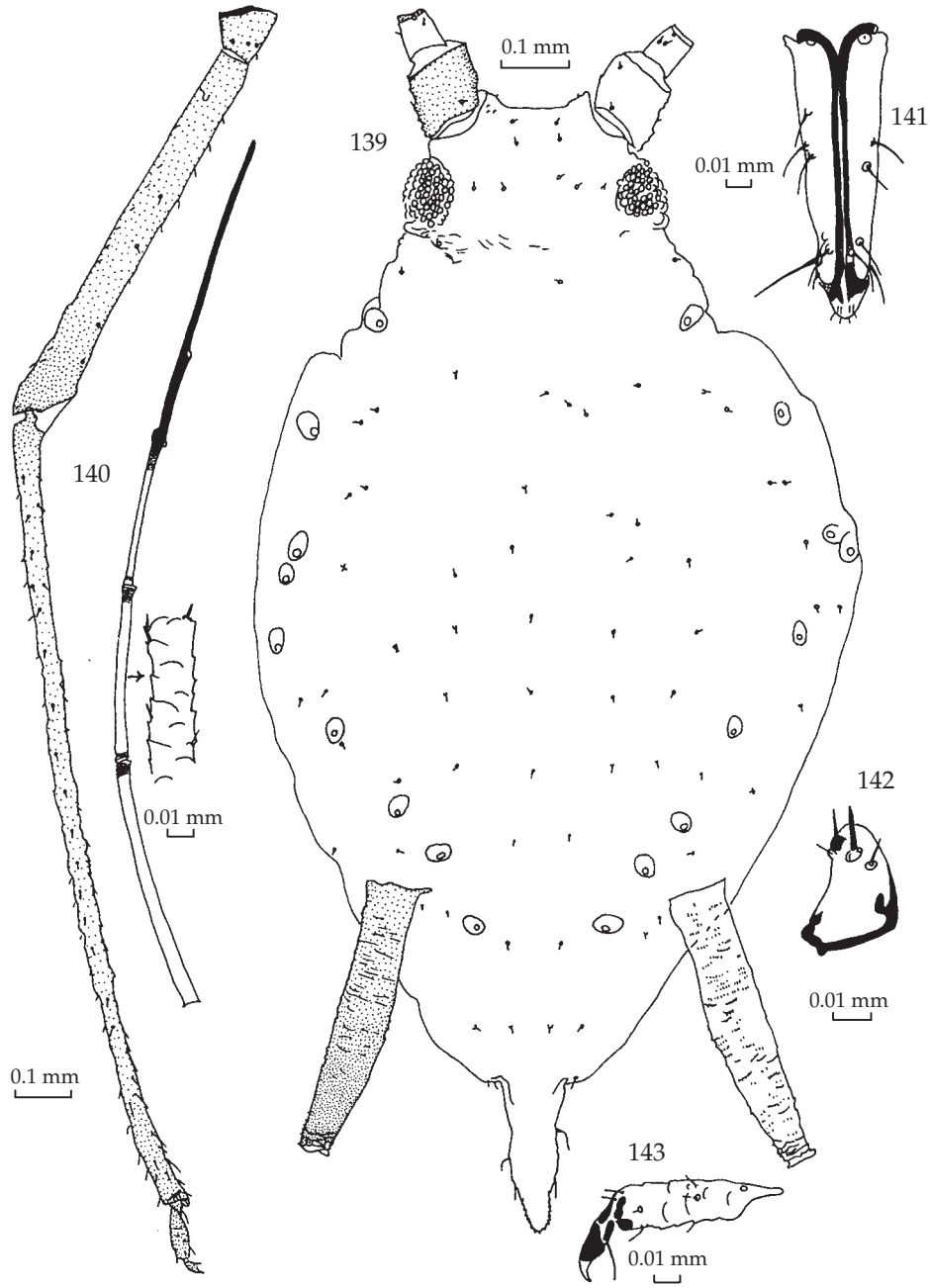
Figs 121-126. *Micromyzus katoi* (Takahashi), alate. Fig. 121, antennal segments III-VI. Fig. 122, wings. Fig. 123, last rostral segment. Fig. 124, second tarsal segment of the hind leg. Fig. 125, first tarsal segment of the hind leg. Fig. 126, hairs of: **a** the head; **b** abdominal tergum IV; **c** abdominal tergum VII; **d** abdominal tergum VIII.



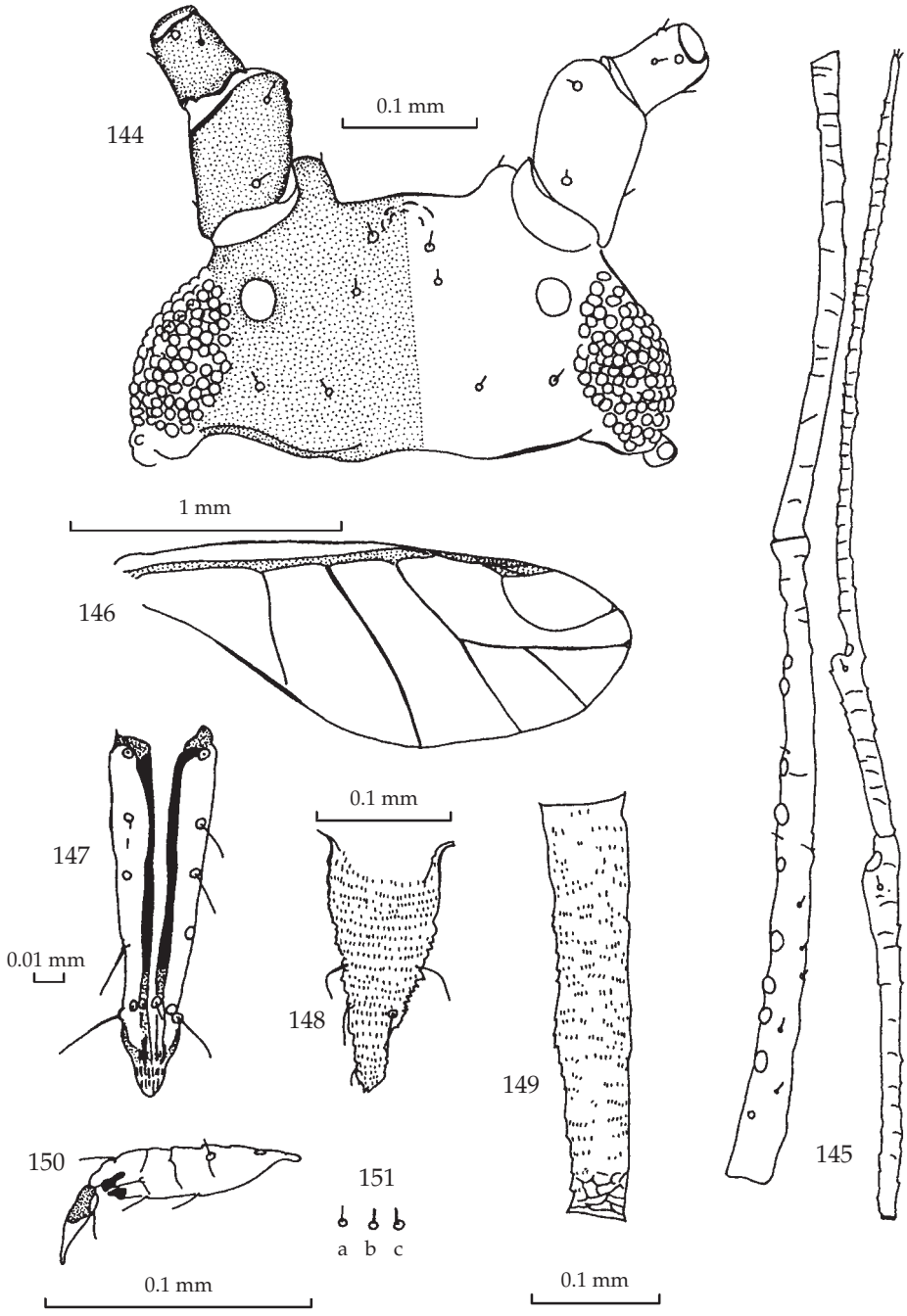
Figs 127-131. *Micromyzus niger* van der Goot, apterous viviparous ♀. Fig. 127, dorsal side of the body and ventral spiracles. Fig. 128, antennal segments III-IV and V-VI. Fig. 129, hind leg. Fig. 130, second tarsal segment of the hind leg. Fig. 131, last rostral segment.



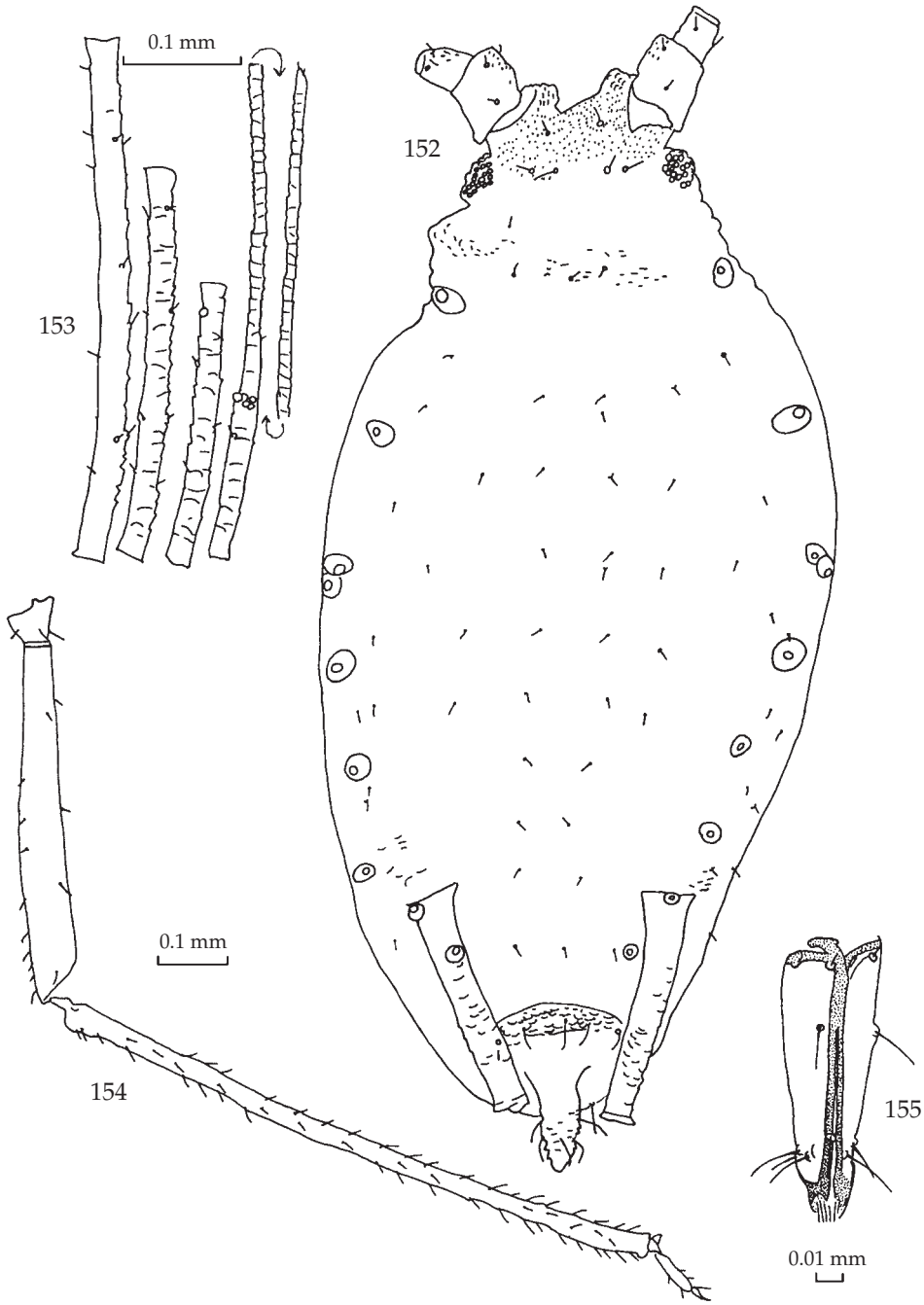
Figs 132-138. *Micromyzus niger* van der Goot, alate. Fig. 132, head. Fig. 133, antennal segments III-IV and V-VI. Fig. 134, wings. Fig. 135, dorsal side of the body and ventral spiracles. Fig. 136, first tarsal segment of the hind leg. Fig. 137, last rostral segment. Fig. 138, second tarsal segment of the hind leg.



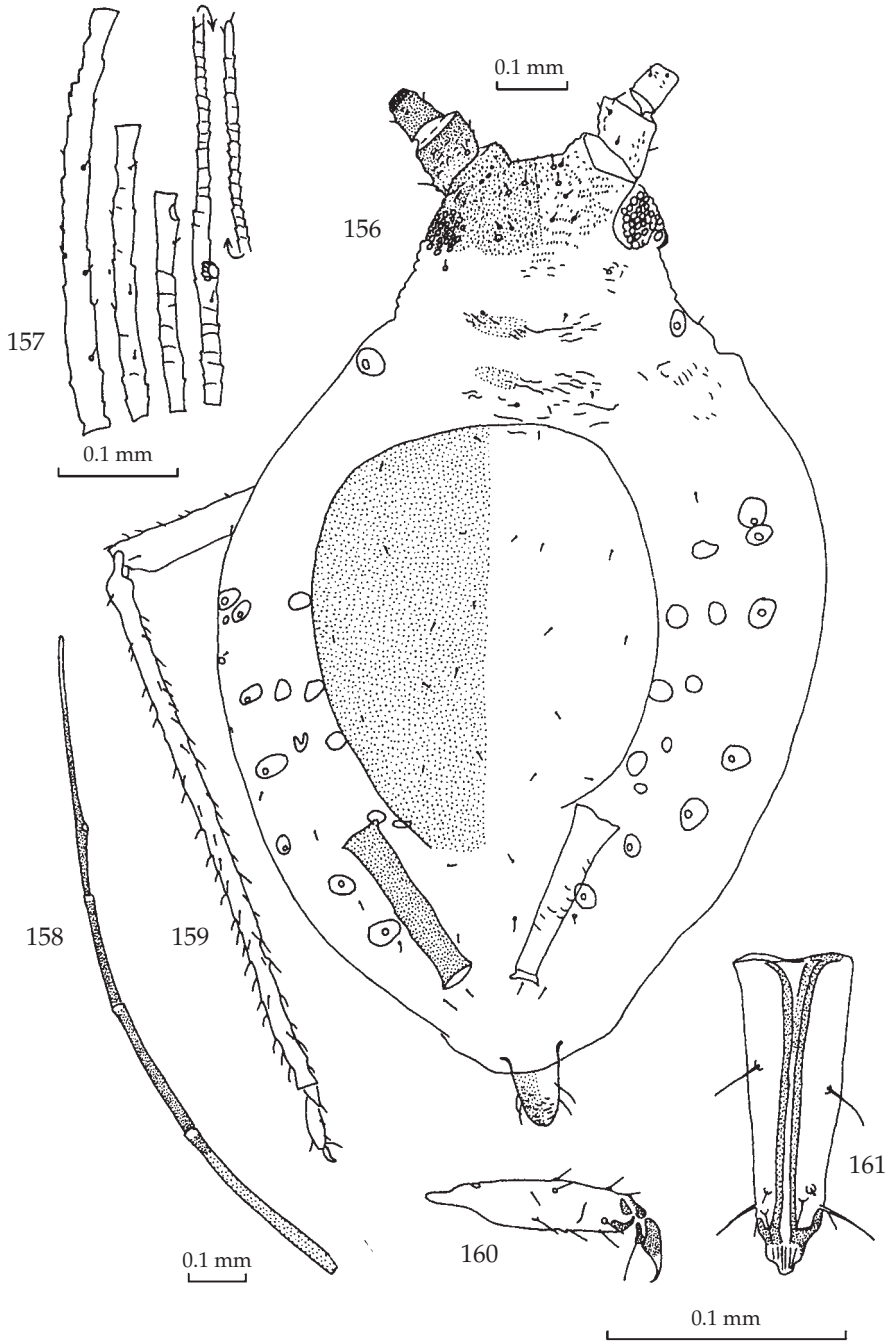
Figs 139-143. *Micromyzus vandergooti* spec. nov., apterous viviparous ♀. Fig. 139, dorsal side of the body and ventral spiracles. Fig. 140, antennal segments III-VI and left hind leg. Fig. 141, last rostral segment. Fig. 142, first tarsal segment of the hind leg. Fig. 143, second tarsal segment of the hind leg.



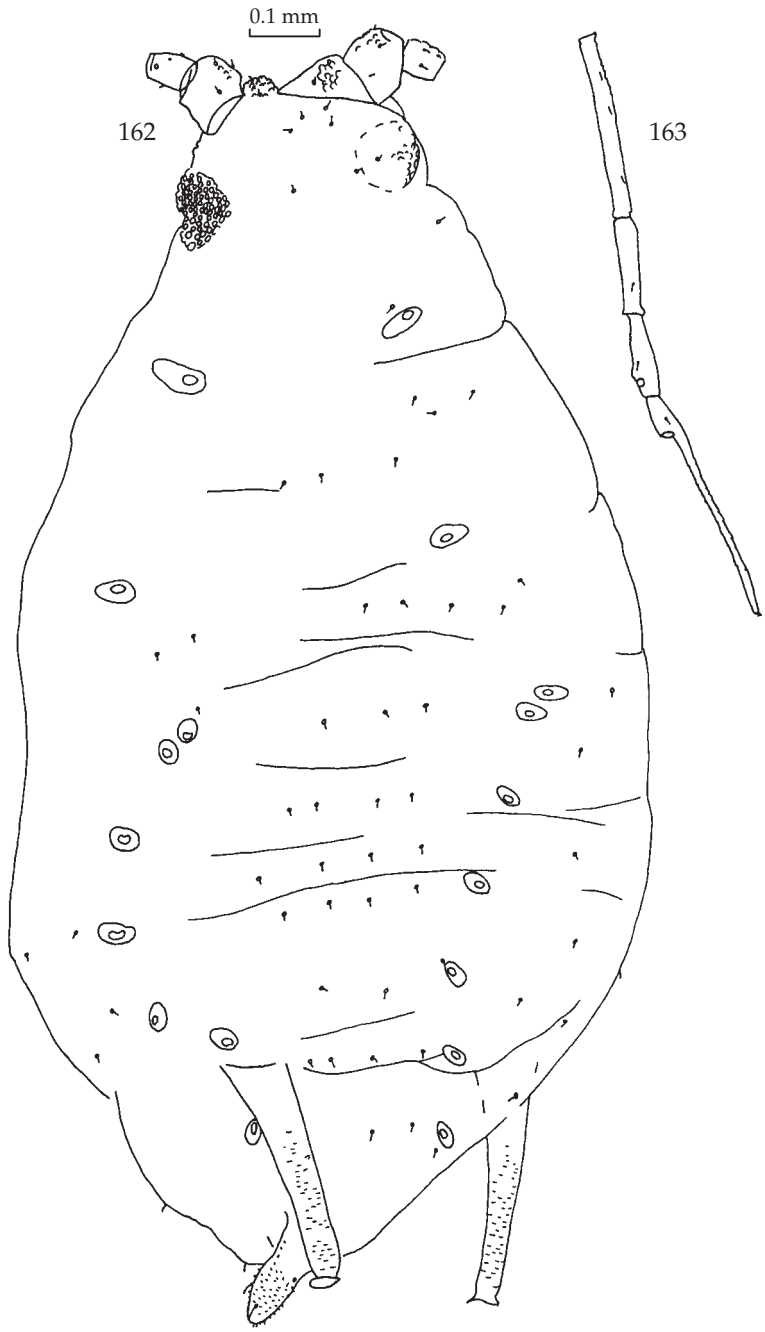
Figs 144-151. *Micromyzus vandergooti* spec. nov., alate. Fig. 144, head. Fig. 145, antennal segments III-VI. Fig. 146, wing. Fig. 147, last rostral segment. Fig. 148, cauda. Fig. 149, siphunculus. Fig. 150, second tarsal segment of the hind leg. Fig. 151, hairs of: **a** the head; **b** abdominal tergum IV; **c** abdominal tergum VIII.



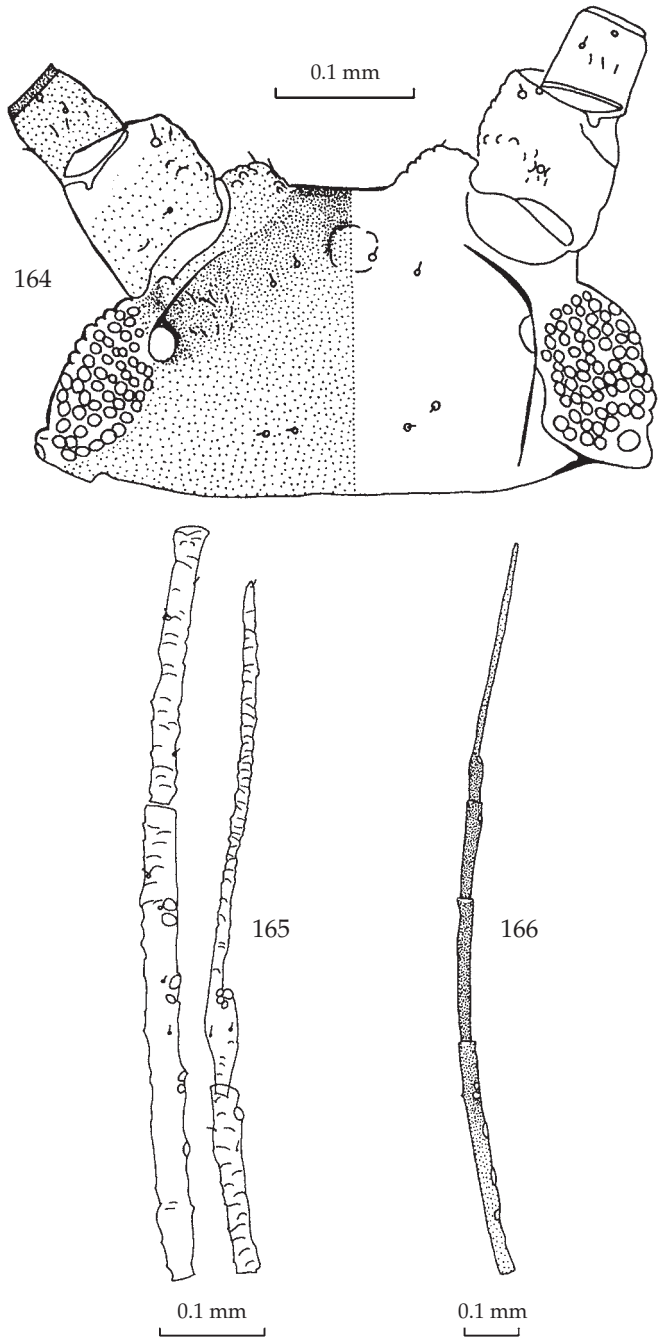
Figs 152-155. *Myzus debregeasiae* spec. nov., apterous viviparous ♀. Fig. 152, dorsal side of the body and ventral spiracles. Fig. 153, antennal segments III-VI. Fig. 154, hind leg. Fig. 155, last rostral segment.



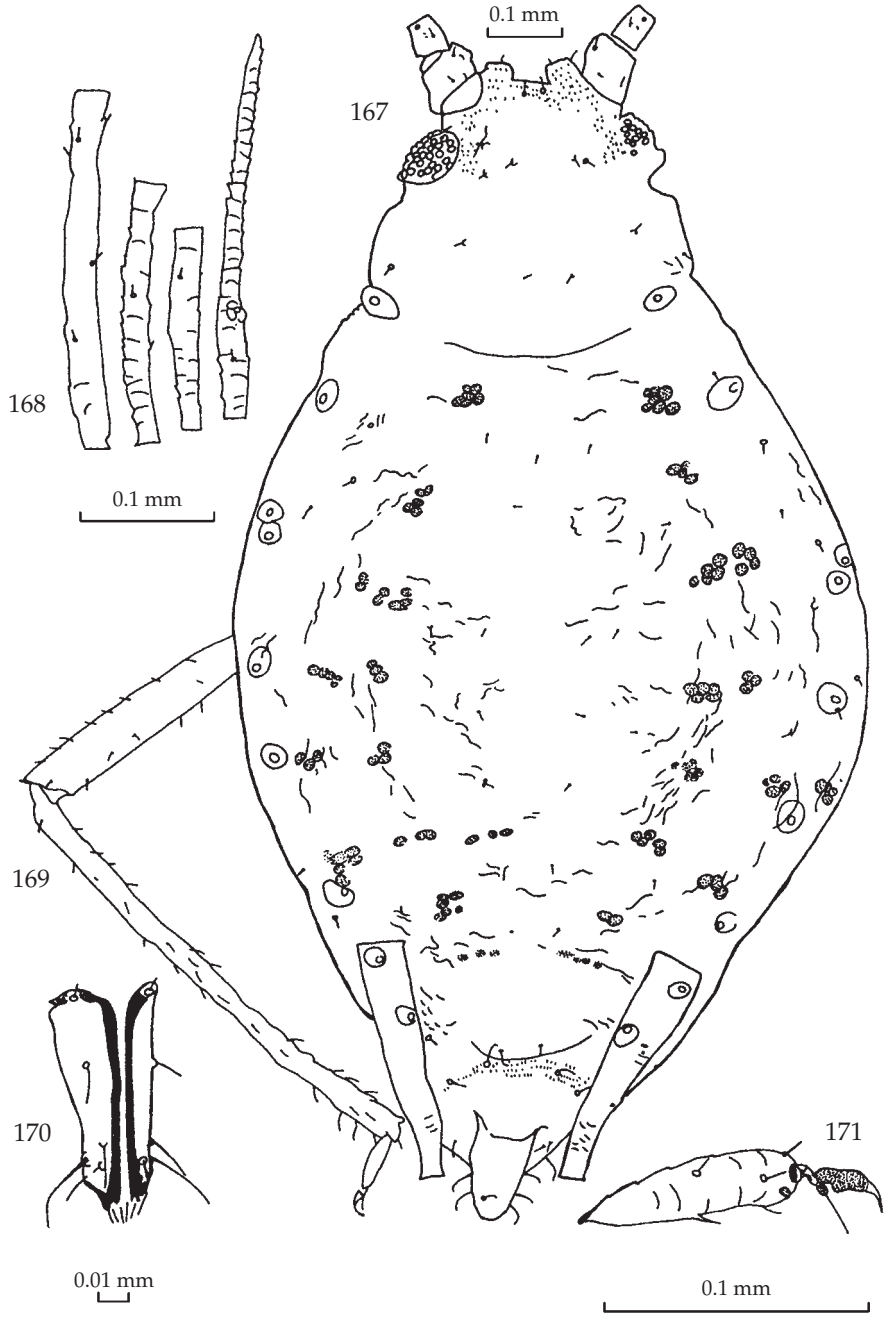
Figs 156-161. *Myzus duriatae* spec. nov., apterous viviparous ♀. Fig. 156, dorsal side of the body and ventral spiracles. Fig. 157, antennal segments III-VI. Fig. 158, colour indication of antennal segments III-V. Fig. 159, hind leg. Fig. 160, second tarsal segment of the hind leg. Fig. 161, last rostral segment.



