

# Investigations on the Oribatid Fauna of Java

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## *Synopsis*

This paper deals with 165 species (certain groups are not yet treated, see p. 4). The oribatid fauna of Java seems to be a "young" fauna. This is manifested by relatively few new Javanese genera (10) and many new species (103). The majority of genera and some species (17 – marked by + in front of the generic name in table 1) that have a wide distribution in the tropical areas of the southern hemisphere must be considered to have penetrated into Indonesia via India and south-eastern Asia in the Tertiary period. A palearctic element is represented by three species only (p. 65). To these should be added 9 cosmopolitan species (underlined in table 1). The oribatid fauna of Java has spread to groups of islands in the southern Pacific. Thus, the Fiji Islands, the Tonga Islands, and West Samoa have together 47 species in common with Java, and Tahiti has 34. The fauna has not, on the other hand, managed to reach Hawaii (2 species common with Java). Neither are there many species in common with North America, South America or New Zealand. The islands in the southern Pacific have not only many species in common with Java but also many genera that are represented by other species in the Pacific Ocean area. The many endemic species on the different island groups make it unlikely that man has been the spreading factor, as also the absence of the Lohmanniidae on New Zealand (p. 70). Probably the fauna has been chiefly spread by ocean currents (p. 70).

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## Preface

The material that forms the basis of the present investigation was collected partly in 1969 and partly in 1973–74. On my way to Tahiti in 1969 I collected 25 samples in Central Java. The result of these samples was so promising that I returned to Java in 1973 to make a more thorough investigation of the oribatid fauna of Java and Bali.

I owe an immense debt of gratitude to the Danish Research Foundation for paying my travelling and other expenses. Furthermore this Foundation paid for the translation of this report and made an exceedingly generous grant for its publication – invaluable help which I am very happy to acknowledge. Moreover I am deeply indebted to the Carlsberg Foundation for

covering my expenses during the preparation of the material collected.

The Royal Danish Academy of Sciences and Letters has for many years undertaken the publication of my papers on the distribution of the oribatids in the southern hemisphere. For this I should like to express my most heartfelt thanks; without this support I should not be able to reach the goal which I proposed to myself many years ago – to demonstrate the distribution of the oribatids by continental drift.

Mrs. Jennifer Dupuis-Paris undertook the translation of part of the manuscript and assisted me with a revision of the remainder. For this I thank her most cordially.

Fredensborg, 15th July 1977. *Marie Hammer.*

## Introduction

At the beginning of the present century *Berlese* described several new species of oribatids from Java. In the following years more new oribatids from Java were described by *Sellnick* (1925a), *Willmann* (1931, 1932, 1933), *Csiszar* (1961) and *Balogh & Mahunka* (1968). *Sellnick* contributed furthermore to our knowledge of the Indonesian oribatid fauna with his papers from Krakatau (1925b) and from Sumatra (1925c, 1930).

My investigation on the oribatid fauna of the Fiji Islands (1971), Tahiti (1972) and the Tonga Islands and West Samoa (1973) showed a pronounced relationship between the faunas of these islands in the Southern Pacific and that of Indonesia, a relationship that was more apparent than that with any of the surrounding areas of land, i.e. New Zealand, South America, North America and Hawaii. Has the Indonesian oribatid fauna penetrated into the Pacific, inhabiting the numerous islands there? Has the fauna been introduced by man or accidentally by wind or water? These were the questions which I hoped to help solve through the present investigation.

It was therefore necessary to find as many species as possible to gain a comprehensive

picture of the oribatid fauna. Consequently, I collected in numerous and varied biotopes from East Java (Malang) over Central Java (Jogjakarta) to West Java (the botanical gardens in Bogor and Tjibodas), as well as in the lowlands (Ratu Baka) and in the mountains (the volcano Tangkuban Prahū at about 1830 m.a.s.l. and in the Tjibodas botanical garden at 2400 m.a.s.l.). Samples were taken both in rather dry localities (Ratu Baka) and in wet localities (rain forest at Tjibodas), in cultivated areas (Bandung, Pengalengan) and in tropical forest (Tangkuban Prahū with deciduous forest and tree fern forest).

As the 258 samples collected (each of about 1/1000 m<sup>2</sup>) contained a very large number of species, I prefer to publish the material in several parts, of which this first part deals with the majority of the species found. Later the species belonging to the Phthiracaroidea, Euphthiracaroidea, Otocephoidea, *Scheloriabates* with related genera, subgenera, and Galumnoidea will be described.

In addition to collecting in Java, I collected in Bali, and this material will be published later.

## Descriptions of the Biotopes

- No. 158–161. Central Java. October 1969. Borobudur; thin moss on soil.
- No. 162–182. Central Java. Kaliurang, Pawan-gan Mountains, about 25 km north of Jogjakarta, about 700 m.a.s.l. Wood on mountain slope with thick under-vegetation of low Bamboo and shrubs; Selaginella, ferns, liverwort, mosses on dead branches and roots and dead leaves on the soil. Rich epiphyte flora. Fog hanging over the mountain slope.
- No. 1–25. Central Java. December 1973. Kaliruang, the same locality as above.
- No. 27. Near Borobudur. Roadside with dry grass.
- No. (28–100 Bali).
- No. 101–124. East Java. Selecta Park near alang, about 1100 m.a.s.l. Mountain slope with scattered, tall trees and shrubs; ferns, liverworts, Selaginella, mosses on branches and roots, different small plants and dead leaves.
- No. 125–136. Central Java. Rahu Baka, rounded summit of chalk rock, about 200 m.a. the lowland and about 17 km from Jogjakarta. Mainly grassland with ferns, mosses and dead leaves.
- No. 137–144. West Java. Bandung. Roadside with grass; grass and dead leaves in a park in Bandung.
- No. 145–150. Pengalengan, about 40 km south of Bandung; dead leaves of 10 to 20 year old tea bushes.
- No. 151–160. Situcilenca Lake, dammed about 5 km west of Pengalengan; luxurious grass, small plants and mosses.
- No. 161–168. Tangkuban Prahua, a volcano about 28 km north of Bandung, about 1830 m.a.s.l. Deciduous forest with luxurious undervegetation of Bamboo, shrubs, ferns, mosses, etc., dead leaves.
- No. 169–172. Grass and semi-rotten hay on the roadside not far from the preceding locality.
- No. 173–180. Along an almost dry brook through luxurious forest with tree ferns, Zingiber sp., shrubs, dead trunks, mosses and dead leaves, debris of all kinds.
- No. 181–184. Pinus forest with dead needles, about 1100 m.a.s.l.
- No. 185–204. The Botanical Garden at Bogor with very tall, dark trees, dense under-vegetation and numerous bushes and flowers; mosses everywhere, lichens, liverworts, Selaginella and dead leaves and debris.
- No. 205–233. The Botanical Garden at Tjibodas and rainforest reservation, about 45 km south-east of Bogor and about 1450 m.a.s.l., the reservation up to 3000 m.a.s.l.; very moist and rainy. Rich epiphyte flora of orchids, lichens and mosses; ferns, mosses on roots and branches, liverworts, Selaginella, mouldering leaves and debris, wet dead leaves. (220–26 at about 2400 m.a.s.l.; dead leaves, mosses and epiphytic plants).

## List and Descriptions of the Species Found

To avoid the many repetitions of biotopes under the discussion of the different species, the samples (biotopes) are in the following indicated by number, while the number of individuals found in each sample is given in brackets.

### Ctenacaridae

*Ctenacarus araneola* Grndj., 1932.  
103(1).

### Protoplophoridae

*Cryptoplophora abscondita* Grndj., 1932.

The only specimen found differs only from *Grandjean's* description by having a slightly more slender sensillus and a thicker, stiffer exopseudostigmatic seta. However, this may only be a different way of showing details. 20(1).

### Mesoplophoridae

*Mesoplophora pantotrema* Berl., 1913; fig. 1.

Although *Berlese's* description and figure are brief and incomplete, the specimens found by me no doubt represent *Berlese's* species. They recall *M. pantotrema* first of all in the broad triangular genital plates with six pairs of short smooth setae, fig. 1a, in the long distance between the genital and the anal field being longer than the latter, fig. 1b. The anal field has four pairs of long, marginal, barbed setae, directed medially. The two middle ones are a little longer than the others. *Berlese* illustrates only two anal setae. On the ventral plate there are seven pairs of long barbed setae, the six posterior ones being arranged more or less round the anal field. *Berlese* shows five of these setae. The seventh pair, which is located far anteriorly, is thinner than the other.