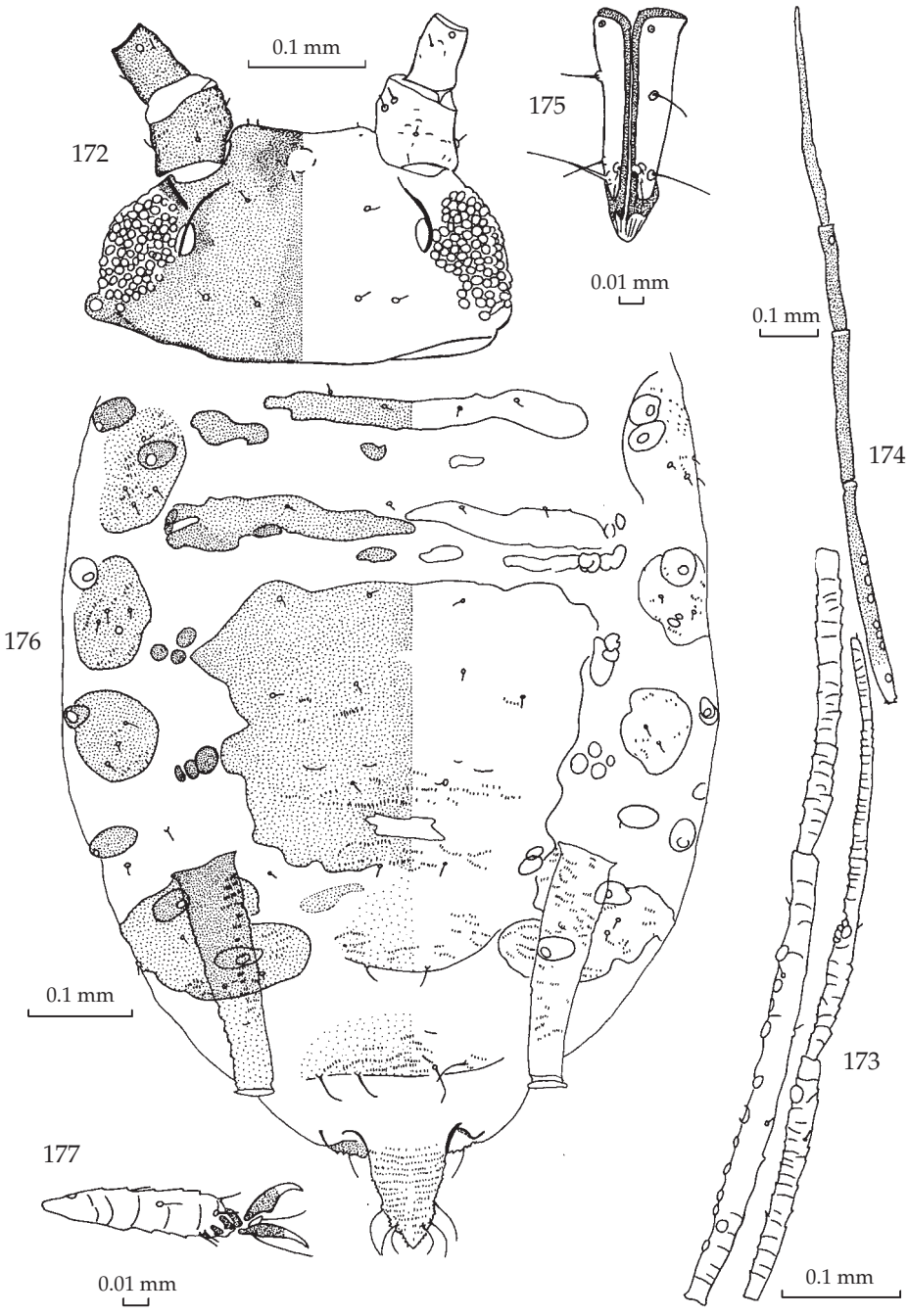
Figs 162-163. *Myzus hemerocallis* Takahashi, apterous viviparous ♀. Fig. 162, dorsal side of the body and ventral spiracles. Fig. 163, antennal segments III-VI.



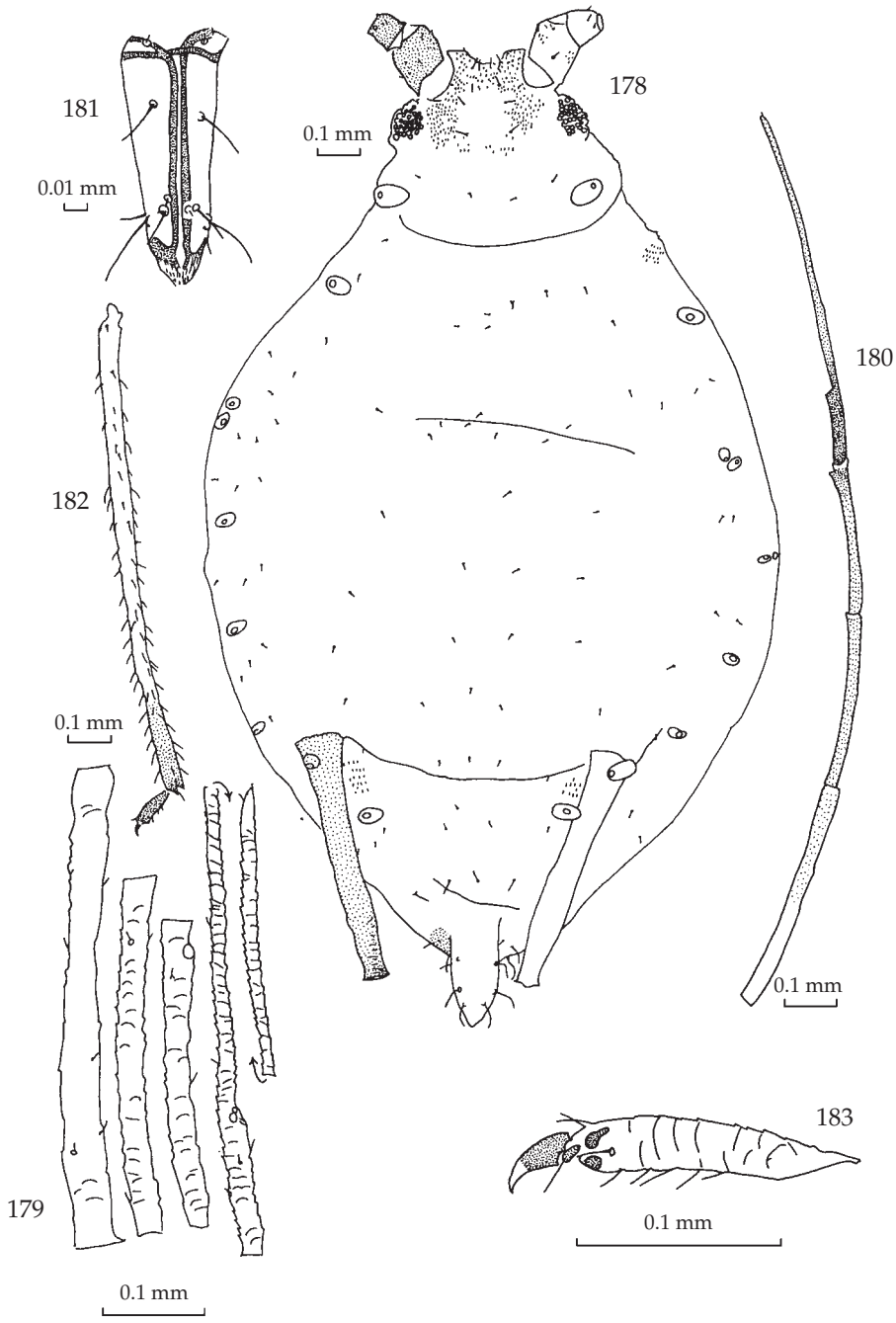
Figs 164-166. *Myzus hemerocallis* Takahashi, alate. Fig. 164, head. Fig. 165, antennal segments III-VI. Fig. 166, colour indication of antennal segments III-VI.



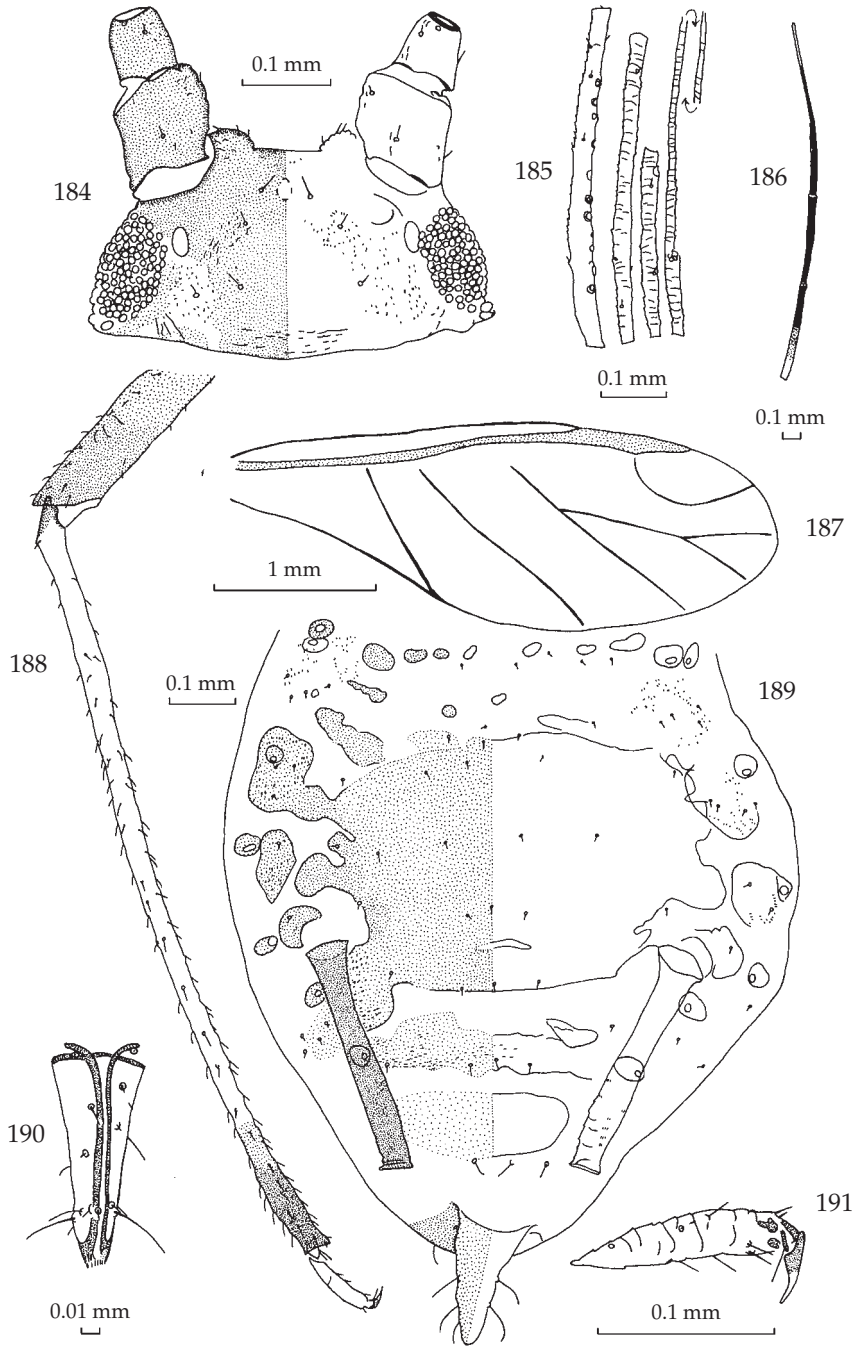
Figs 167-171. *Myzus ornatus* Laing, apterous viviparous ♀. Fig. 167, dorsal side of the body and ventral spiracles. Fig. 168, antennal segments III-VI. Fig. 169, hind leg. Fig. 170, last rostral segment. Fig. 171, second tarsal segment of the hind leg.



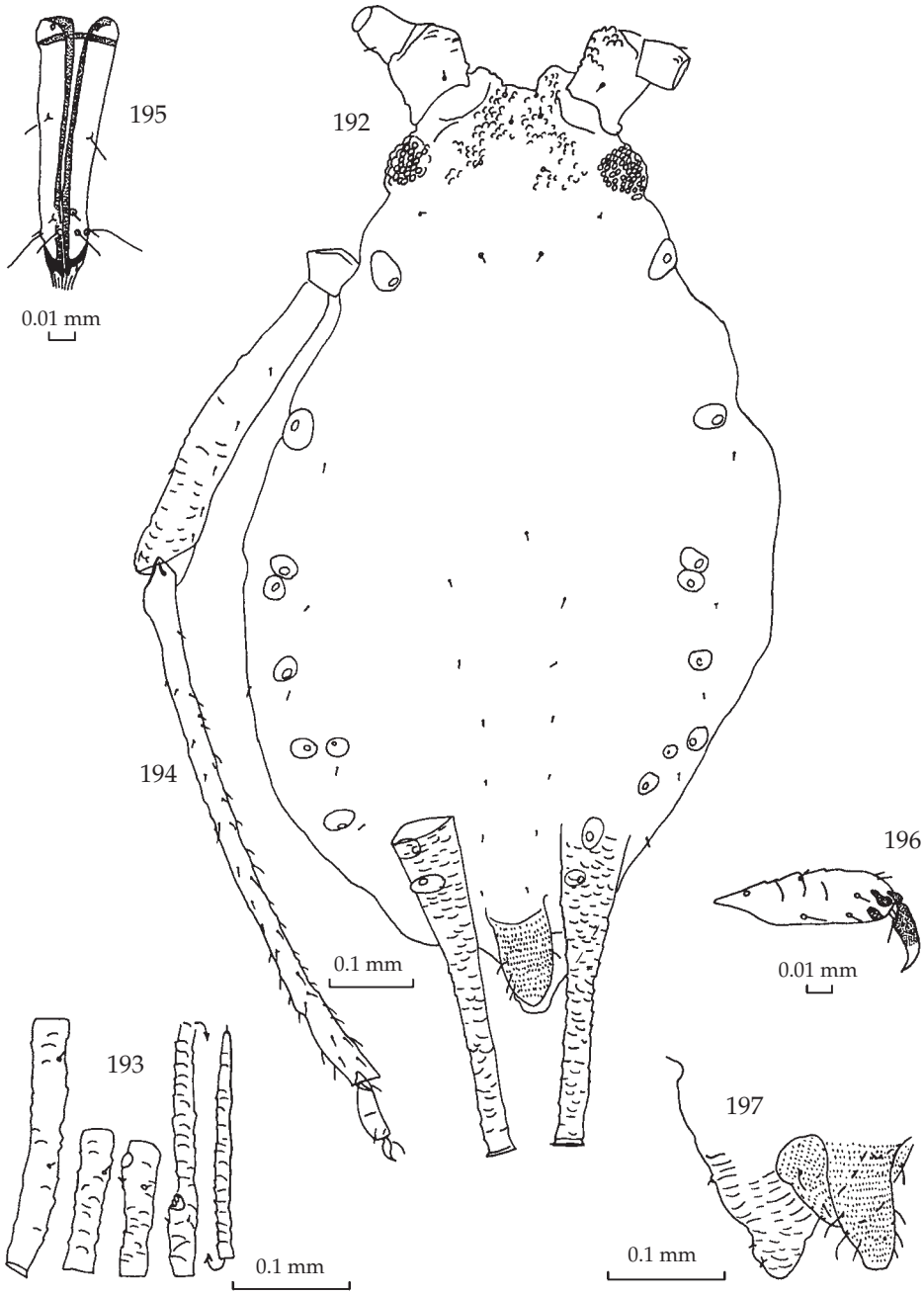
Figs 172-177. *Myzus ornatus* Laing, alate. Fig. 172, head. Fig. 173, antennal segments III-VI. Fig. 174, colour indication of antennal segments. Fig. 175, last rostral segment. Fig. 176, dorsal side of the body and ventral spiracles. Fig. 177, second tarsal segment of the hind leg.



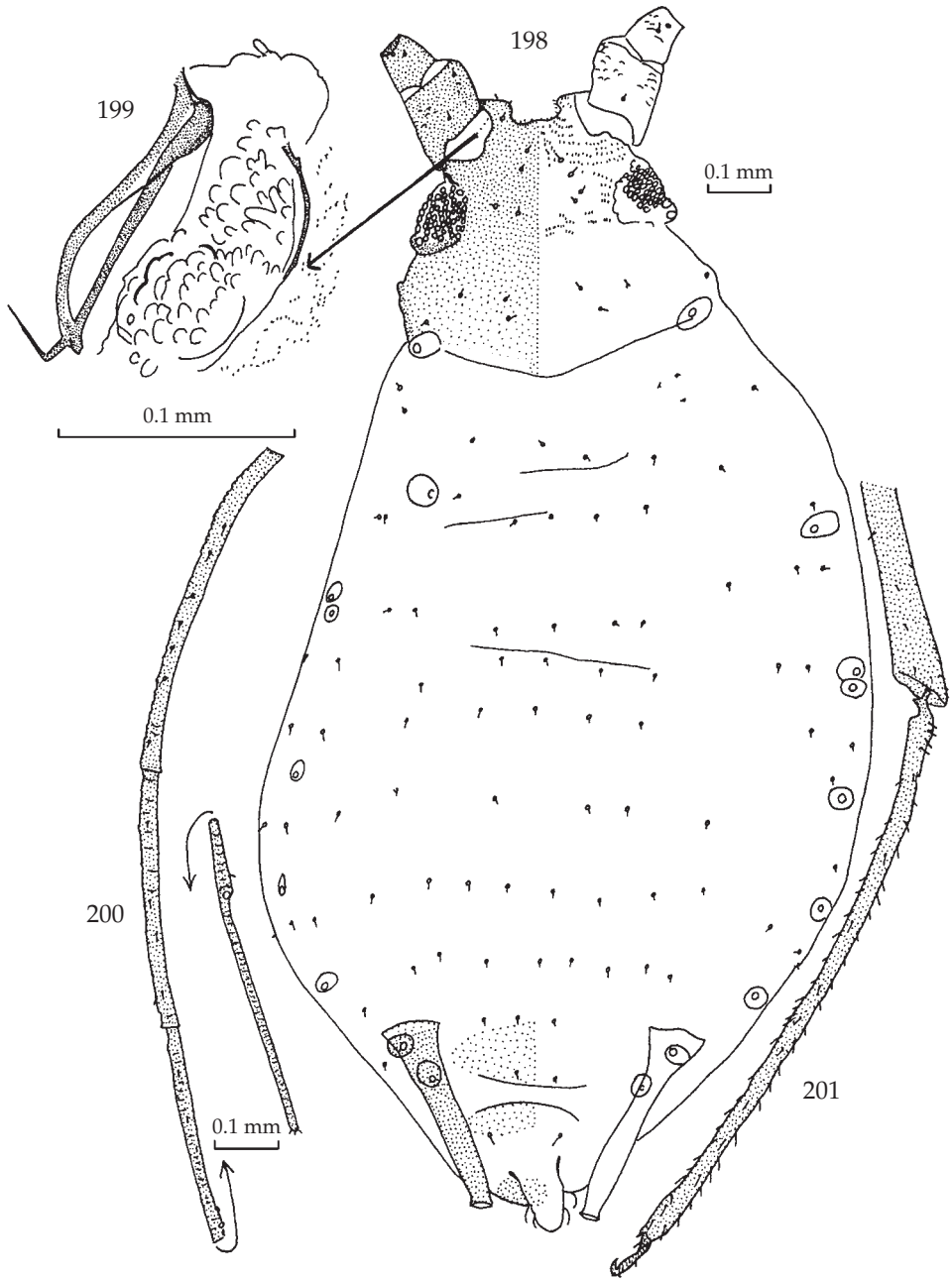
Figs 178-183. *Myzus persicae* (Sulzer), apterous viviparous ♀. Fig. 178, dorsal side of the body and ventral spiracles. Fig. 179, antennal segments III-VI. Fig. 180, colour indication of antennal segments III-VI. Fig. 181, last rostral segment. Fig. 182, hind leg. Fig. 183, second tarsal segment of the hind leg.



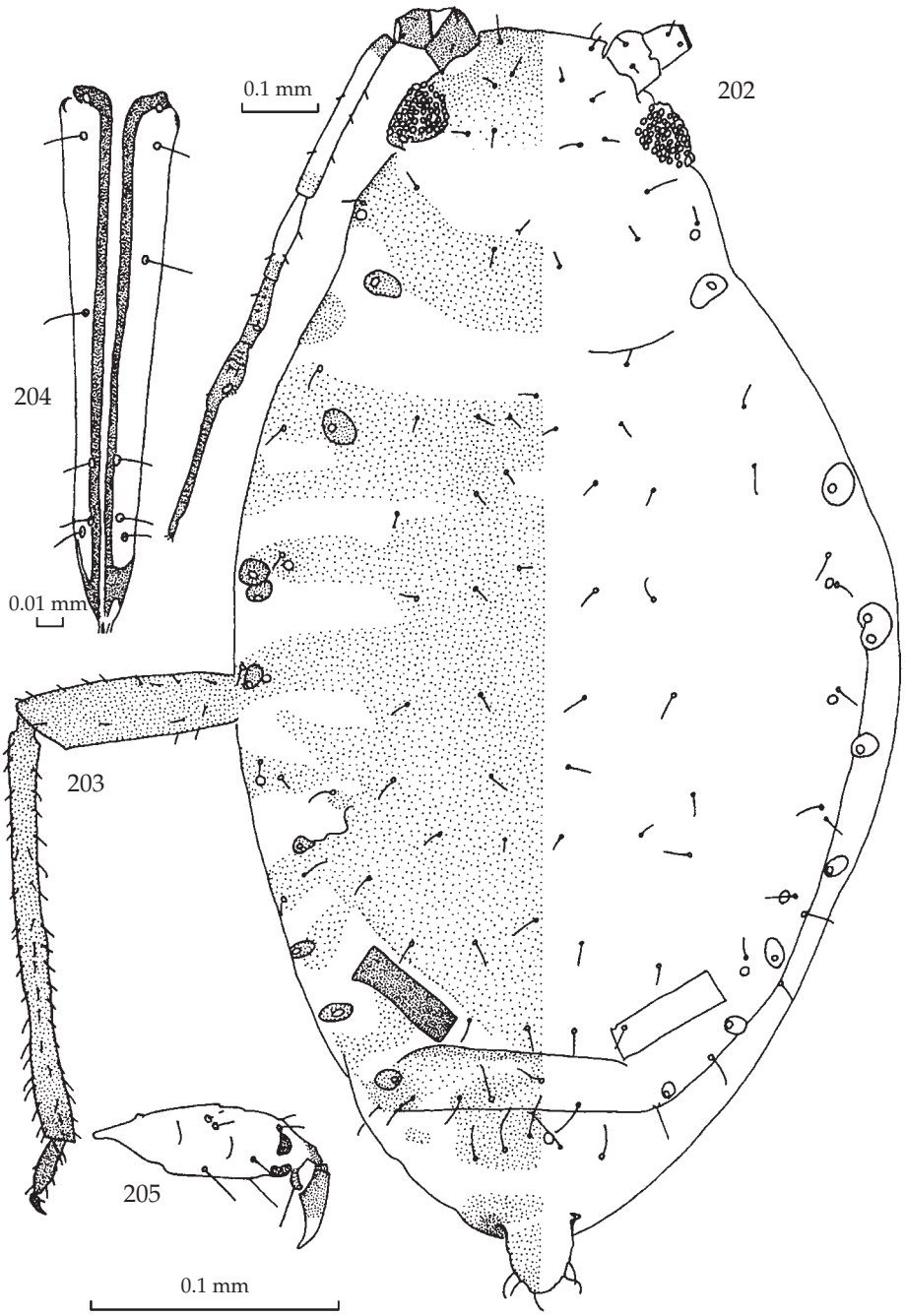
Figs 184-191. *Myzus persicae* (Sulzer), alate. Fig. 184, head. Fig. 185, antennal segments III-VI. Fig. 186, colour indication of antennal segments III-VI. Fig. 187, wing. Fig. 188, hind leg. Fig. 189, dorsal side of the body and ventral spiracles. Fig. 190, last rostral segment. Fig. 191, second tarsal segment of the hind leg.