To add a few more details to this short description, the aspis is shown in a dorsal view, fig. 1c. Figure 1d shows a notogastral seta with short, proximally located barbs that are longer towards the short distal tip. The distal barb is longer and thicker than the others (cp. fig. 3c, *M. rostrorugosa*).

1 (1), 105, 107, 108, 110, 111 (1-4), 152 (1), 168, 175, 177, 179, 180, 183 (1-2), 215, 216, 217, 218 (1-3), 228, 230 (1-2).

*Mesoplophora leviseta* n.sp.; fig. 2.

Length of hysterosoma 0.235 mm, length of aspis 0.18 mm. Colour greyish yellow, at a greater magnification the greyish colour is seen to be caused by numerous small points and irregular spots that together form a vermiculate pattern. Figure 2a shows the aspis in a dorsal view. Both the rostral and the lamellar setae, which are located laterally, are very long, crossing in the middle of the aspis. They are smooth. The interlamellar and the exopseudostigmatic setae are shorter and thinner and also smooth. The sensillus, fig. 2b, has about 20 equally long branches and a free tip. The sculpture of the integument consists of numerous deep-lying dots and irregular spots making a greyish, vermiculate pattern.

The Notogaster has 8 pairs of long, smooth setae of which c2, d2 and d3 are a little longer than the others. At the base of each seta there is a small pore.

Figure 2c shows the ventral plate with the genital and the anal field. There are seven pairs of short, thin, genital setae. The distance between the genital and the anal field is very short, about the width of the anal plate. On each anal

plate there are three setae, located near the lateral border. They are smooth and directed medially. The anterior seta is shorter than the other two, which reach beyond the medial border of the plate. On the ventral plate there are nine pairs of smooth pointed setae, i.e. seven surrounding the anal field, all directed medially, and a very long one located in the middle of the plate far laterally. It projects beyond the posterior border of the notogaster. Furthermore one seta each is found on either side of the genital field, far laterally. Monodactylous. 200(2).

*Mesoplophora rostrorugosa* n.sp.; fig. 3.

Length of notogaster 0.39 mm; length of aspis 0.29 mm. A greyish colour as a result of a dense chitinized reticulate structure, each cellule ending in a sharp, backwards-directed tip, which makes all contours "shaggy", fig. 3a.

Figure 3b shows a dorsal view of the aspis. The rostral and the lamellar setae, both of which are situated near the lateral borders, are directed forwards. They are equally long. The lamellar setae reach the rostral setae. Most of the setae in this species are shaped like a fine comb, fig. 3c, with numerous, equally long thin branches, the distal one always thicker than the others. Together with the free tip, this distal branch forms a V. The interlamellar setae, which are directed backwards, are thinner than the former two pairs. The exopseudostigmatic setae are shorter. The sensillus is long and thin, set with thin bristles in two rows, for which reason the branches are not parallel as in the setae of the aspis, but often cross each other. The integument of most of the aspis from the tip of the rostrum to a line in front of the sensilli is densely wrinkled with a fine vermiculate pattern between the wrinkles. Behind the line the integument is reticulate.

The notogaster has 8 pairs of comb-shaped setae. Its contour is very rough due to the sharp tips of the cellular structure.

Figure 3d shows a part of the ventral plate

with one genital plate and the anal field. The distance between the genital and the anal field is much longer than in the preceding species, about one and a third times longer than the anal field. Only six short, smooth, genital setae were observed. Each anal plate has four almost equally long comb-shaped hairs directed medially. The anal plates are densely obliquely striped. On the ventral plate there are six pairs of comb-shaped setae, the four posterior ones being arranged round the posterior end of the anal field, the fifth further anteriorly and laterally. The anterior one, which is directed forwards, is located at a level a little in front of the anal field and midway between the latter and the lateral border of the ventral plate. The ventral plate has the same reticulate structure as the dorsum. Monodactylous. 211 (1).

#### Hypochthoniidae

*Eohypochthonius vermicularis* n.sp.; fig. 4.

Length about 0.28 mm. Colour yellowish light brown.

The anterior border of the rostrum is hyaline and finely serrated. The rostral setae, which are parallel, thin and smooth, reach for more than half their length beyond the border of the rostrum, where they bend ventrally. The lamellar setae are no thicker than the rostral setae but slightly thinner at the tip. The short, thick interlamellar setae are in some specimens directed forwards, in others backwards. The anterior exopseudostigmatic setae, which are bent forwards, are thicker than the lamellar setae. The sensillus, figure 4a, has eight almost equally long, thick branches on its anterior border, and eight minute bristles on its posterior border. The two lateral crests meet in a point and do not reach the lamellar setae. The integument is covered with small tubercles that form a very distinct vermiculate pattern (hence the specific name) behind a line between the pseudostigmata. Near the posterior border of the prodorsum there is an oval, almost smooth area with some light spots. Notogaster. The notogastral setae

are equally thick throughout, the tip bent ventrally. They are as thick as the rostral and the lamellar setae. C1 and c2 reach d1 and d2, respectively. D1 does not reach f1. F1 reaches beyond h1. D1 is located further anteriorly than d2. Small tubercles form a fine dendrite pattern on the whole dorsal surface. Ventral side, figure 4b. The number of epimeral setae is 3:1:3:4. 1b, 3b and 3c are a little longer than the others, 3b the strongest. The number of genital and anal setae are as usual within *Eohypochthonius*. The anal setae, and ad1 and ad2 are alike, ad3 apparently thicker. The integument is covered with small tubercles forming a faint vermiculate pattern.

Remarks. This species can be distinguished from *E. gracilis* Jacot subsp. *crassisetiger* Aoki 1959, by its much thinner lamellar and notogastral setae, by the minute bristles on the posterior border of the sensillus and its dendrite-vermiculate pattern.  
3 (1), 27 (10), 129 (1), 130 (3).

*Eohypochthonius salicifolius* n.sp.; fig. 5.

Length about 0.32 mm. Colour light brown.

This species differs distinctly from the preceding one in several respects. First of all in the shape of the anterior exopseudostigmatic setae, the lamellar and the notogastral setae, which are foliate, i.e. with a transparent rim on either side of the middle rib. They are thus much broader than those of *E. vermicularis*. The interlamellar setae are broad, plumate and directed forwards. The lateral keels are more like regular crests. Between the interlamellar setae there is a short transverse ridge and in front of the interlamellar setae there are two curved ridges almost forming closed loops. The area behind the transverse ridge is granulate. In the oval in front of the notogaster, 6-7 short lines can be seen. The sensillus has nine approximately equally long branches and minute bristles along its posterior border.

The notogaster has broad, foliate setae. The

second dorsal segment with e1 and e2 is much broader than that of *E. vermicularis*. Along its posterior border there is a row of light spots. In front of these spots the integument has vermiculate lines. On the dorsal surface of the notogaster there is an irregular, faint, reticulate pattern.

The ventral side does not differ from that of *E. vermicularis* except for the appearance of ps2, which is foliate. Ps3 is similar to ps3 in *E. vermicularis*.

188 (1), 196 (2), 203 (4).

*Hypochthonius elegans* n.sp.; fig. 6.

Length about 0.57 mm. Colour very pale greyish (young individual?).

The border of the rostrum is slightly serrate. The rostral setae are very thin, about three times longer than their mutual distance, perhaps dull at the tip, or bent. The lamellar setae, which are much stronger, are smooth, their distal half bent medially at a right angle meeting the opposite seta. The interlamellar setae are long, thin and smooth. The exopseudostigmatic setae are very small. The sensillus has 5-6 equally long branches on its anterior border and 1-2 shorter ones set proximally. There are some very short bristles on its posterior border. The integument is covered with very small tubercles, apparently arranged in "beds".

The notogaster is almost as broad as it is long. The notogastral setae, which are very thin and slightly uneven, are faintly curved, especially f1 and h1, these two pairs being the longest. F1 are approximately three times longer than their mutual distance. D1 reach f1 and d2 reach beyond f2.

Ventral side. The number of epimeral setae is 3:1:3:4. There are four + four pairs of genital setae, the lateral ones much longer than the medial ones. There are three pairs of adanal setae that are as long as the lateral genital setae. There are no anal setae. Ps2 and ps3 are as long as the adanal setae and only half as long as psl.