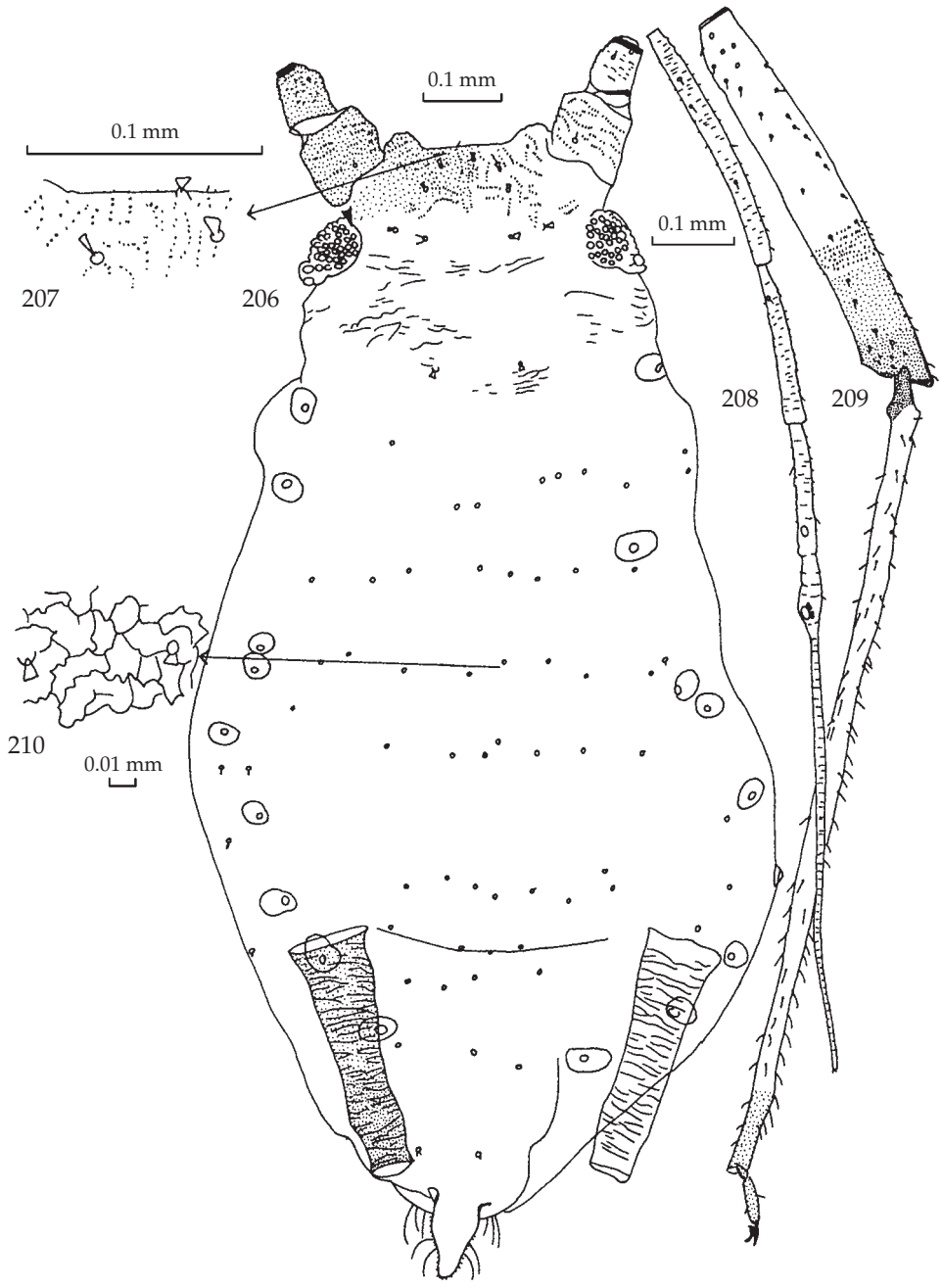
Figs 192-197. *Myzus siegesbeckicola* Strand, apterous viviparous ♀. Fig. 192, dorsal side of the body and ventral spiracles. Fig. 193, antennal segments III-VI. Fig. 194, hind leg. Fig. 195, last rostral segment. Fig. 196, second tarsal segment of the hind leg. Fig. 197, cauda.



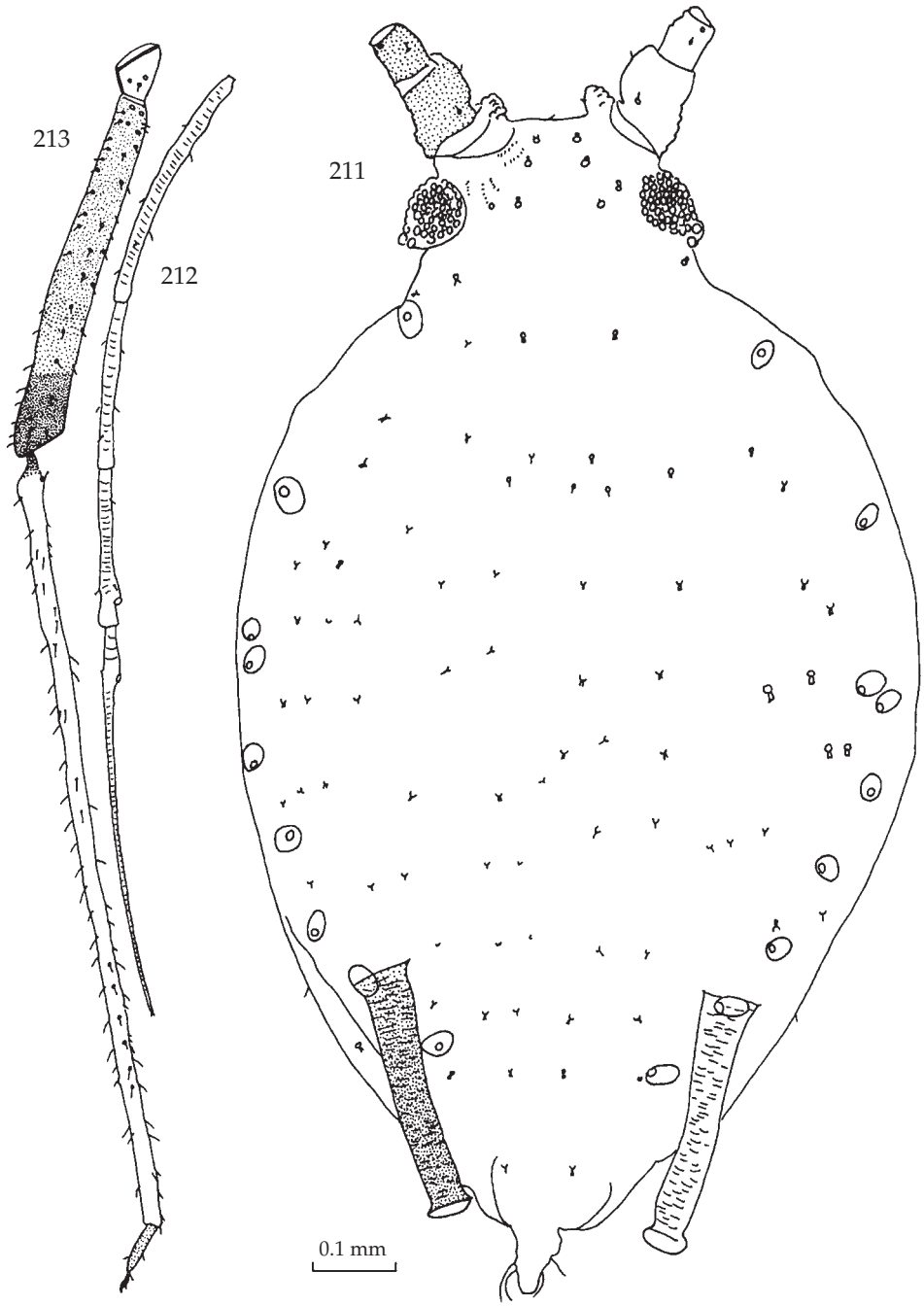
Figs 198-201. *Neotoxoptera oliveri* (Essig), apterous viviparous ♀. Fig. 198, dorsal side of the body and ventral spiracles. Fig. 199, ventral side of the antennal tubercle. Fig. 200, antennal segments III-VI. Fig. 201, hind leg.



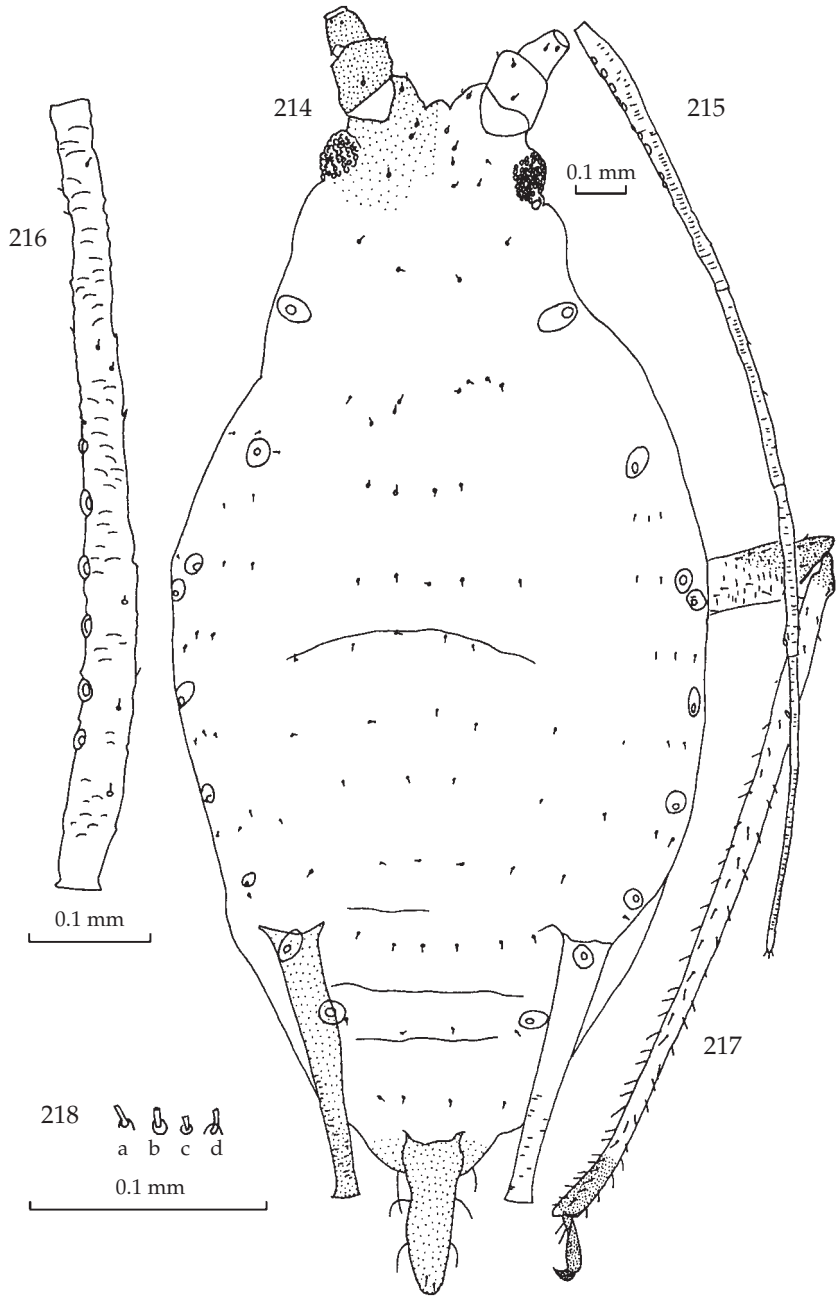
Figs 202-205. *Oedisiphum compositarum* van der Goot, apterous viviparous ♀. Fig. 202, dorsal side of the body. Fig. 203, hind leg. Fig. 204, last rostral segment. Fig. 205, second tarsal segment of the hind leg.



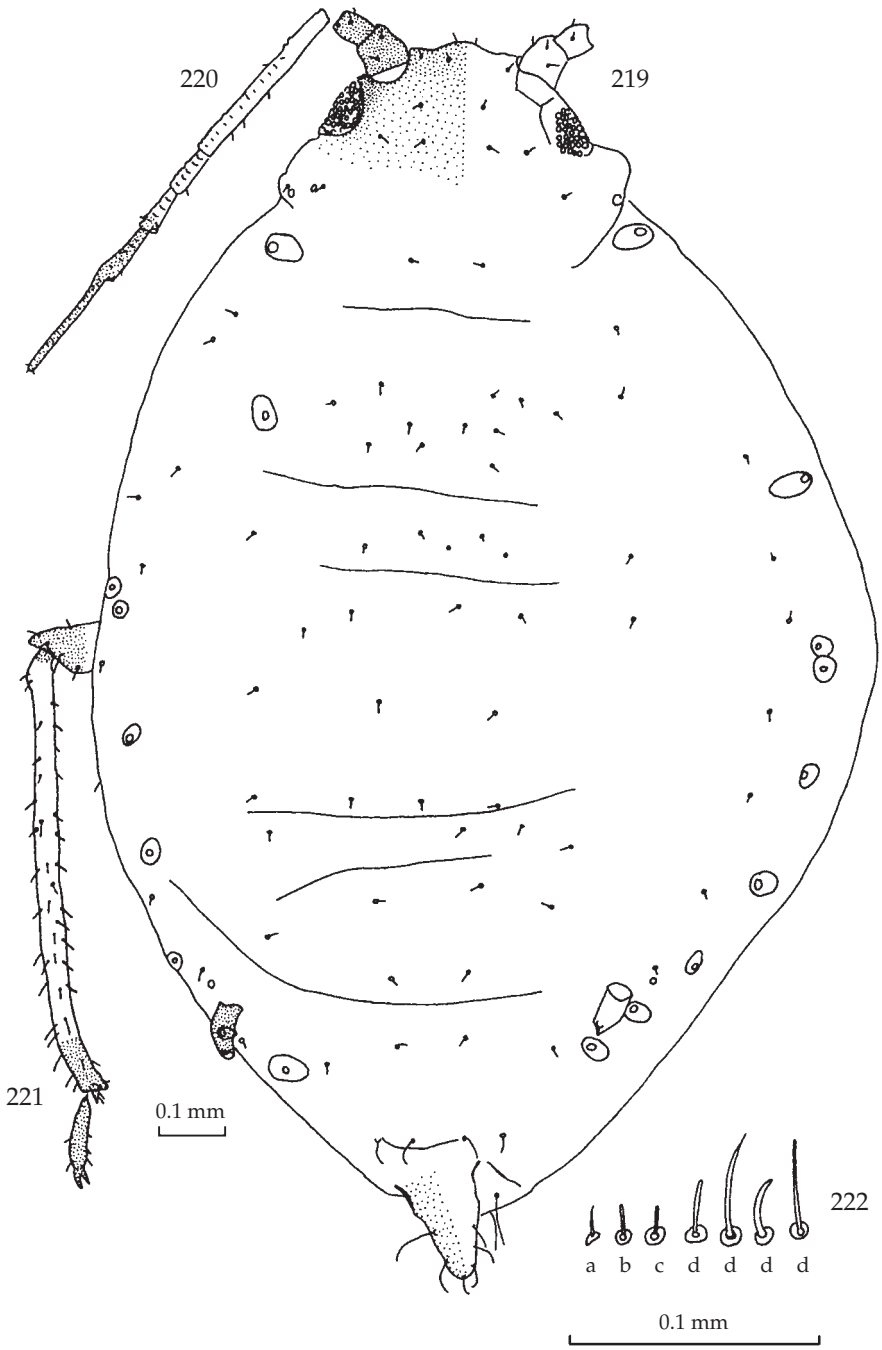
Figs 206-210. *Pentalonia nigronervosa* Coquerel, apterous viviparous ♀. Fig. 206, dorsal side of the body and ventral spiracles. Fig. 207, apical part of the head with some hairs. Fig. 208, antennal segments III-VI. Fig. 209, hind leg. Fig. 210, dorsal structure of the abdomen with hairs.



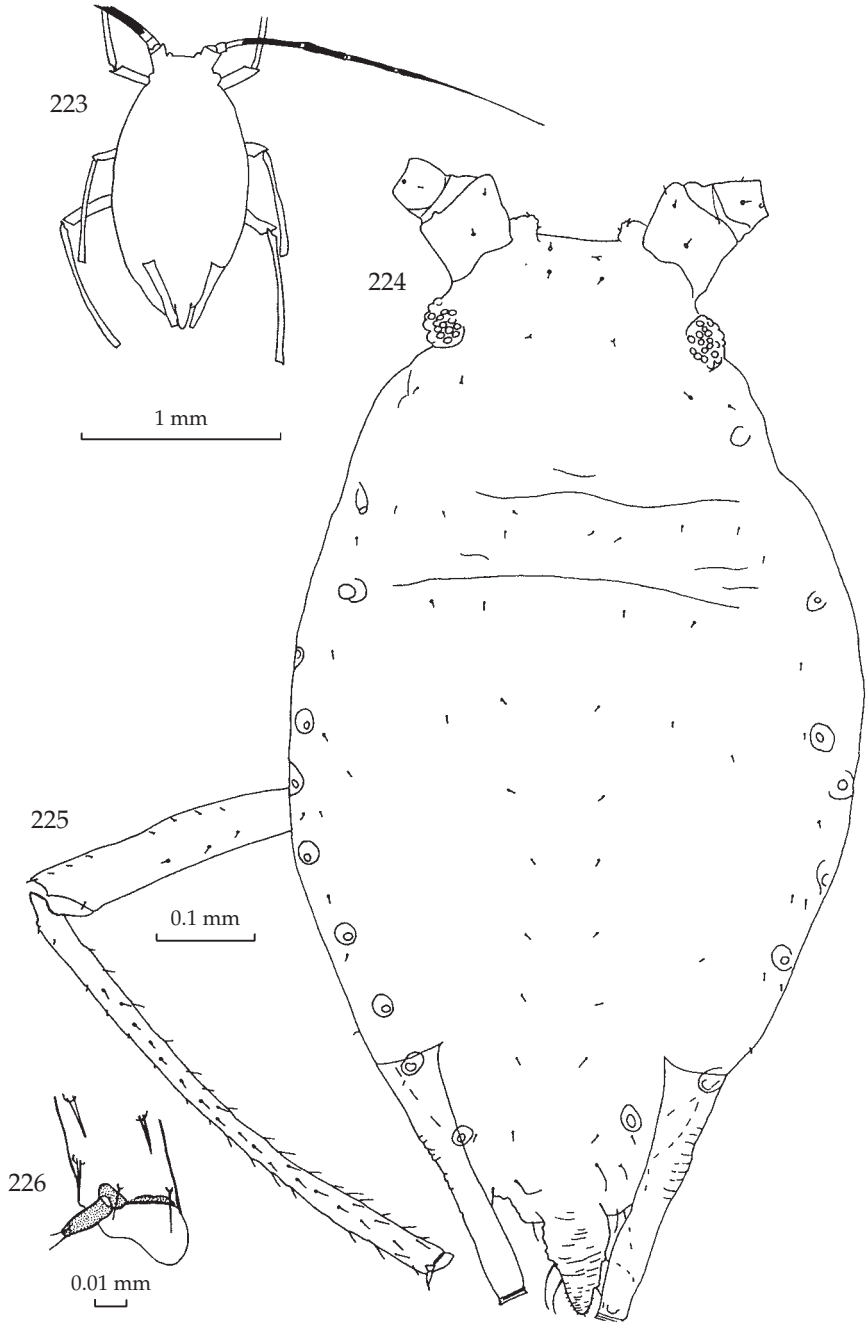
Figs 211-213. *Pentalonia nigronervosa*, f. *caladii* van der Goot, apterous viviparous ♀. Fig. 211, dorsal side of the body and ventral spiracles. Fig. 212, antennal segments III-VI. Fig. 213, hind leg.



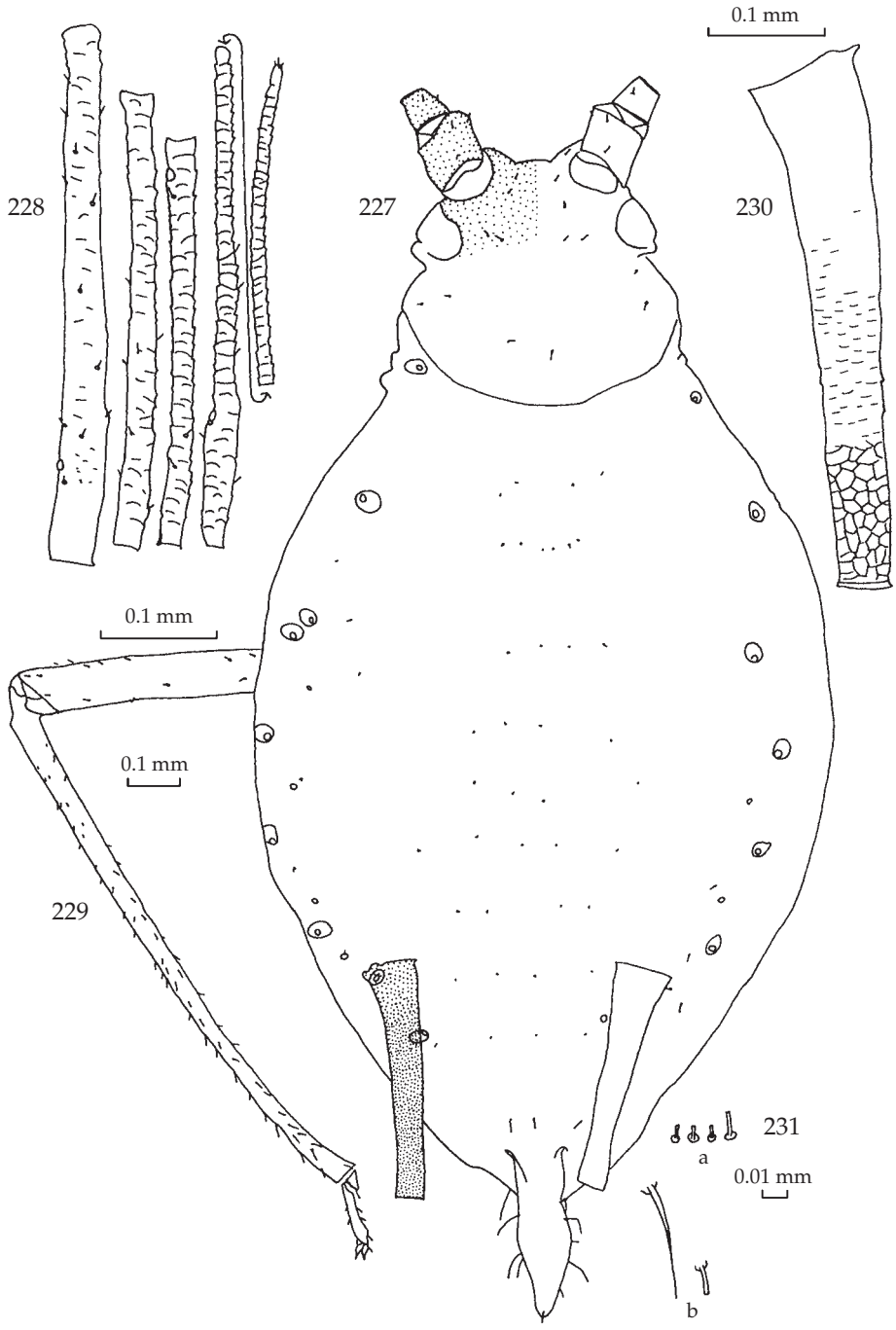
Figs 214-218. *Rhodobium porosum* (Sanderson), apterous viviparous ♀. Fig. 214, dorsal side of the body and ventral spiracles. Fig. 215, antennal segments III-VI. Fig. 216, antennal segment III. Fig. 217, hind leg. Fig. 218, hairs of: **a** antenna; **b** head; **c** abdominal tergum IV; **d** abdominal tergum VIII.



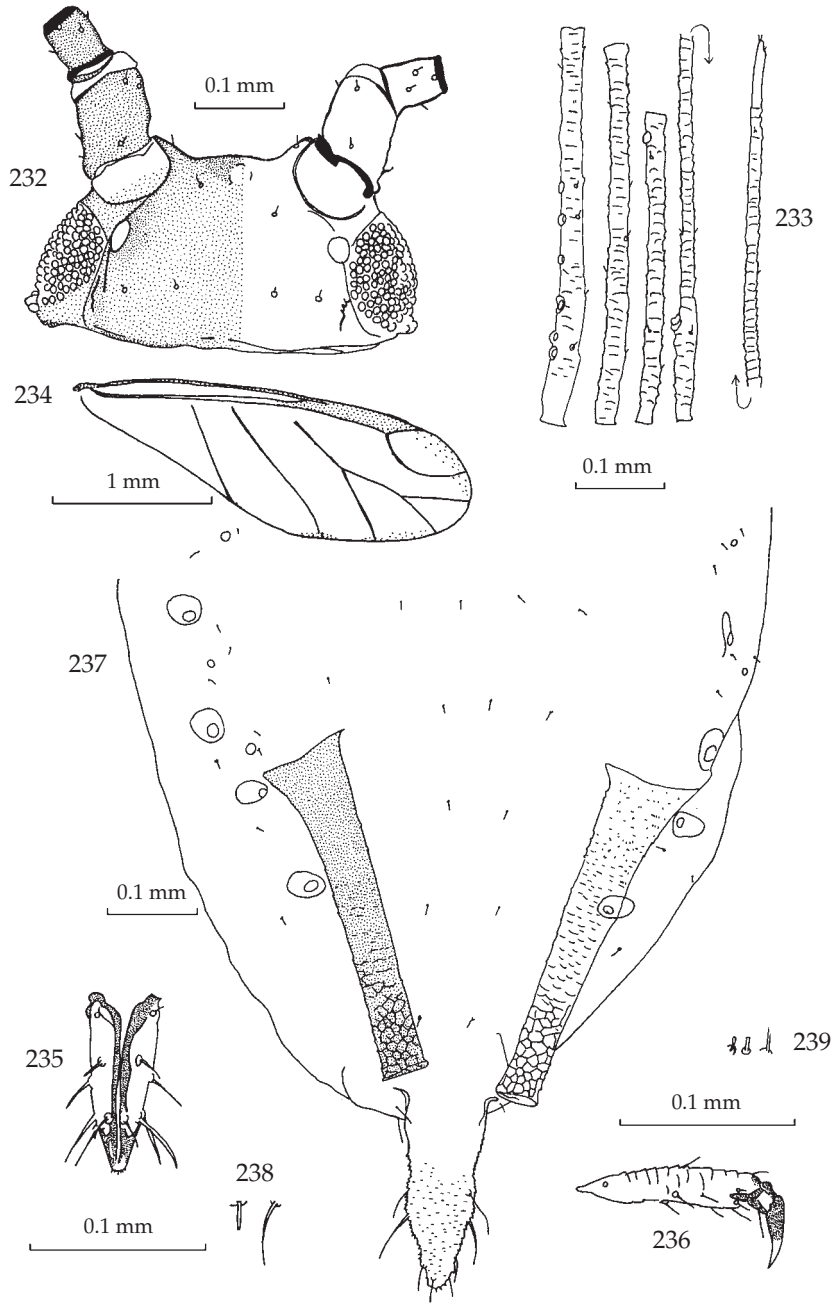
Figs 219-222. *Semiaphis heraclei* (Takahashi), apterous viviparous ♀. Fig. 219, dorsal side of the body. Fig. 220, antennal segments III-VI. Fig. 221, hind leg. Fig. 222, hairs of: **a** antenna; **b** head; **c** abdominal tergum IV; **d** abdominal tergum VIII.



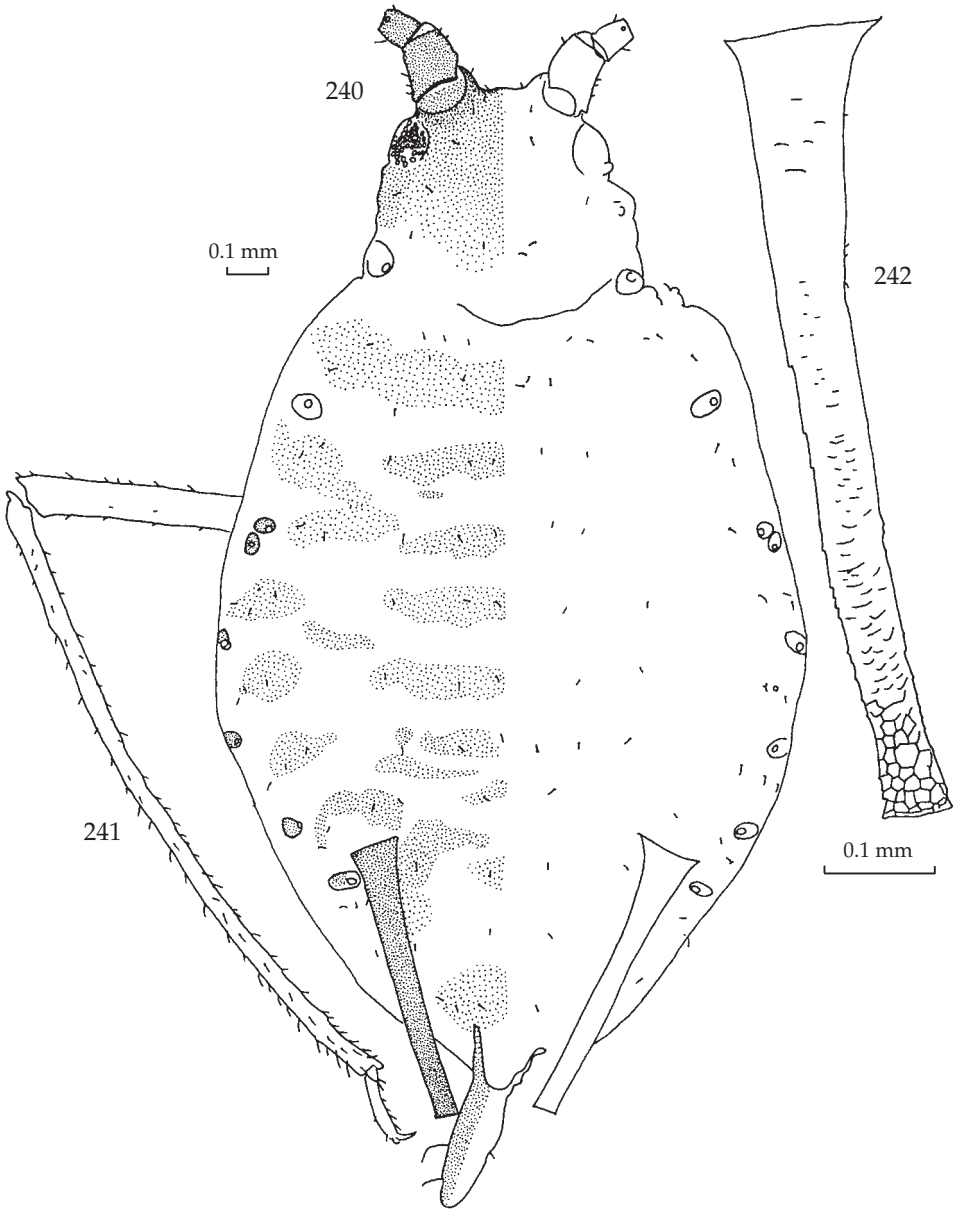
Figs 223-226. *Shinjia orientalis* (Mordvilko), apterous viviparous ♀. Fig. 223, impression of the body and antennae. Fig. 224, dorsal side of the body and ventral spiracles. Fig. 225, hind leg. Fig. 226, separate tarsus II enlarged.



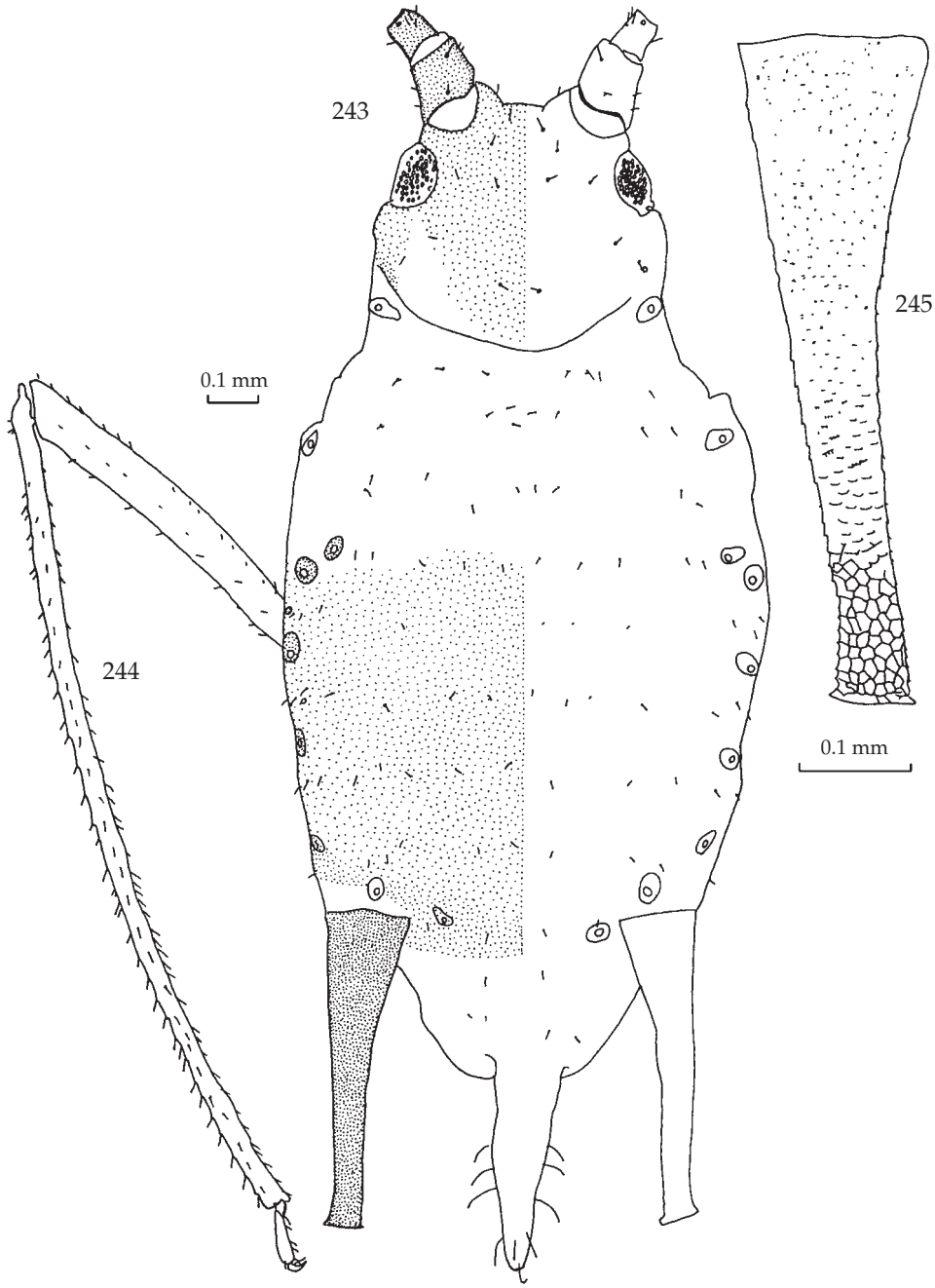
Figs 227-231. *Sitobion breyniae* spec. nov., apterous viviparous ♀. Fig. 227, dorsal side of the body and ventral spiracles. Fig. 228, antennal segments III-VI. Fig. 229, hind leg. Fig. 230, siphunculus. Fig. 231, hairs of: **a** (from left to right): antenna, head, abdominal tergum IV, abdominal tergum VIII; **b** base (left) and posterior (right) hairs of cauda.



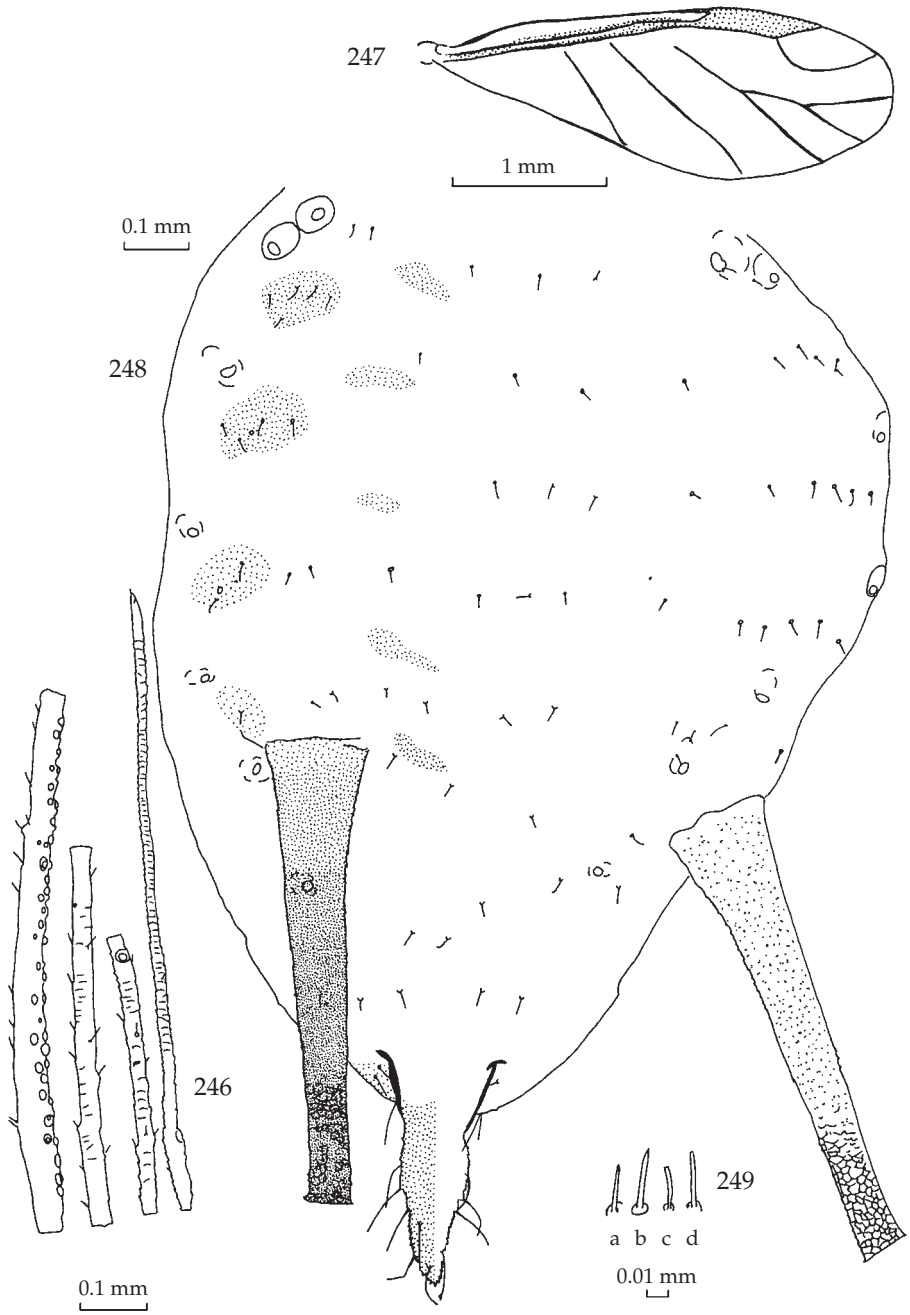
Figs 232-239. *Sitobion breyniae* spec. nov., alate. Fig. 232, head. Fig. 233, antennal segments III-VI. Fig. 234, wing. Fig. 235, last rostral segment. Fig. 236, second tarsal segment of the hind leg. Fig. 237, dorsal side of the abdomen and ventral spiracles. Fig. 238, hairs of apex of cauda. Fig. 239, hairs of (from left to right): antenna, head, abdominal tergum VIII.



Figs 240-242. *Sitobion graminis* Takahashi, apterous viviparous ♀. Fig. 240, dorsal side of the body and ventral spiracles. Fig. 241, hind leg. Fig. 242, siphunculus.



Figs 243-245. *Sitobion ibarae* (Matsumura), apterous viviparous ♀. Fig. 243, dorsal side of the body and ventral spiracles. Fig. 244, hind leg. Fig. 245, siphunculus.



Figs 246-249. *Sitobion ibarae* (Matsumura), alate. Fig. 246, antennal segments III-VI. Fig. 247, wing. Fig. 248, dorsal side of the abdomen and ventral spiracles. Fig. 249, hairs of: **a** antenna; **b** head; **c** abdominal tergum IV; **d** abdominal tergum VIII.

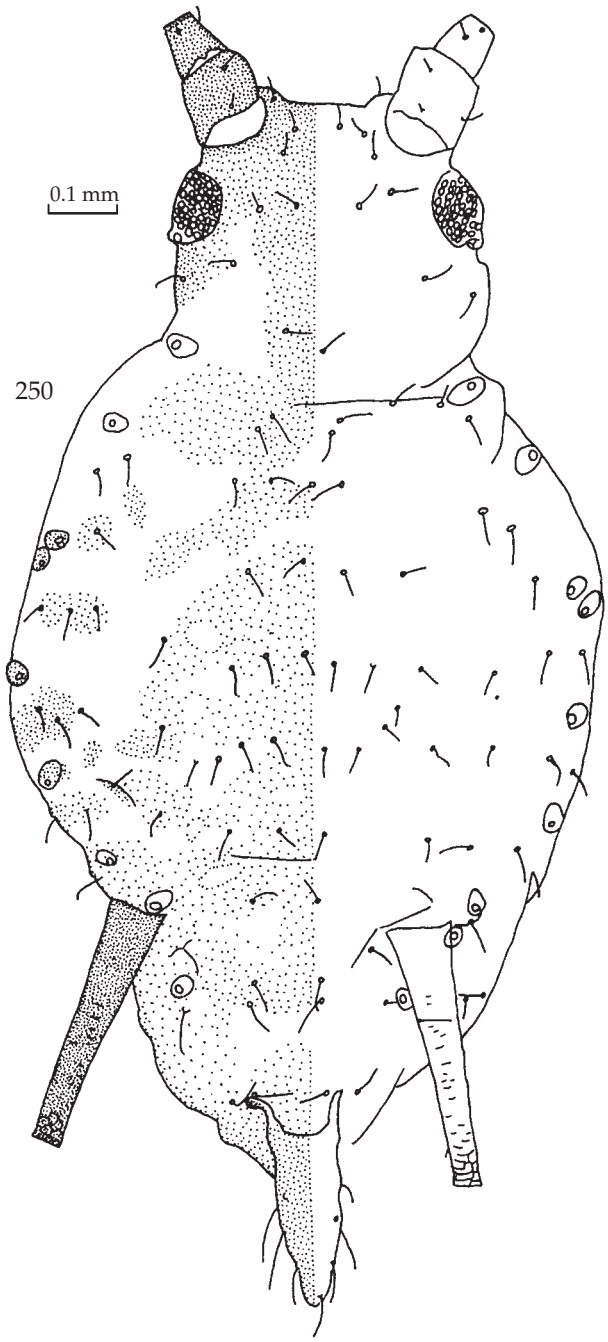
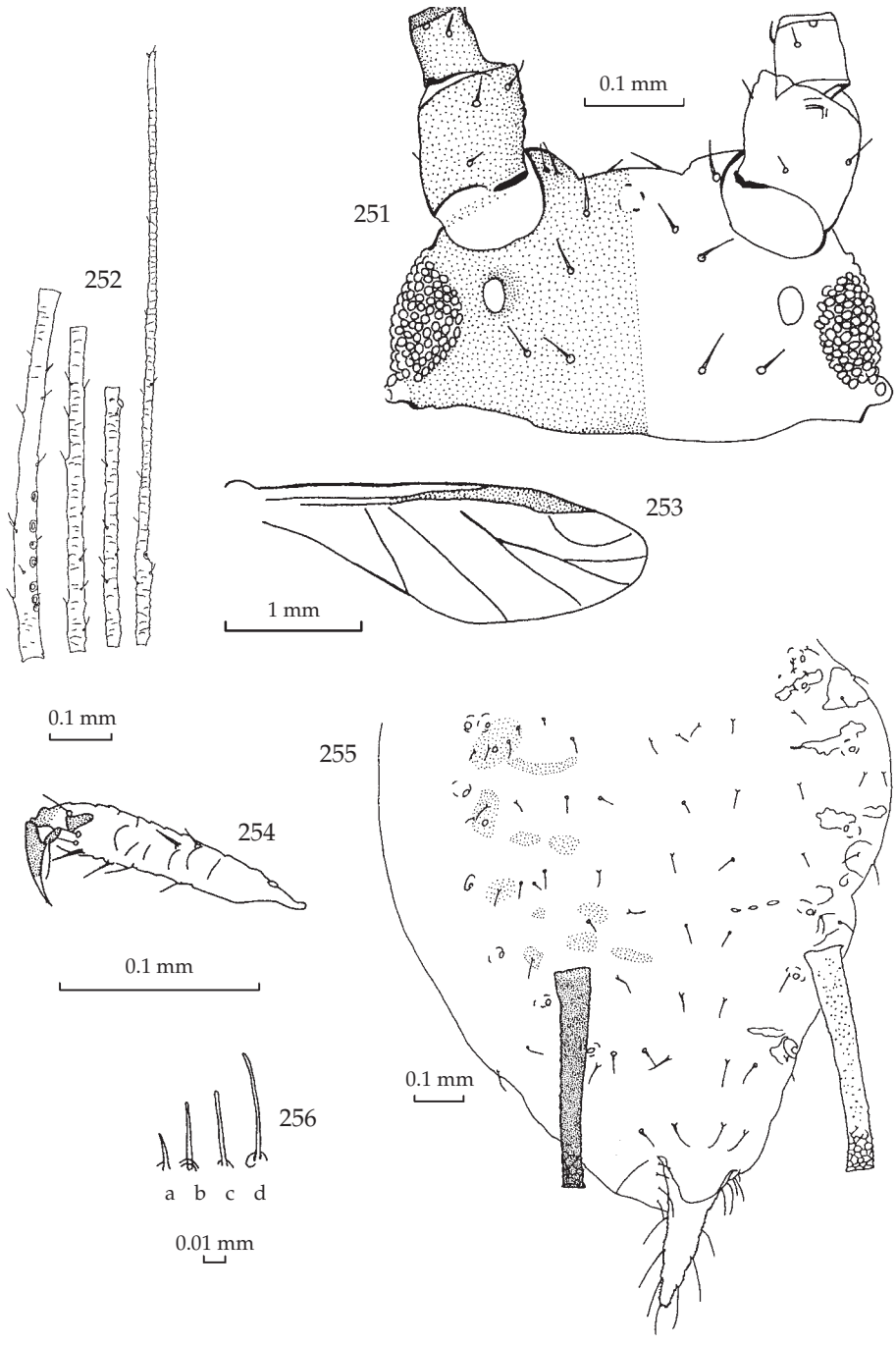
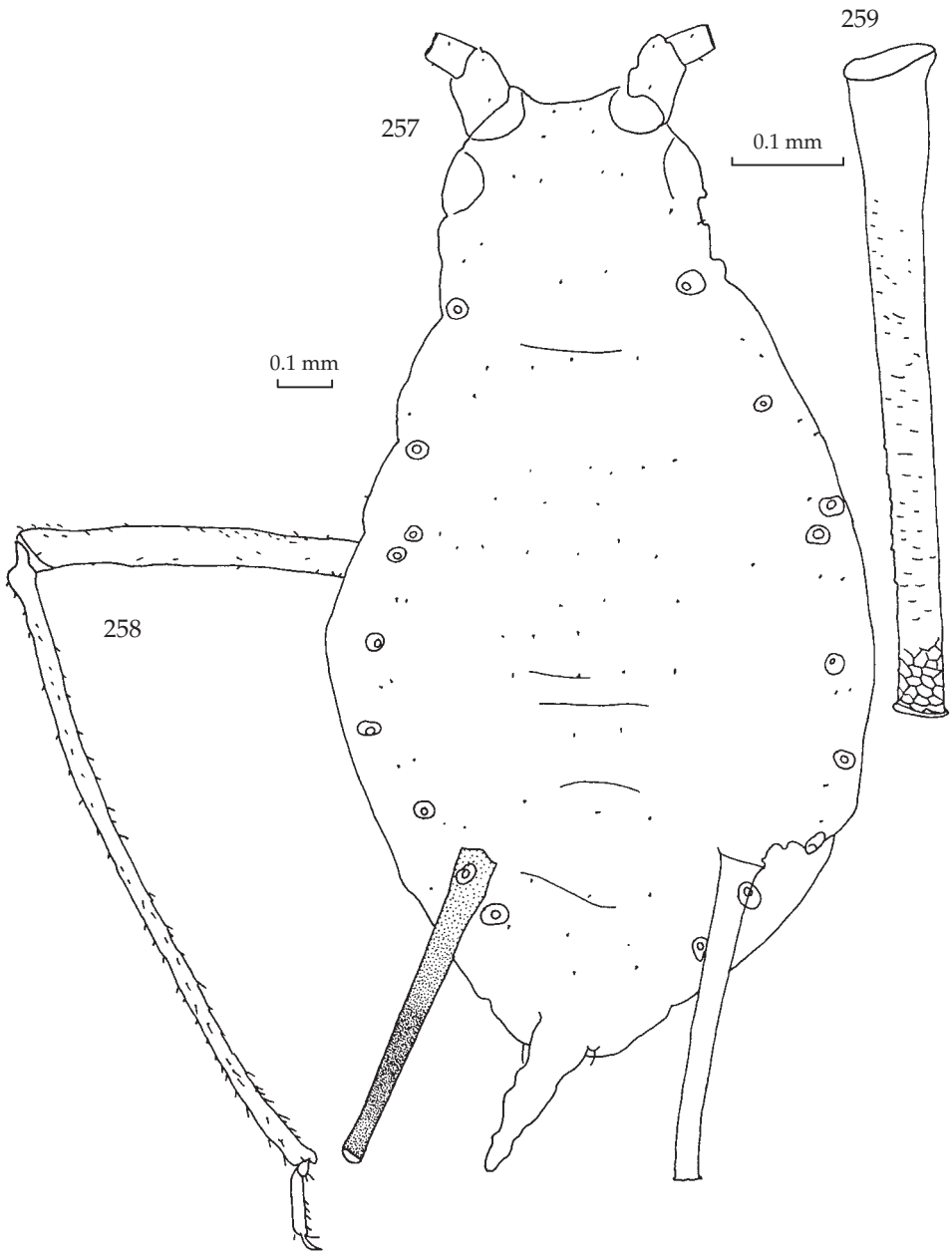