Remarks. This species much recalls *H. rufulus* C. L. Koch. The notogastral setae are, however, much longer, and the lamellar setae differ. 168 (1).

*Malacoangelia remigera* Berl., 1913.  
129 (8), 130 (5), 141 (1).

#### Eniochthoniidae

*Eniochthonius minutissimus* (Berl.), 1904.  
133 (1).

#### Sphaerochthoniidae

*Sphaerochthonius* sp.

Only one juvenile specimen with 3 dorsal "cou-pure" was found. Due to shrinkage, it cannot be identified.  
1969: 158 (1).

#### Lohmanniidae

*Annectacarus unilateralis* Hammer, 1973.  
129 (4), 130 (2).

*Haplacarus javensis* n.sp.; fig. 7.

Length about 0.72 mm. Colour light brown.

The rostrum is narrow, its broad tip forming a low arch. The rostral setae are long, foliate with a transparent edging, slightly dentate. The other prodorsal setae are similar to the rostral setae, but slightly curved and perhaps a little stronger. The lamellar setae are directed outwards, the anterior exopseudostigmatic setae forwards, the interlamellar outwards and the posterior exopseudostigmatic setae curved backwards.

The sensillus is pectinate with about eight branches. The integument is covered with dense, round, greyish tubercles. Between the pseudostigmata there is a band without microsculpture and behind it the tubercles are much smaller.

The notogaster has 32 setae. They are foliate and slightly dentate like those of the prodorsum. C1 is directed forwards and is a little longer than the others. The marginal setae c3, d3, f2, h2, h3,

ps2 and ps3 are longer than the dorsal setae, some of them also thinner in their distal half, viz., c3, d3, f2, h3, ps2 and ps3. Ps1 are thicker and shorter than the others and have strongly incurved tips. Across the notogaster there are 10 smooth bands without microscopical tubercles. Number two is very short, being only present for a short distance behind c3. Number four is interrupted in the middle.

Ventral side, fig. 7a. The infracapitulum bears four pairs of setae, viz., a, m1, m2 and h. They are foliate and transparent.

The coxisternal setal formula is 3:1:3:4. 1a and 3c are stronger than the remainder and distinctly dentate. The aggenital plates, located at the latero-anterior corner of the genital field, are longish and triangular. The genital plates each bear 10 setae, viz., six short, thin paraxial and four antiaxial setae. Of the latter, number two is only half as long as the others. The preanal plate is as broad as the anal plates together. The anal and the adanal plates are fused without a suture. There are four adanal setae and one anal seta on each plate. The adanal setae are foliate, the anal setae shorter and thinner than the former. Ad1 is thicker than the other adanal setae and has a strongly curved tip. Fissures ia, ih and ip were observed. All the epimeres are covered with dense, rounded tubercles. The genital plates have tubercles on most of the surface, but are punctate along their sides. Remarks. *H. javensis* can be distinguished from *H. foliatus* Wallw., 1962b, by its more slender notogastral setae, by e1 which is not longer than f1 and by its longer aggenital plates. *H. pairathi* Aoki, 1965a, is much smaller than *H. javensis*, the notogastral setae c1 much shorter than in both *H. foliatus* and *H. javensis*, and e1 is longer than f1, as it is in *H. foliatus*.  
129 (4), 130 (3).

*Javacarus porosus* n.sp.; fig. 8.

Length about 0.64 mm. Colour light brown.

The setae of the prodorsum are lanceolate

and slightly dentate, the latter feature being most pronounced in the lamellar and the interlamellar setae. The posterior exopseudostigmatic setae are falcate. The sensillus has about 10 thin branches. The integument is covered with greyish tubercles.

Notogaster. Most of the notogastral setae, 16 pairs, are lanceolate and dentate. The dorsal ones have a short, more or less dull tip, whereas the marginal ones, i.e., c3, d3, h3, ps2 and ps3 are thinner at the tip and the setae longer. E2 is short. C1 is directed forwards. E1, f1 and h1 form an anteriorly open circle. There are nine fossulae vittiformes that are formed by round areae as in *J. kühnelti* Bal., 1961. They are all complete but very irregular. Besides the round areae in the fossulae vittiformes, there are a few areae porosae, viz., between d2 and e2. Between the fossulae vittiformes there are greyish tubercles. These are especially present on the posterior part of the notogaster.