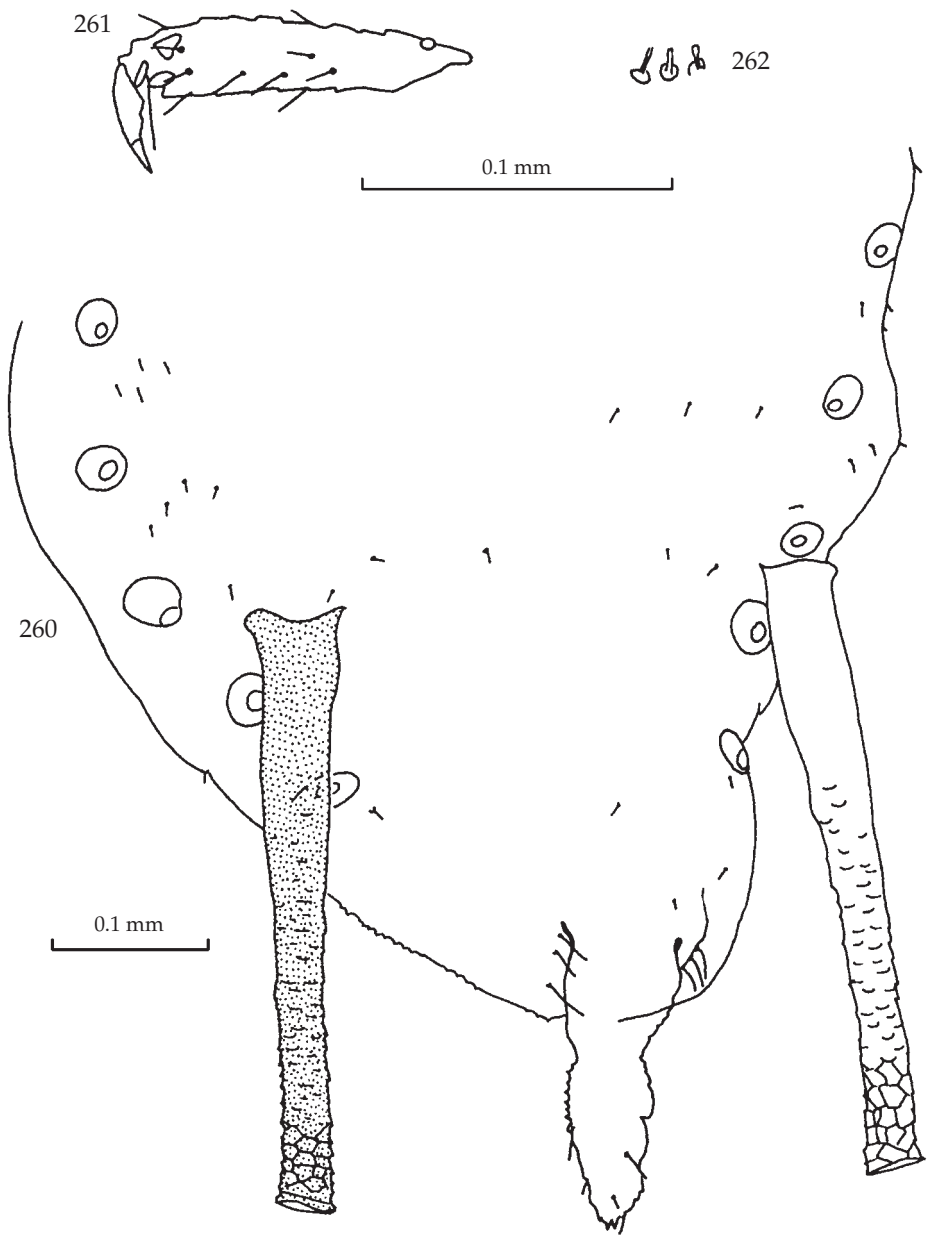
Fig. 250. *Sitobion javanicum* spec. nov., apterous viviparous ♀. Dorsal side of the body and ventral spiracles.



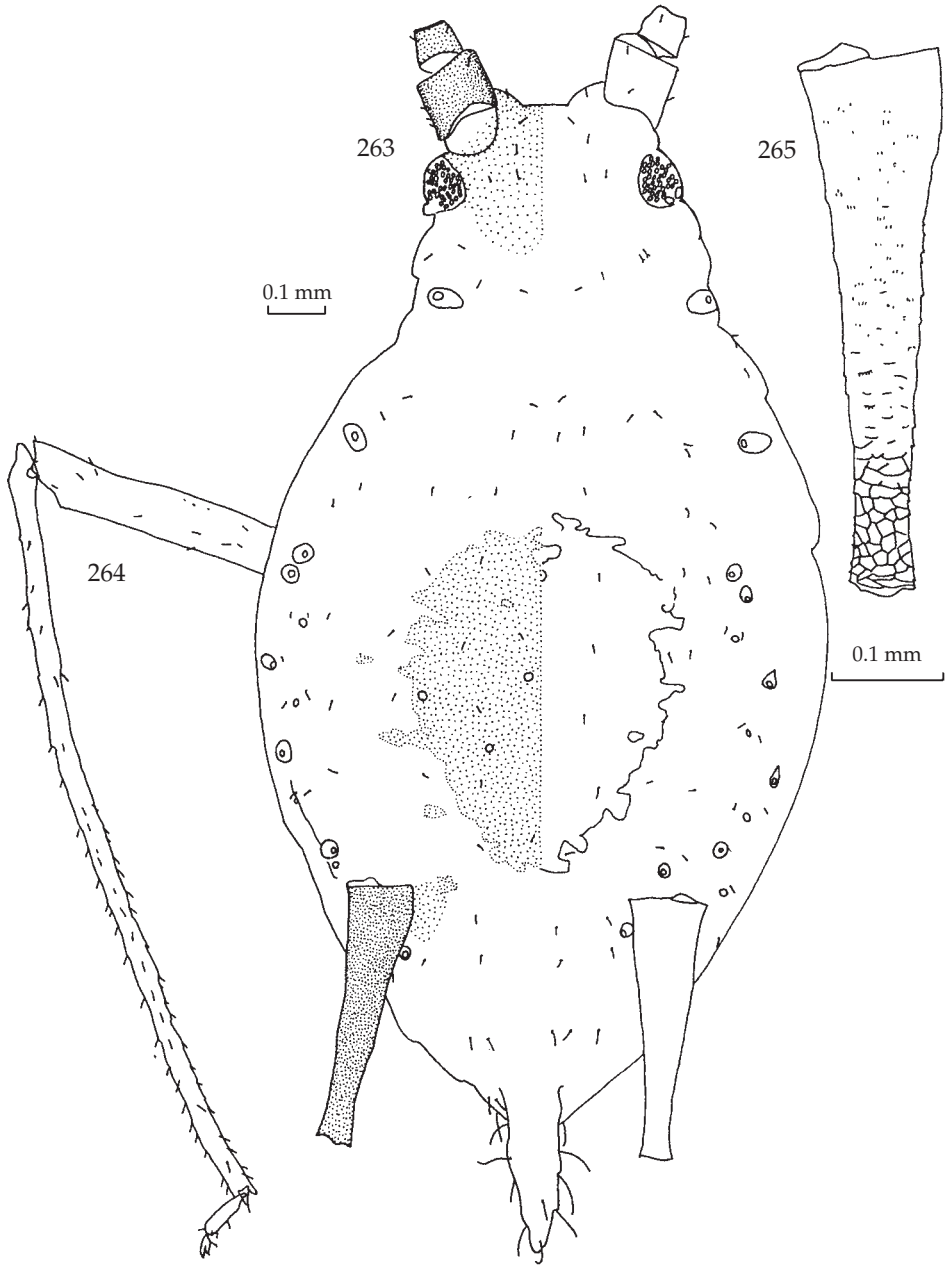
Figs 251-256. *Sitobion javanicum* spec. nov., alate. Fig. 251, head. Fig. 252, antennal segments III-VI. Fig. 253, wing. Fig. 254, second tarsal segment of the hind leg. Fig. 255, dorsal side of the abdomen and ventral spiracles. Fig. 256, hairs of: **a** antenna; **b** head; **c** abdominal tergum IV; **d** abdominal tergum VIII.



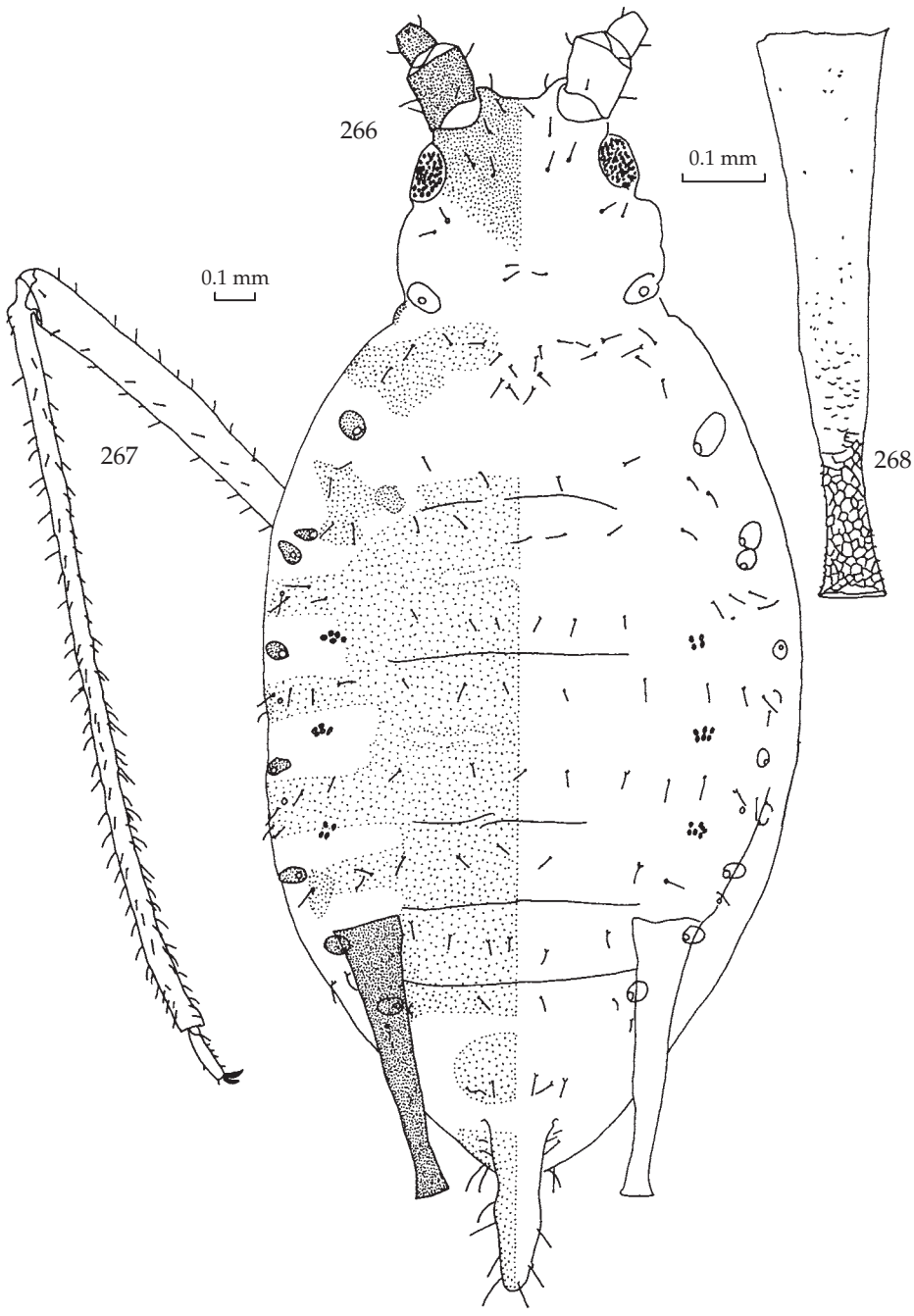
Figs 257-259. *Sitobion lambersi* David, apterous viviparous ♀. Fig. 257, dorsal side of the body and ventral spiracles. Fig. 258, hind leg. Fig. 259, siphunculus.



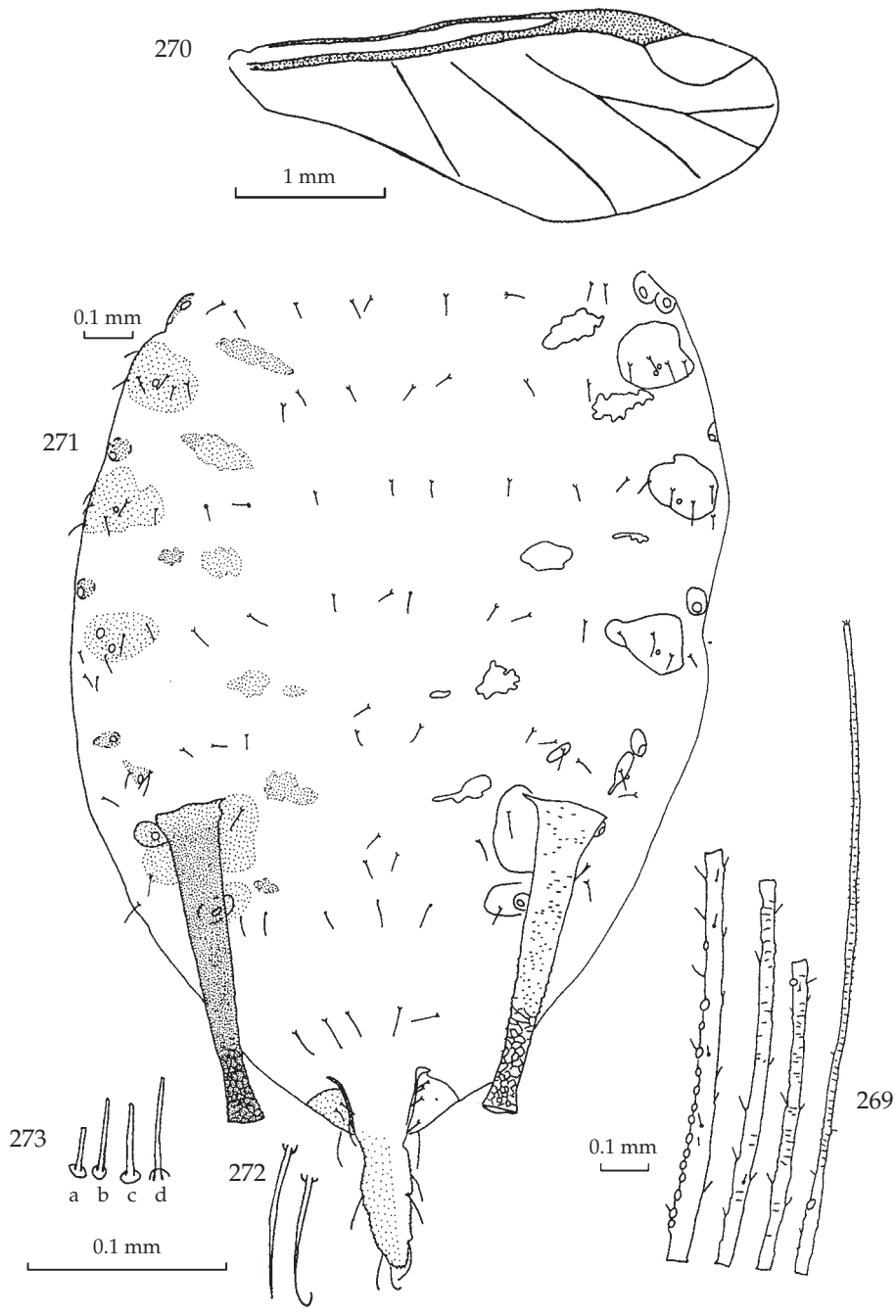
Figs 260-262. *Sitobion lambersi* David, alate. Fig. 260, dorsal side of the body and ventral spiracles. Fig. 261, second tarsal segment of the hind leg. Fig. 262, hairs of (from left to right): antenna, head, abdominal tergum VIII.



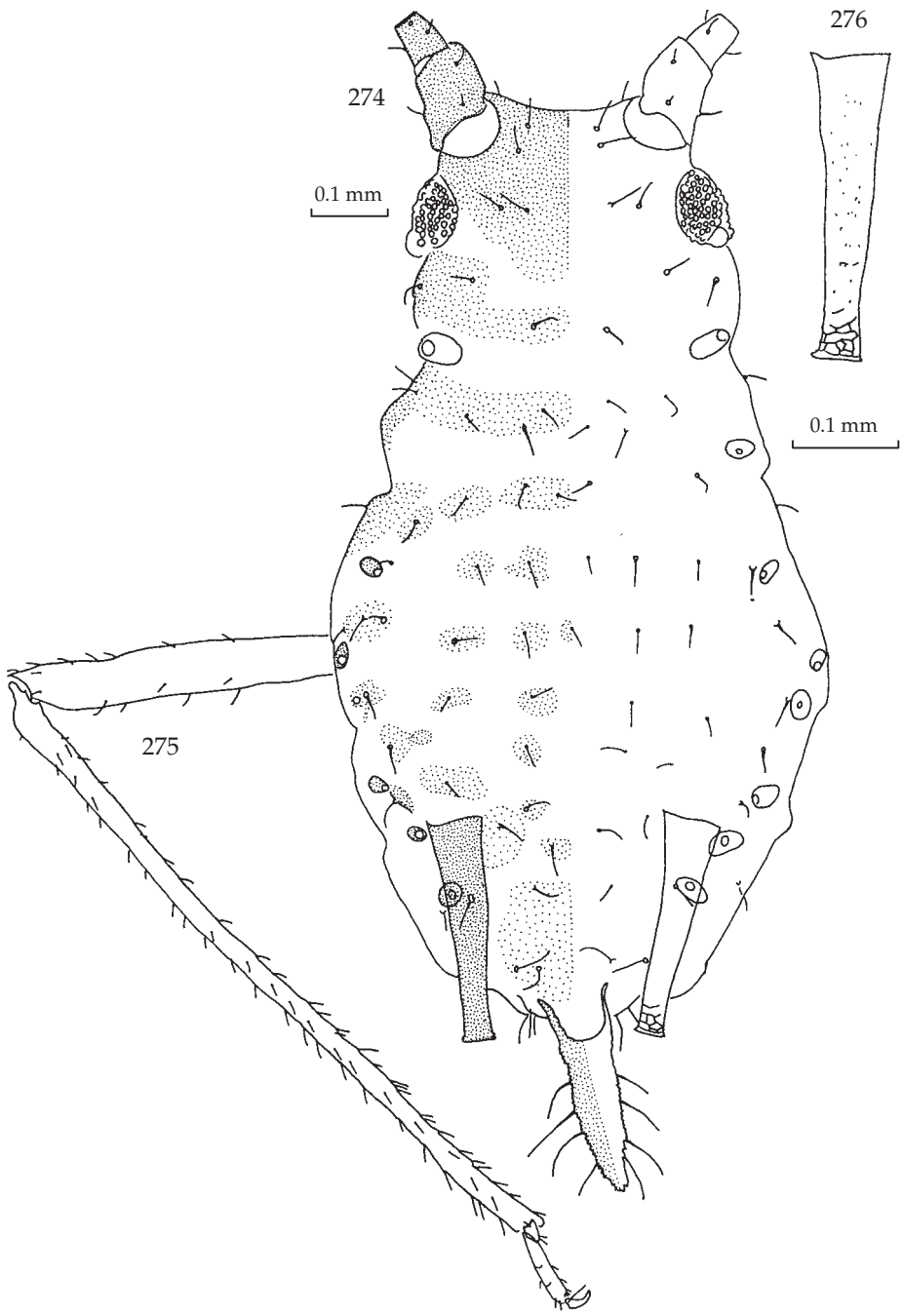
Figs 263-265. *Sitobion luteum* (Buckton), apterous viviparous ♀. Fig. 263, dorsal side of the body and ventral spiracles. Fig. 264, hind leg. Fig. 265, siphunculus.



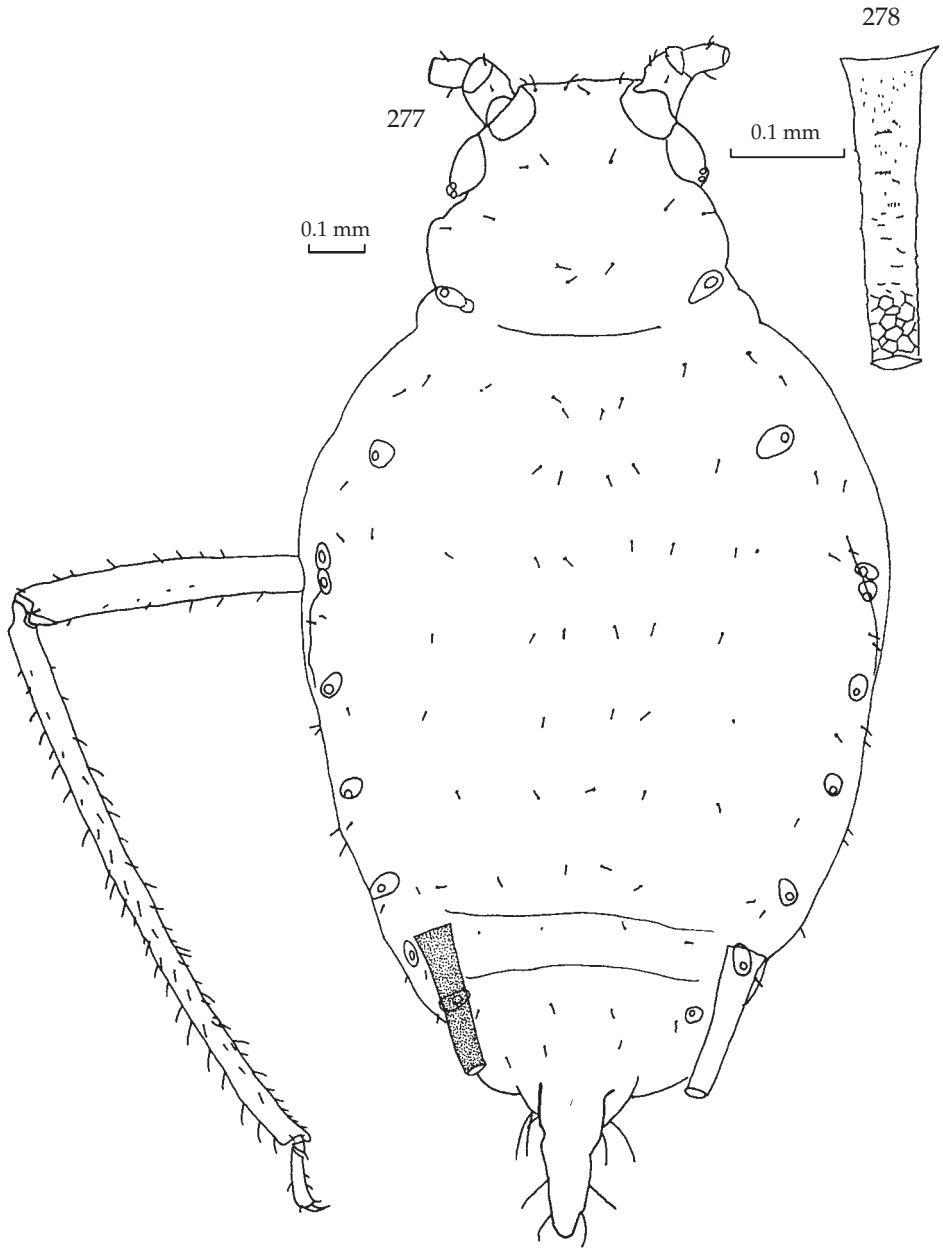
Figs 266-268. *Sitobion miscanthi* (Takahashi), apterous viviparous ♀. Fig. 266, dorsal side of the body and ventral spiracles. Fig. 267, hind leg. Fig. 268, siphunculus.



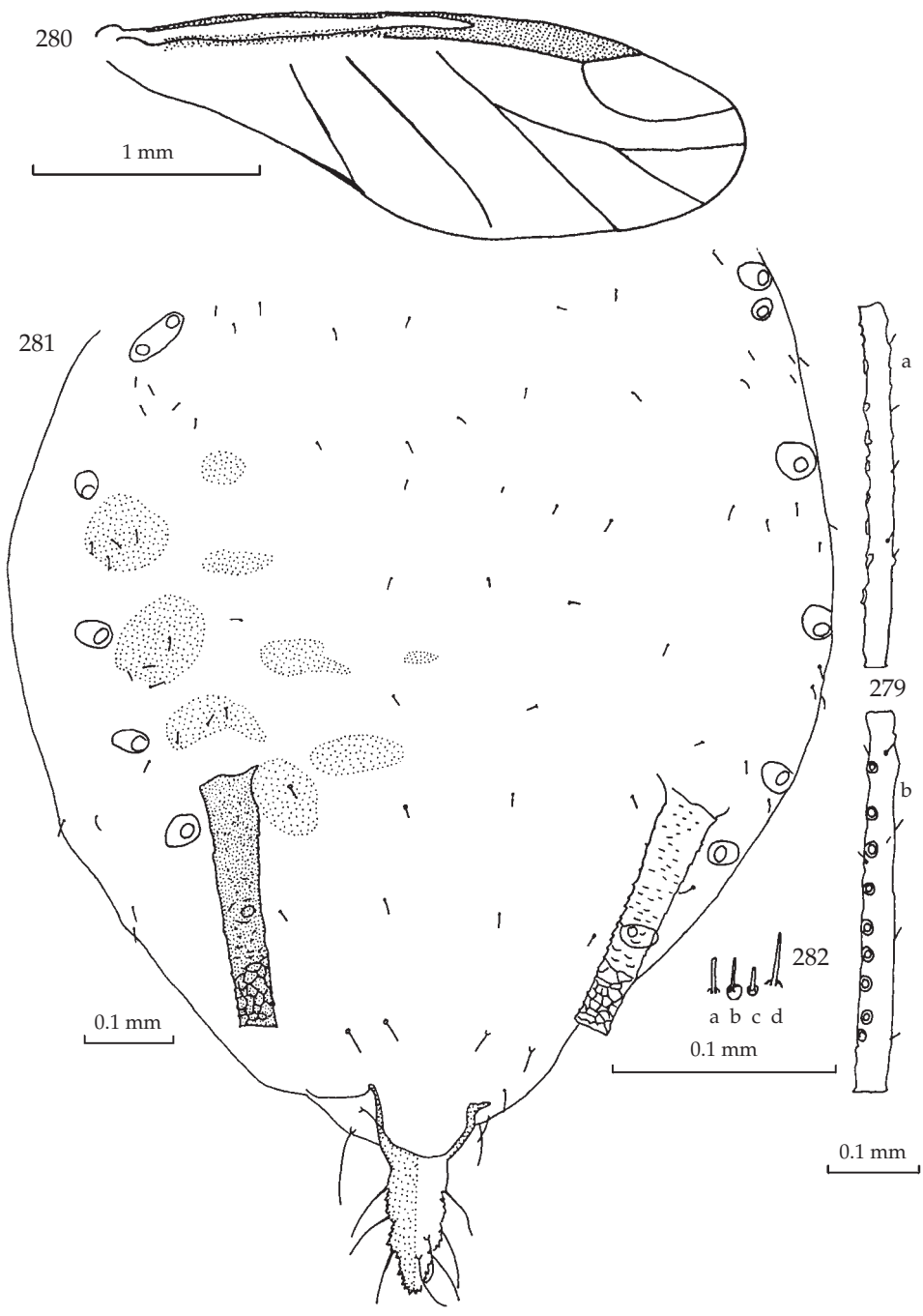
Figs 269-273. *Sitobion miscanthi* (Takahashi), alate. Fig. 269, antennal segments III-VI. Fig. 270, wing. Fig. 271, dorsal side of the abdomen and ventral spiracles. Fig. 272, hairs of cauda. Fig. 273, hairs of: **a** antenna; **b** head; **c** abdominal tergum IV; **d** abdominal tergum VIII.



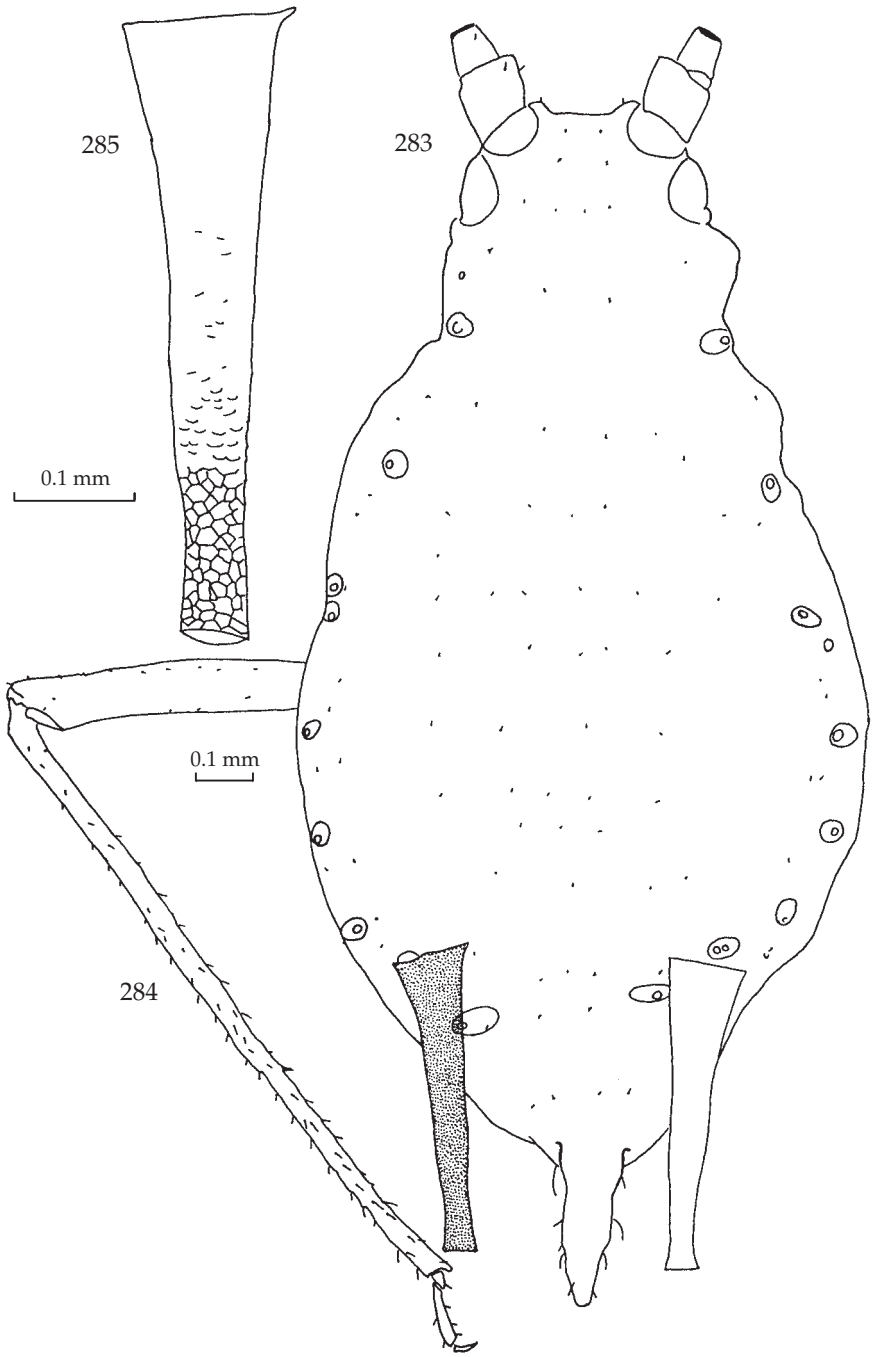
Figs 274-276. *Sitobion orchidacearum* (Franssen & Tiggelovend), apterous viviparous ♀. Fig. 274, dorsal side of the body and ventral spiracles. Fig. 275, hind leg. Fig. 276, siphunculus.



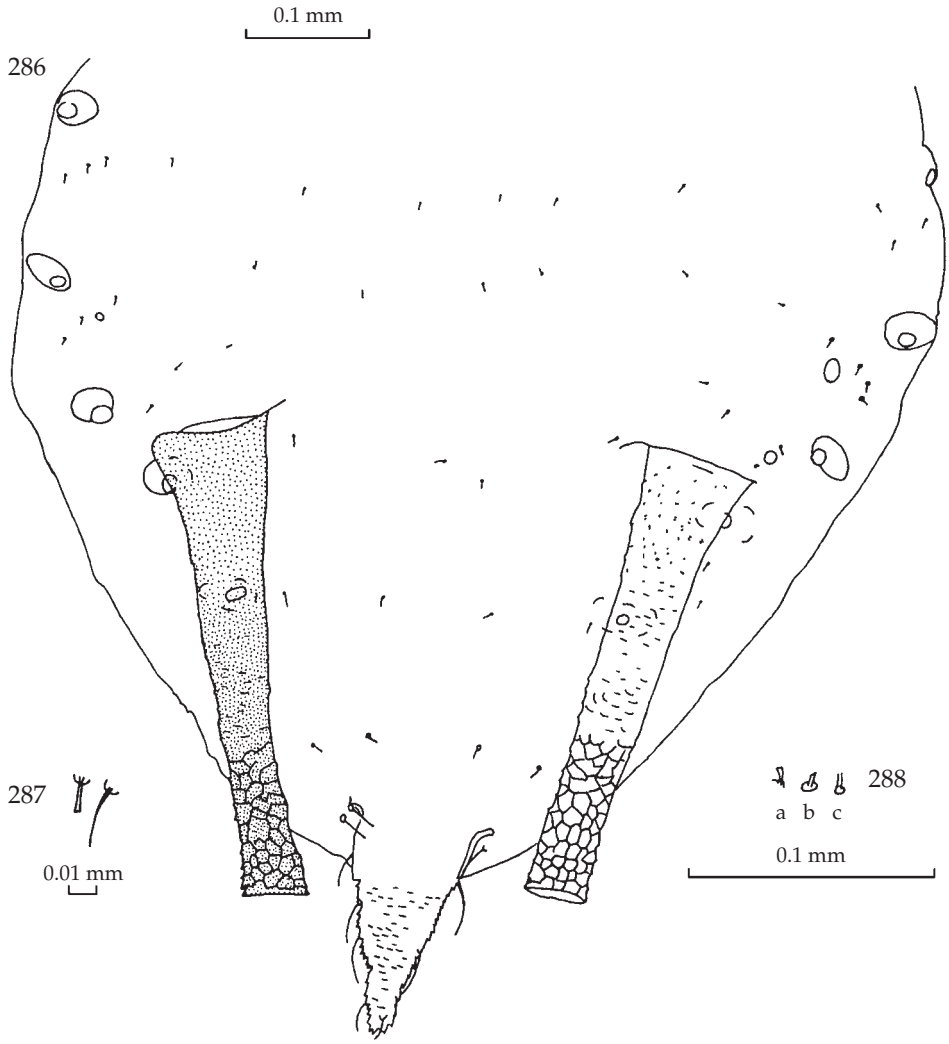
Figs 277-278. *Sitobion pauliani* Remaudière, apterous viviparous ♀. Fig. 277, dorsal side of the body and ventral spiracles, and hind leg. Fig. 278, siphunculus.



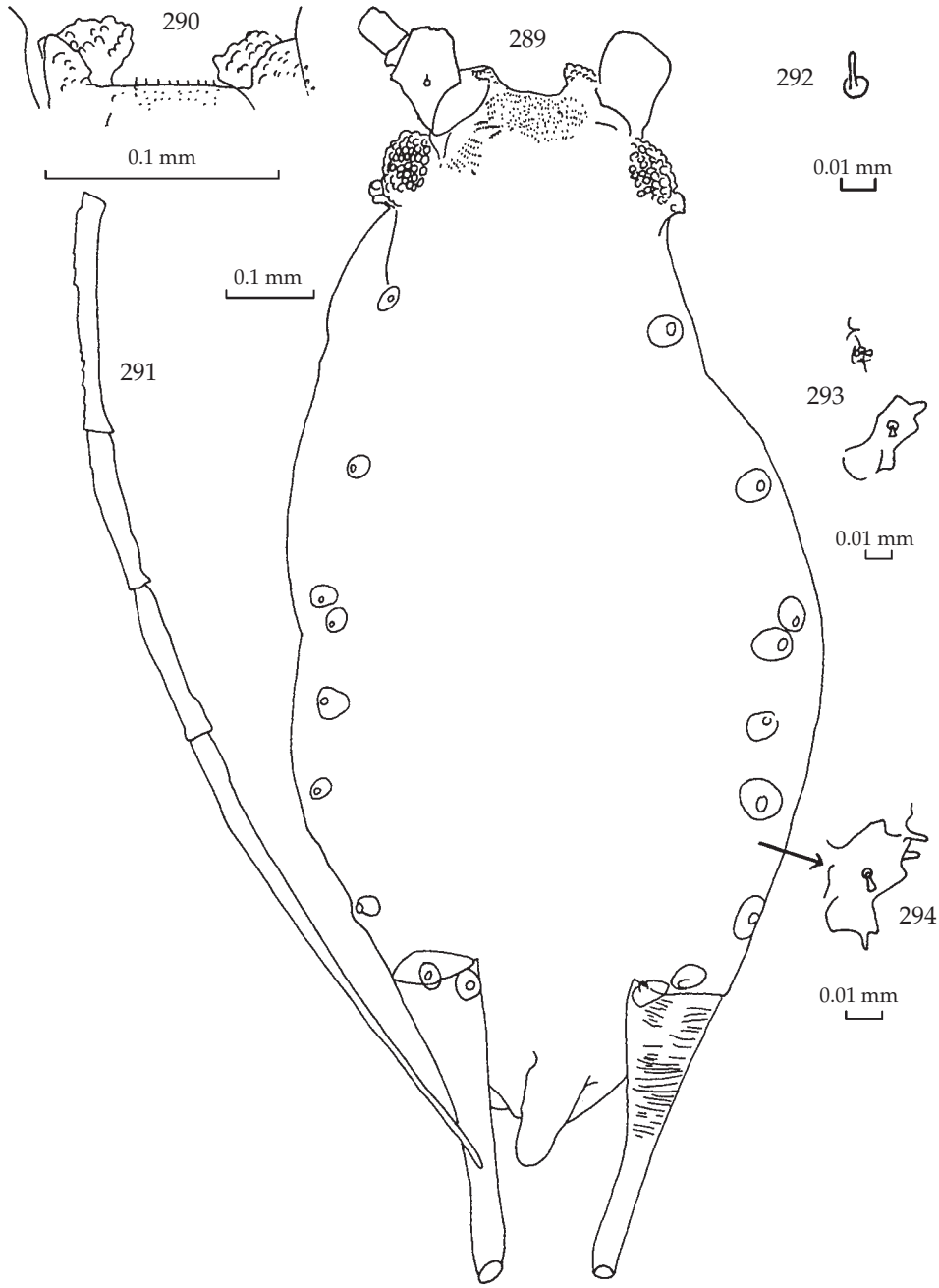
Figs 279-282. *Sitobion pauliani* Remaudière, alate. Fig. 279 **a** and **b**, antennal segment III. Fig. 280, wing. Fig. 281, dorsal side of the abdomen and ventral spiracles. Fig. 282, hairs of: **a** antenna; **b** head; **c** abdominal tergum IV; **d** abdominal tergum VIII.



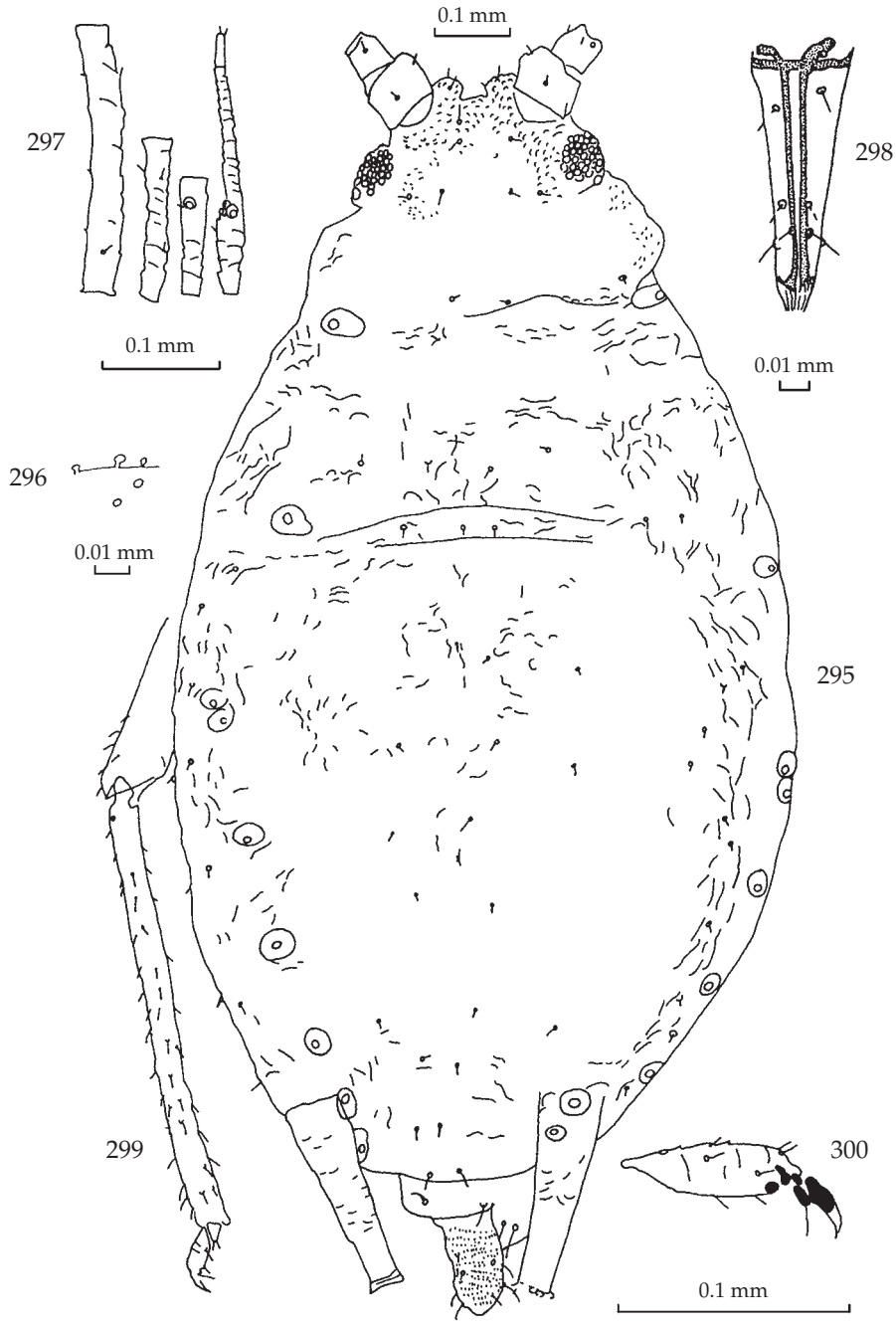
Figs 283-285. *Sitobion takahashii* (Eastop), apterous viviparous ♀. Fig. 283, dorsal side of the body and ventral spiracles. Fig. 284, hind leg. Fig. 285, siphunculus.



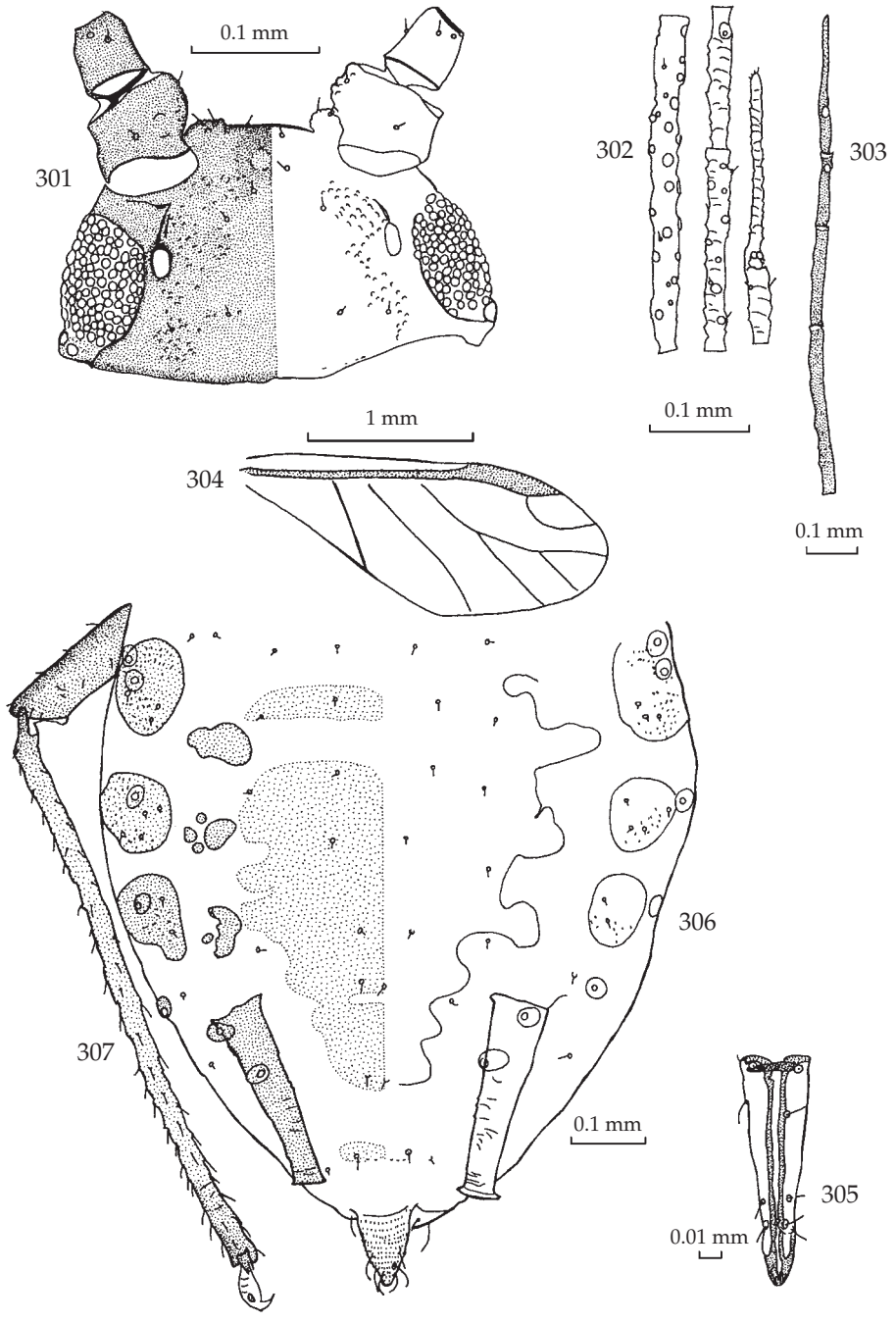
Figs 286-288. *Sitobion takahashii* (Eastop), alate. Fig. 286, dorsal side of the abdomen and ventral spiracles. Fig. 287, hairs of: the cauda. Fig. 288, hairs of: **a** antenna; **b** head; **c** abdominal tergum VIII.



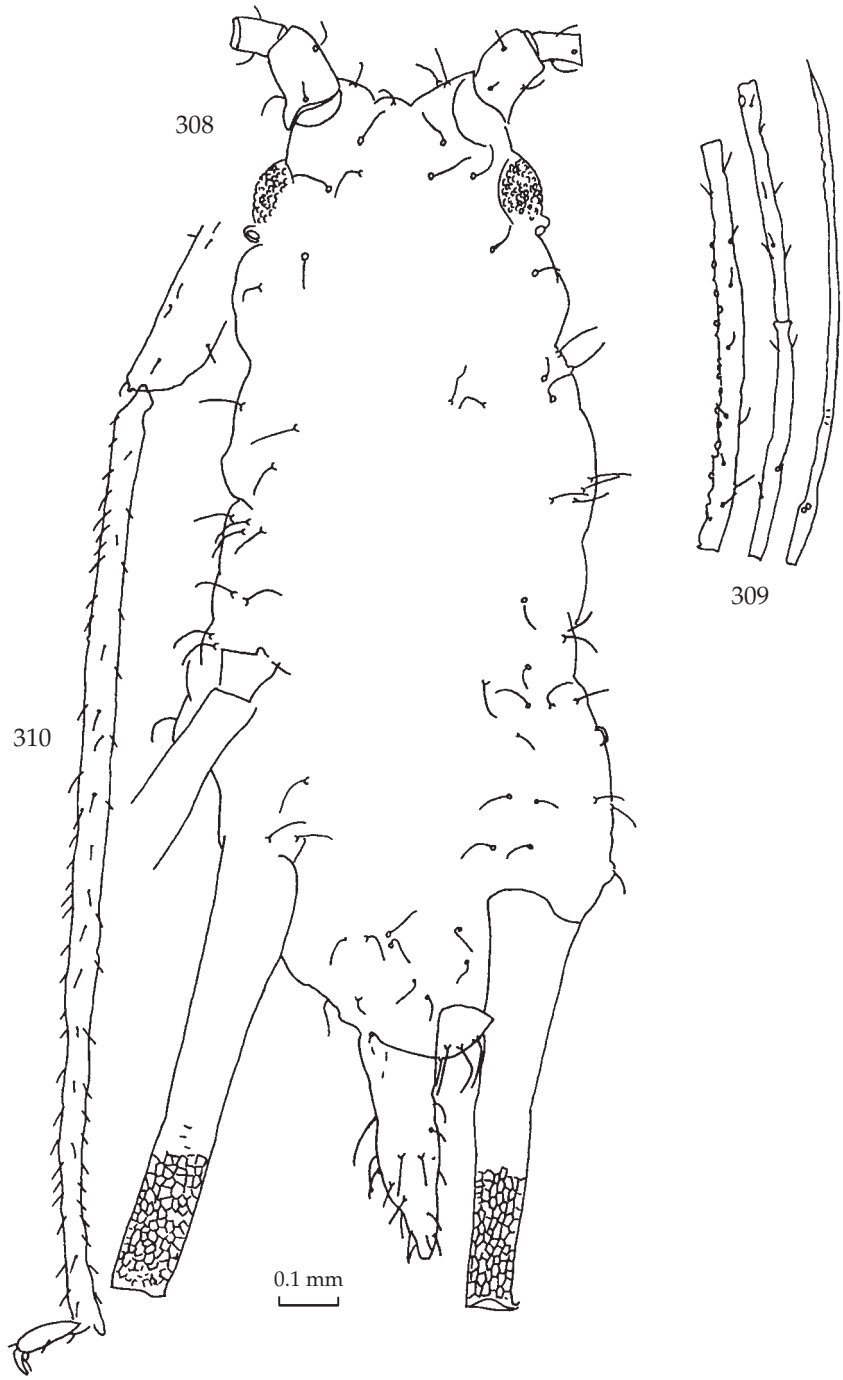
Figs 289-294. *Trichosiphonaphis polygoni* (van der Goot), apterous viviparous ♀. Fig. 289, dorsal side of the body and ventral spiracles with some hairs separately. Fig. 290, frontal part of the head. Fig. 291, antennal segments III-VI. Fig. 292, a hair. Figs 293 and 294, skin and a hair.



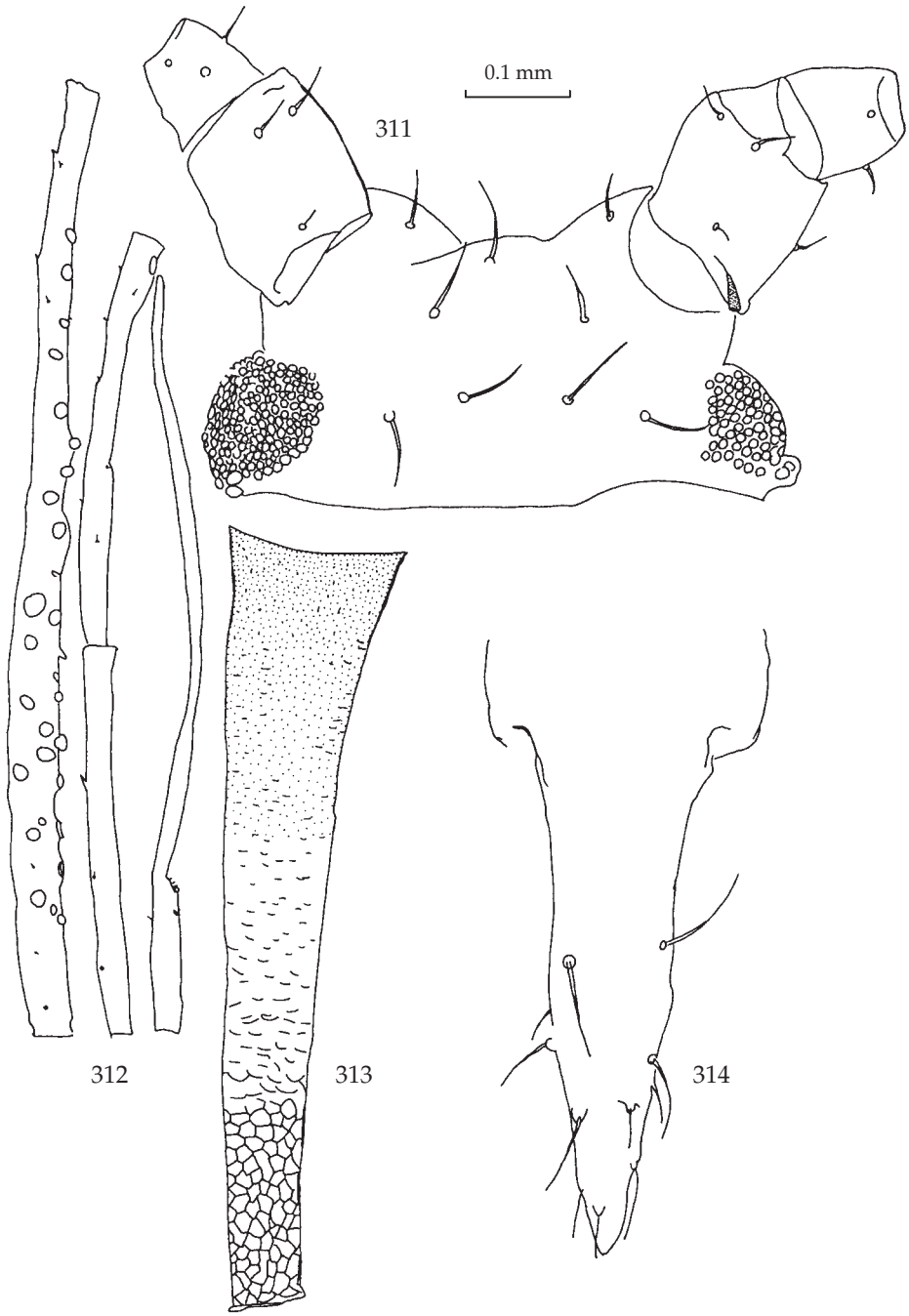
Figs 295-300. *Tuberocephalus sasakii* (Matsumura), apterous viviparous ♀. Fig. 295, dorsal side of the body and ventral spiracles. Fig. 296, frontal part of the head. Fig. 297, antennal segments III-VI. Fig. 298, last rostral segment. Fig. 299, hind leg. Fig. 300, second tarsal segment.



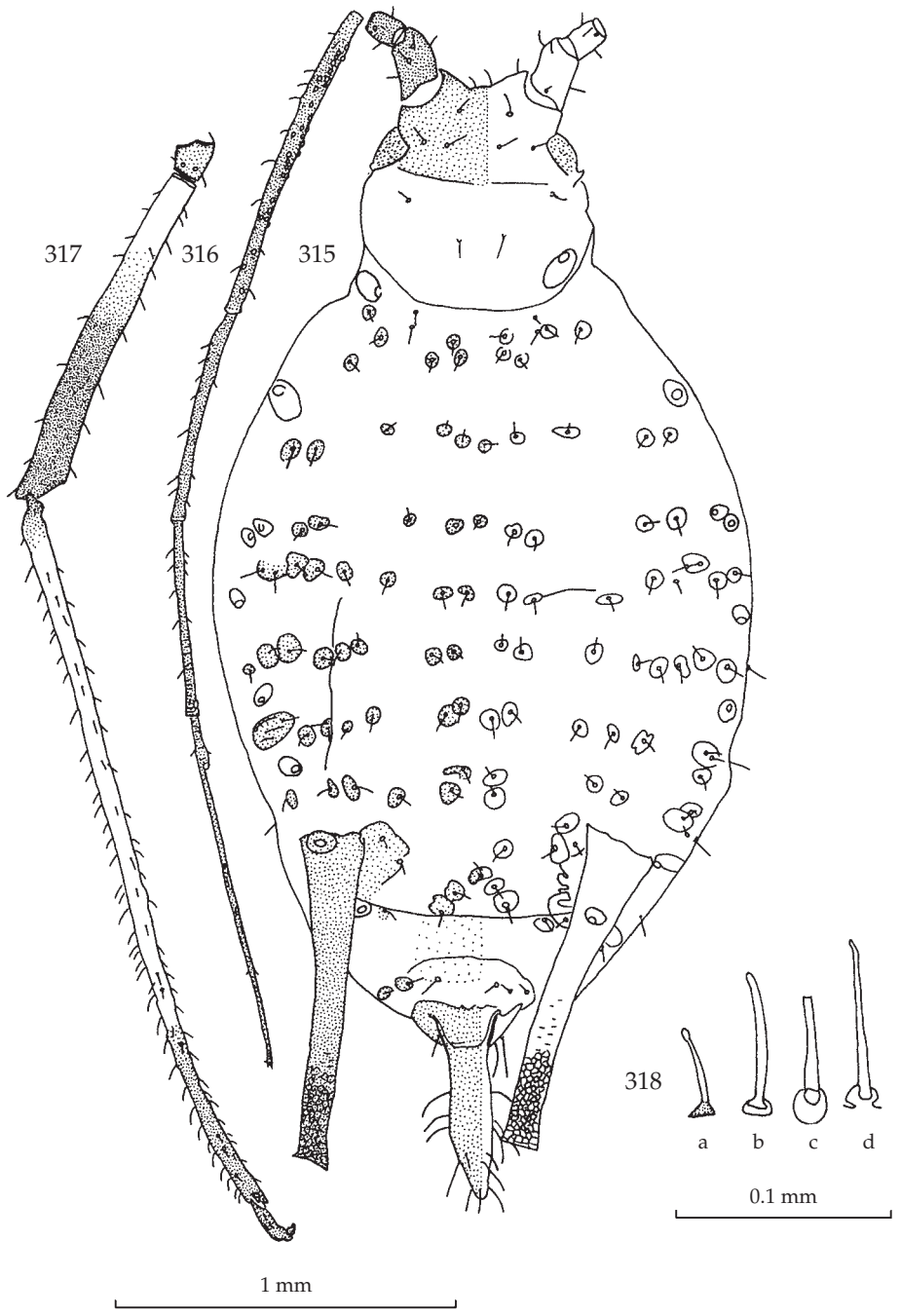
Figs 301-307. *Tuberocephalus sasakii* (Matsumura), alate. Fig. 301, head. Fig. 302, antennal segments III-VI. Fig. 303, colour indication of the antenna. Fig. 304, wing. Fig. 305, last rostral segment. Fig. 306, dorsal side of the abdomen and ventral spiracles. Fig. 307, hind leg.



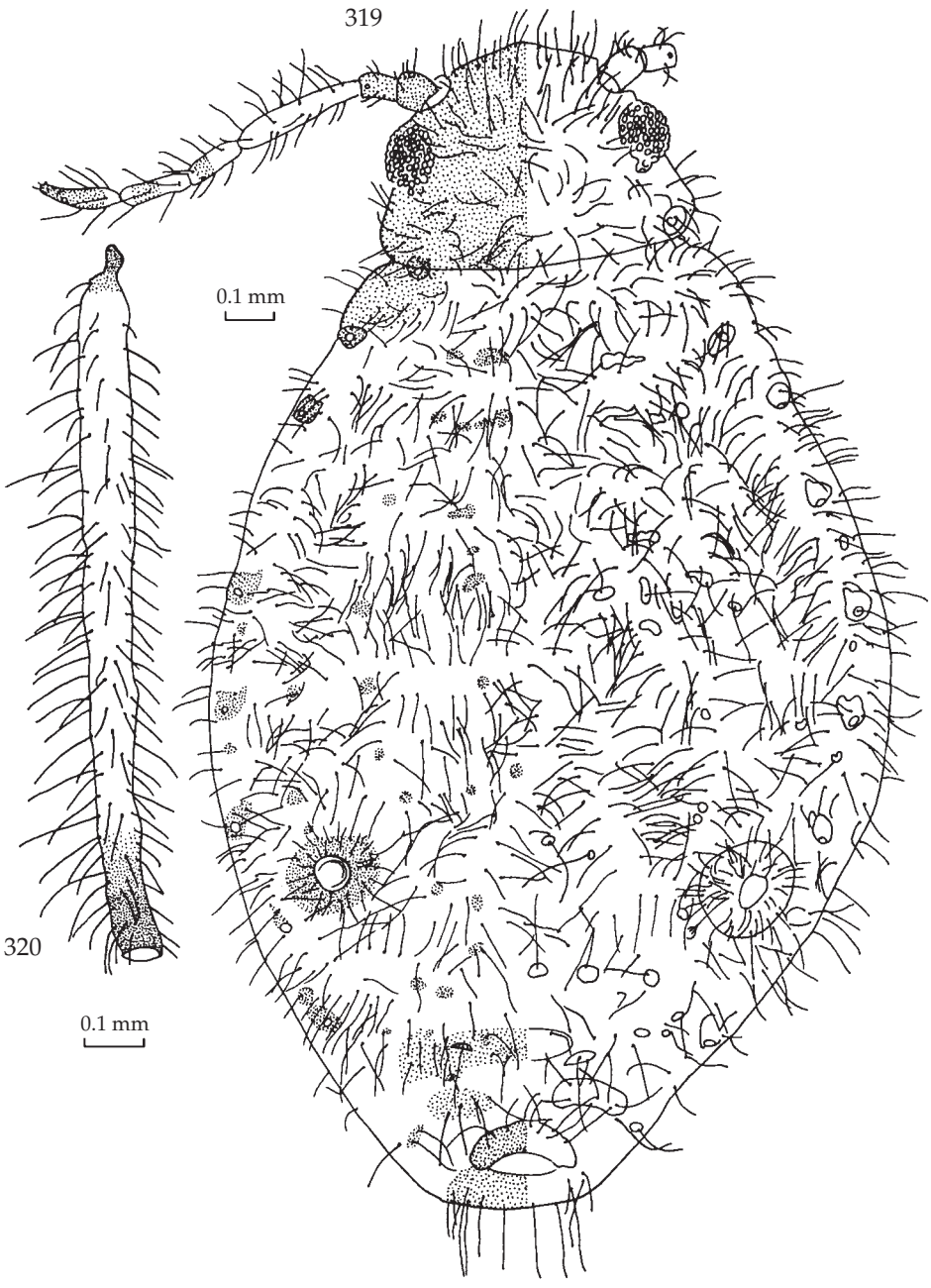
Figs 308-310. *Uroleucon orientale* (van der Goot). apterous viviparous ♀. Fig. 308, dorsal side of the body. Fig. 309, antennal segments III-VI. Fig. 310, hind leg.



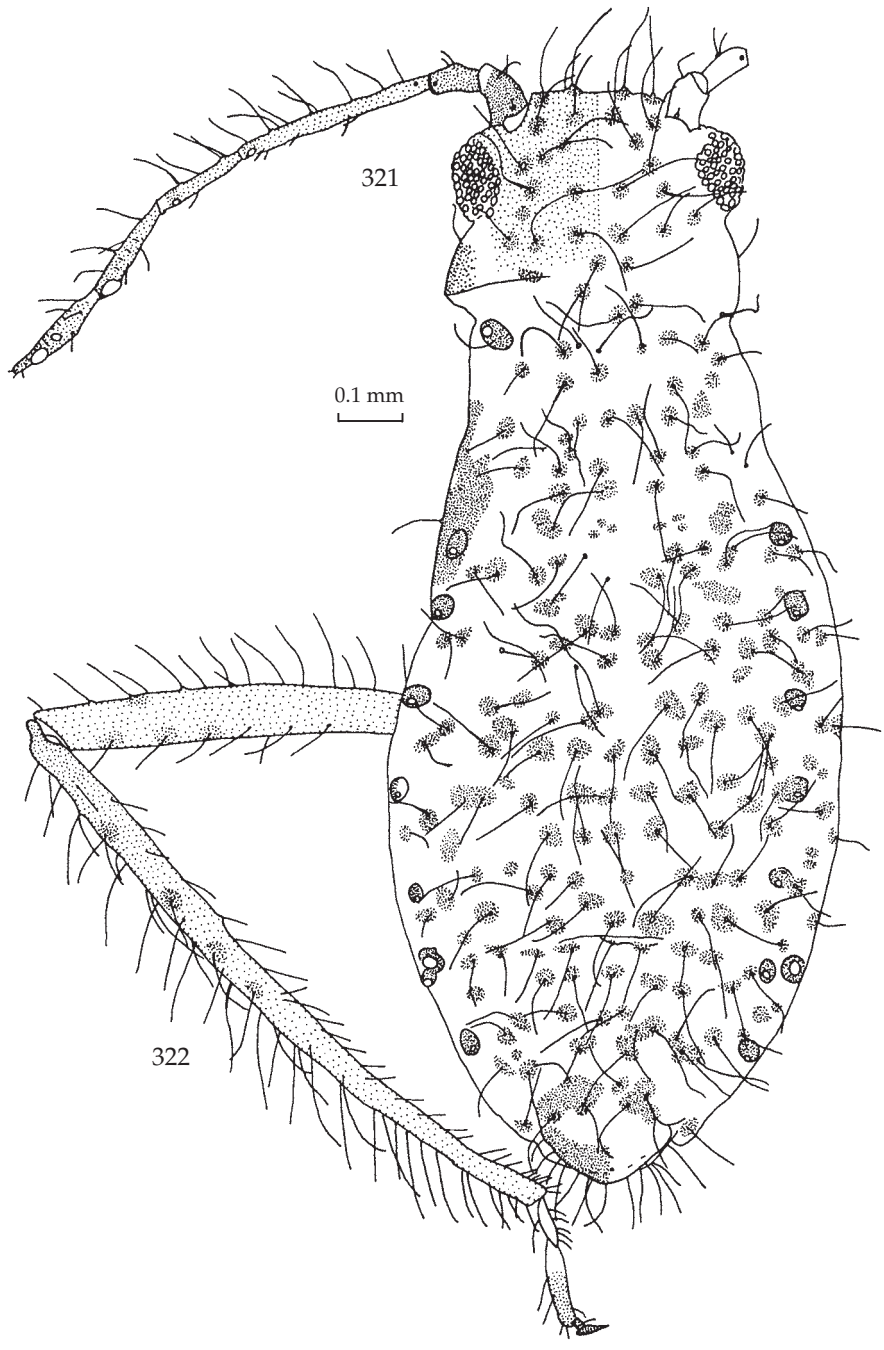
Figs 311-314. *Uroleucon picridis* (Fabricius), alate. Fig. 311, head. Fig. 312, antennal segments III-VI. Fig. 313, siphunculus. Fig. 314, cauda.



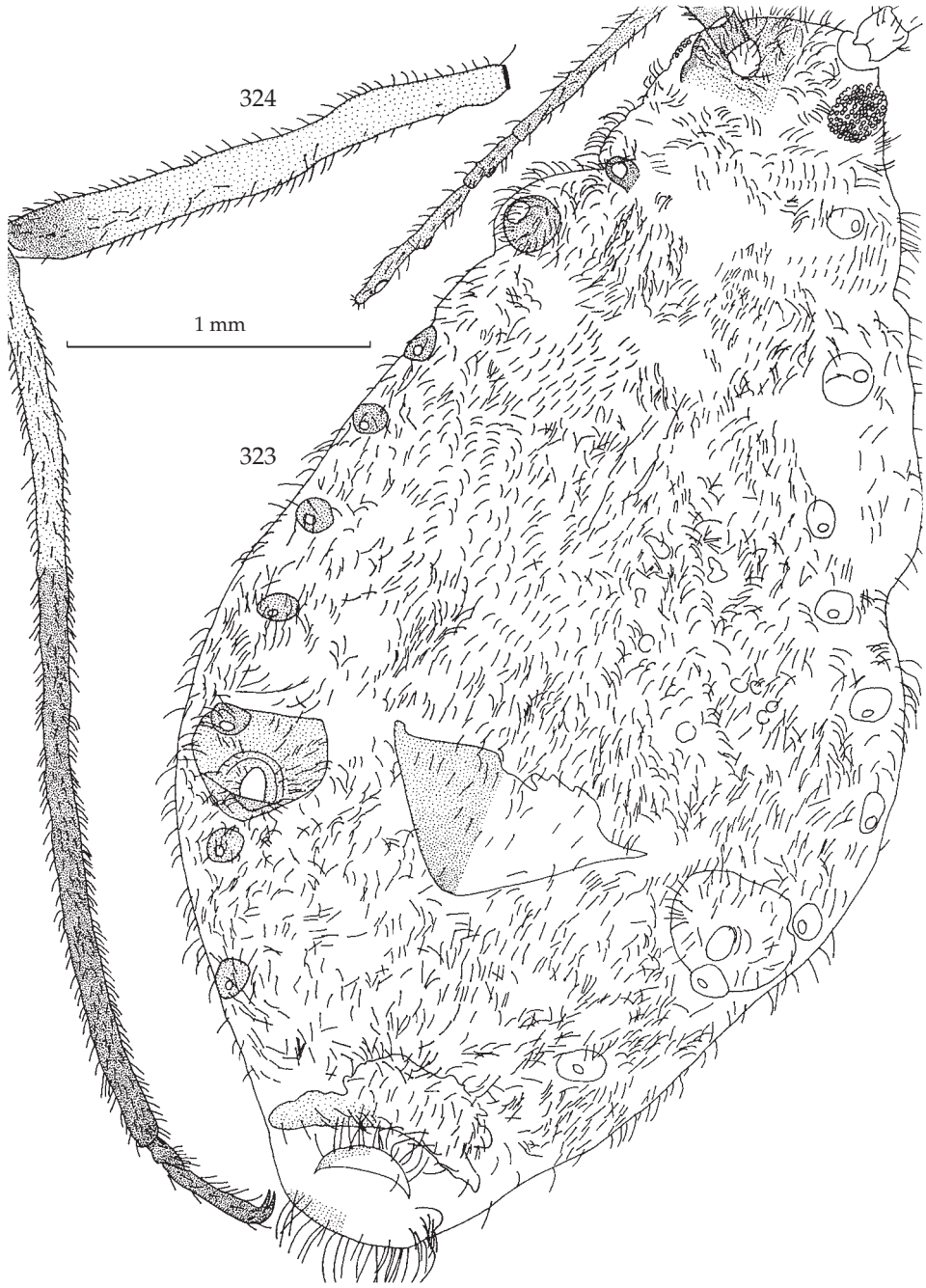
Figs 315-318. *Uroleucon vernoniae* (van der Goot), apterous viviparous ♀. Fig. 315, dorsal side of the body and ventral spiracles. Fig. 316, antennal segments III-VI. Fig. 317, hind leg. Fig. 318, hairs of: **a** antenna; **b** head; **c** abdominal tergum IV; **d** abdominal tergum VIII.



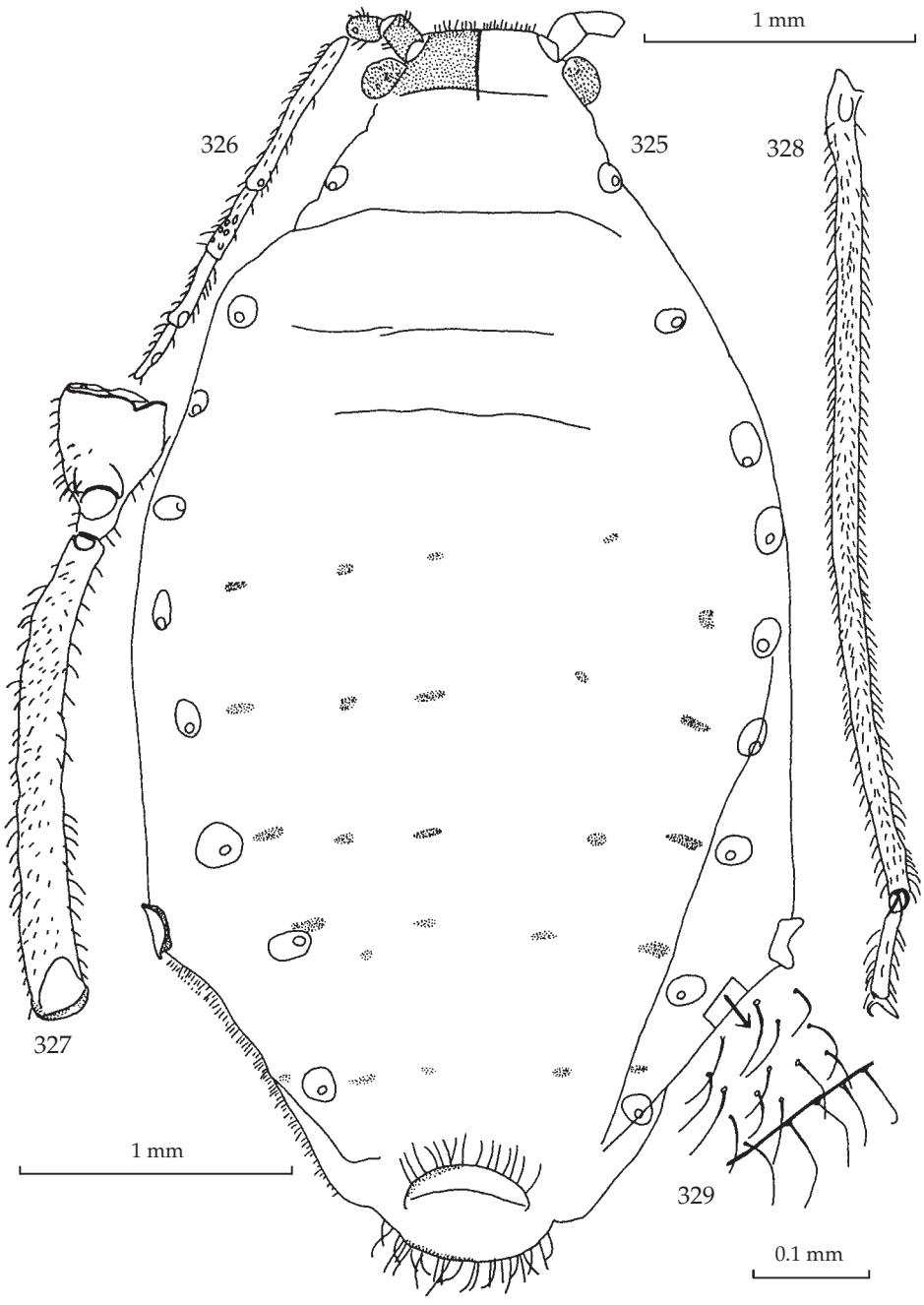
Figs 319-320. *Cinara tujafilina* (del Guercio), apterous viviparous ♀. Fig. 319, dorsal side of the body and ventral spiracles. Fig. 320, tibia.



Figs 321-322. *Eulachnus thunbergii* (Wilson), apterous viviparous ♀. Fig. 321, dorsal side of the body and ventral spiracles. Fig. 322, hind leg.



Figs 323-324. *Tuberolachnus salignus* (J.F. Gmelin), apterous viviparous ♀. Fig. 323, dorsal side of the body and ventral spiracles. Fig. 324, hind leg.



Figs 325-329. *Tuberolachnus scleratus* Hille Ris Lambers & A.N. Basu, apterous viviparous ♀. Fig. 325, dorsal side of the body and ventral spiracles. Fig. 326, antennal segments III-VI. Fig. 327, femur of the hind leg. Fig. 328, tibia and second tarsal segment of the hind leg. Fig. 329, dorsal hairs of the abdomen.

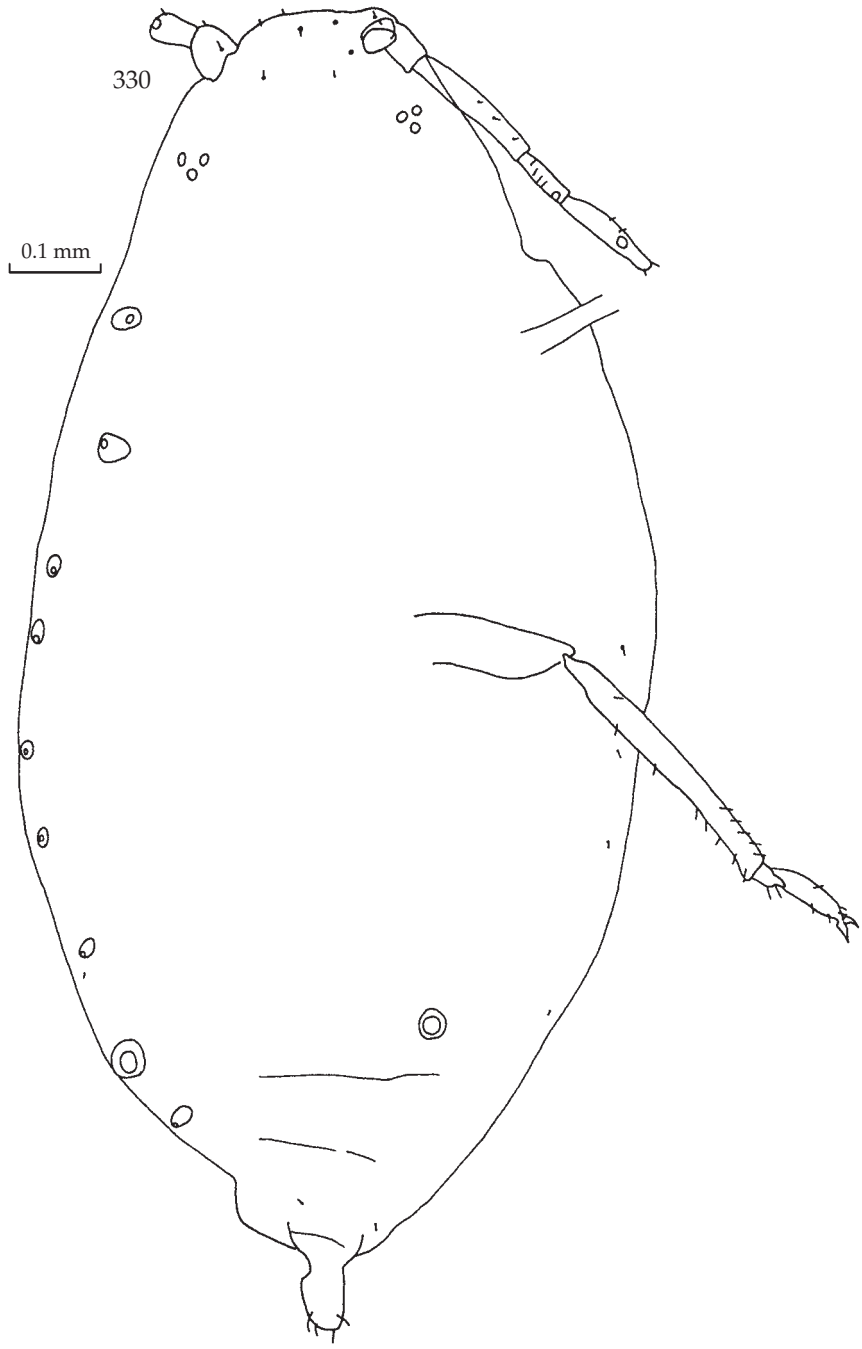
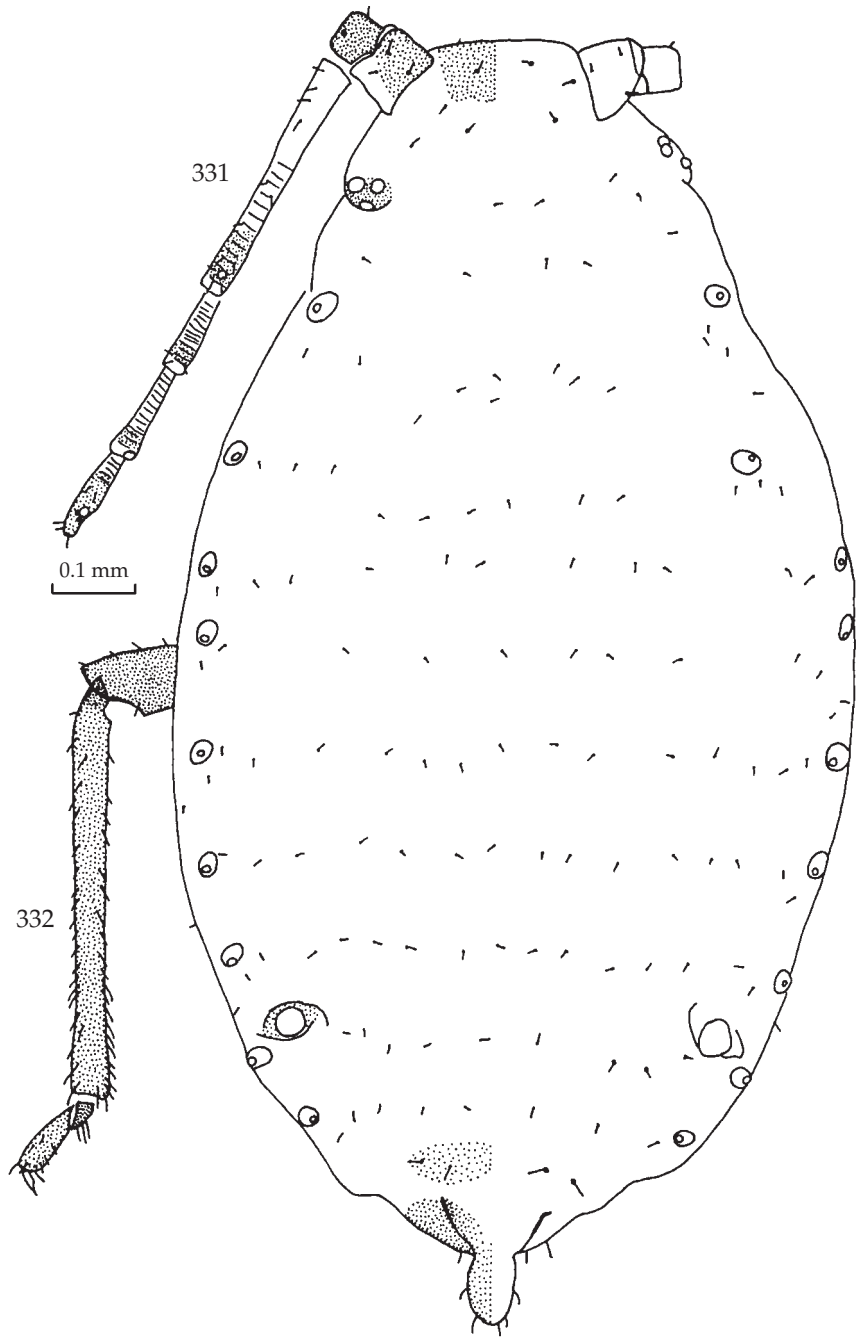
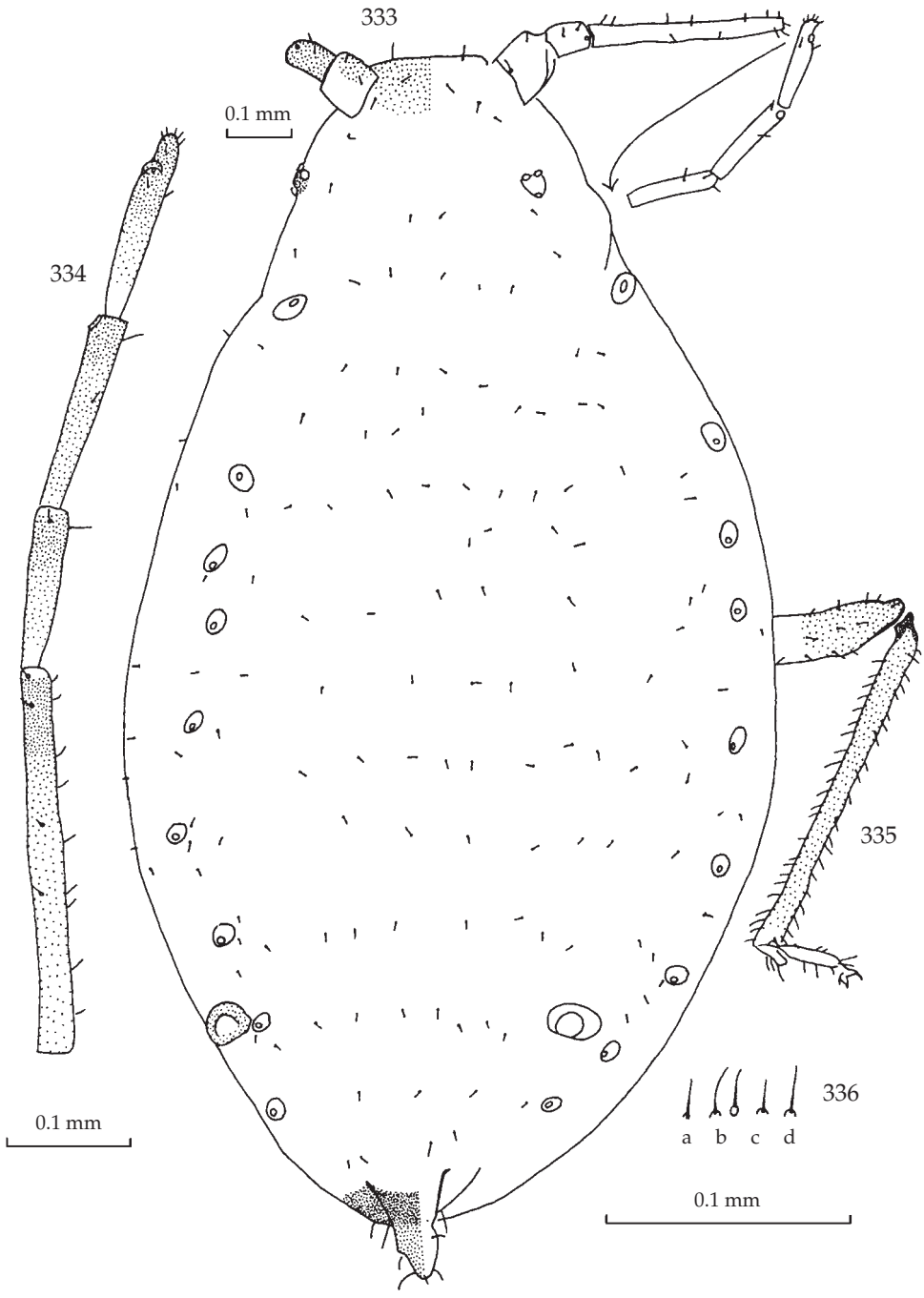


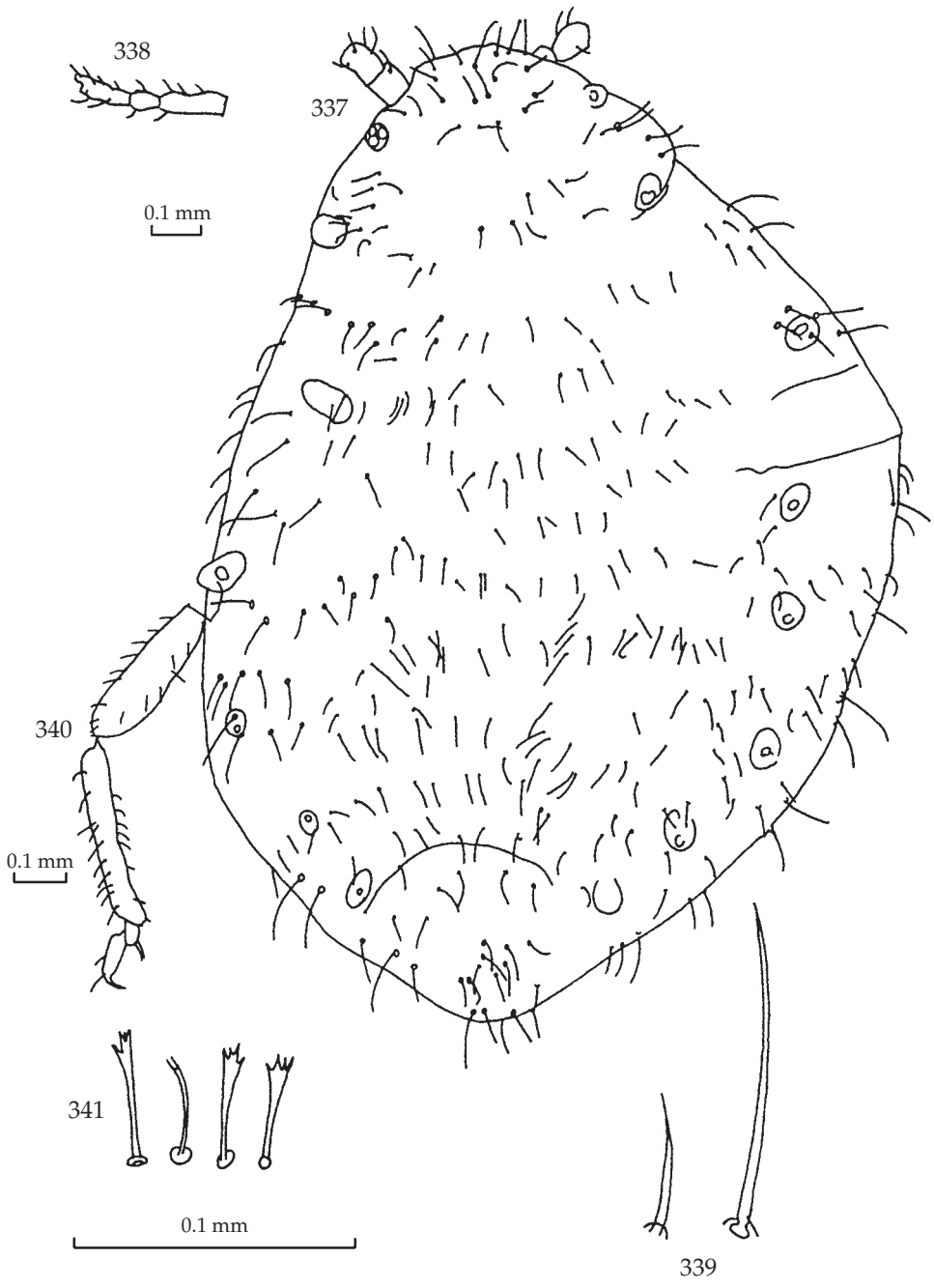
Fig. 330. *Neophyllaphis araucariae* Takahashi, apterous viviparous ♀. Dorsal side of the body. Hairs in the specimen not well visible.



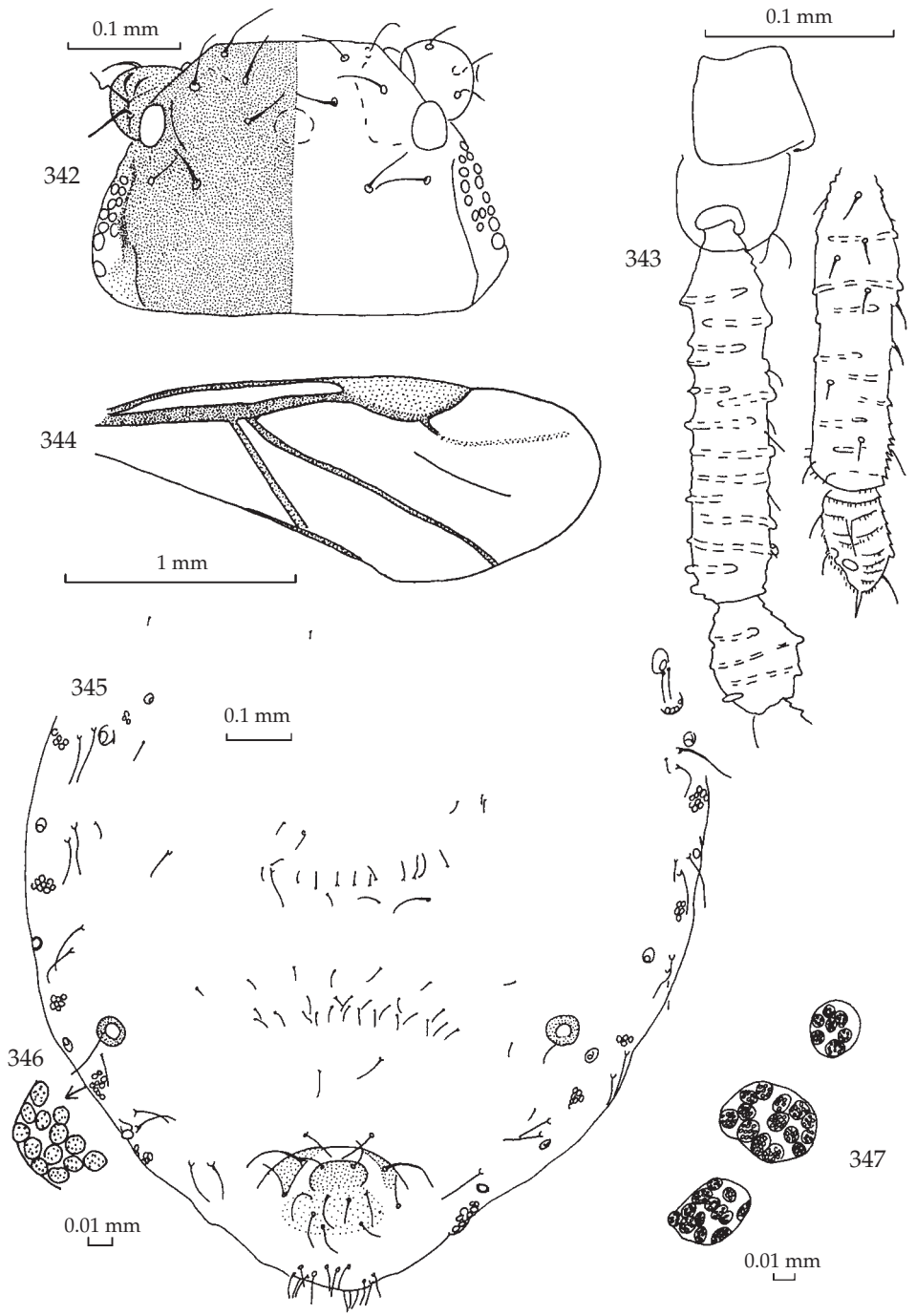
Figs 331-332. *Neophyllaphis fransseni* Hille Ris Lambers, apterous viviparous ♀. Fig. 331, dorsal side of the body and ventral spiracles. Fig. 332, hind leg.



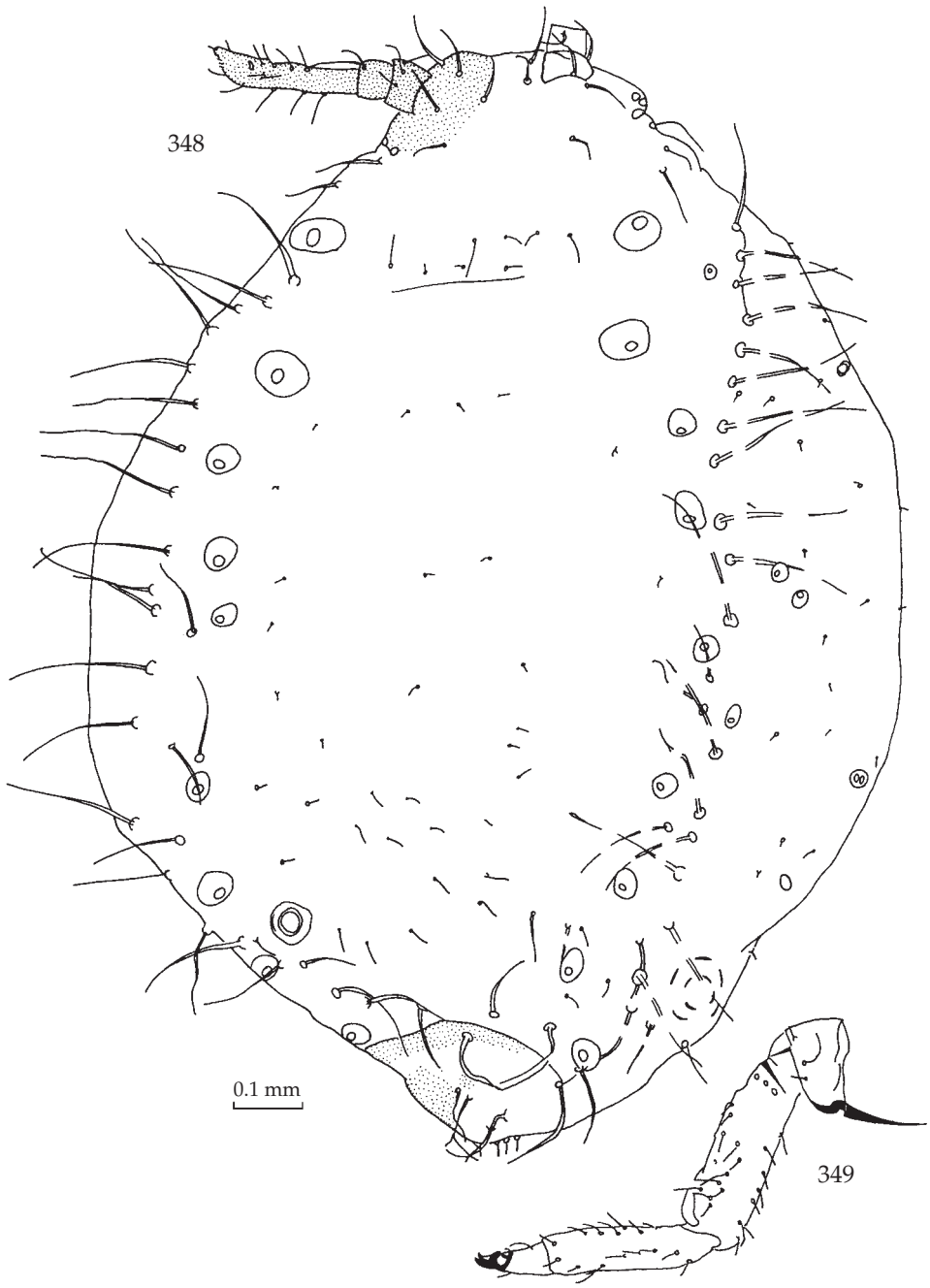
Figs 333-336. *Neophyllaphis podocarpi* Takahashi, apterous viviparous ♀. Fig. 333, dorsal side of the body and ventral spiracles. Fig. 334, antennal segments III-VI. Fig. 335, hind leg. Fig. 336, hairs of: **a** antenna; **b** head; **c** abdominal tergum IV; **d** abdominal tergum VIII.



Figs 337-341. *Geoica lucifuga* (Zehntner), apterous viviparous ♀. Fig. 337, dorsal side of the body and ventral spiracles. Fig. 338, antennal segments III-V. Fig. 339, marginal hairs. Fig. 340, hind leg. Fig. 341, dorsal hairs.



Figs 342-347. *Tetraneura javensis* van der Goot, alate. Fig. 342, head. Fig. 343, antennal segments I-VI. Fig. 344, wing. Fig. 345, dorsal side of the body. Figs 346 and 347, wax glands separately enlarged.



Figs 348-349. *Tetraneura nigriabdominalis* (Sasaki), apterous viviparous ♀. Fig. 348, dorsal side of the body and ventral spiracles. Fig. 349, hind leg.