Ventral side, fig. 8a. Infracapitulum with four pairs of setae of which a and m1 are thin, m2 and h a little thicker and dentate.

The number of epimeral setae is 3:1:3:4. Most of these setae are rather thick, 3c being especially thick and coarsely dentate. 2a, 3a, 4a, 4b and 4d are thinner than the others. On the genital plate there are six rather short paraxial setae and four anti-axial setae, viz., three longer than the width of the plate and one similar to the paraxial ones. The preanal plate is as broad as the genital field. Its posterior border with two low incurvations for the paraproctal plates. The adanal and the anal plate are fused without a suture. No anal setae. Four pairs of adanal setae. The three anterior pairs are long, lanceolate, thin with a marginal edging. The posterior pair is thicker, curved and slightly dentate. The integument is covered with faint tubercles, especially laterally to the genital and the paraproctal plates. The latter have very faint tubercles. There is a punctate area at the base of all legs.

Remarks. *J. porosus* can be distinguished from

*J. granulatus* Csiszar, 1961 by the fossulae vittiformes being composed of areae rotundatae, which are entirely absent in *J. granulatus*. It differs from *J. kühnelti* Bal. 1961a, by the appearance of the notogastral setae, which in *J. kühnelti* are thin and smooth, and by its thick ad1; in *J. kühnelti* ad1-a4 are thin and alike.

105 (1), 188 (1), 189 (1), 200 (4), 215 (1), 216 (1).

#### *Javalohmannia* n.gen.

Genital plates divided indistinctly and only laterally. Genital setae 5+3. Preanal plate broader than long. Anal plates but no anal setae. 4 pairs of adanal setae. Transverse bands and areae porosae. No neutrichy. Infracapitulum with 4 pairs of setae. Anterior border of notogaster broad.

Type: *Javalohmannia striata* n.sp.; fig. 9.

Length about 0.84 mm. Colour yellowish – light brown; anterior margin of notogaster brown.

The rostral setae, which are straight and distinctly barbed, are about three times longer than their mutual distance. The other prodorsal setae resemble the rostral setae but are longer, except the anterior exopseudostigmatic setae. Sensillus is short and has 6–8 spine-shaped branches and a long smooth tip, fig. 9a. Behind the pseudostigmata there is a double line of oblong areae porosae. Furthermore, areae porosae are scattered all over the prodorsum.

Notogaster. The anterior border is a broad, densely striate, slightly arched band, broadest at the middle. The notogaster is shield-shaped, being very broad anteriorly, tapering towards the posterior end. There are 32 notogastral setae that are long, thin and barbed, the tip smooth. In profile they appear to be unilaterally barbed, fig. 9d. E1, f1, f2, h1, h2, h3, psl-ps3 are longer than those on the anterior half of the dorsum. There are 10 transverse bands (S1–S 10), fossulae vittiformes transversales and between these scattered, circular areae porosae.

Ventral side, fig. 9b. Infracapitulum with four

pairs of setae. The number of coxisternal setae is 3:1:3:4, the setae being arranged in the usual manner. 1c and 3b are distinctly barbed. 1a is longer than the others. There are areae porosae, sometimes combining into large areas, in all epimeres. The genital plates are indistinctly divided, but only laterally. In the anterior part of the plates there are five setae, in the posterior part three. The setae are rather thick with a transparent edging and barbed like the notogastral setae. The four antiaxial ones are much longer than the four paraxial, the posterior one reaching the anterior adanal seta. The preanal plate, which is difficult to discern because of adhering debris, is as broad as the anterior border of the adanal-anal plates. There are anal plates but no anal setae. There are four pairs of long adanal setae that are alike; their anterior half to two-thirds set with bristles on a transparent edging. Their distal part is smooth, ending in a very thin tip, fig. 9c. Fissurae ia, im, ih, ip and ips were observed.

Remarks. *Javalohmannia* differs from *Meristolohmannia* Bal. & Mah., 1966, by its broad striate anterior border of the notogaster, by its 4 pairs of setae on the infracapitulum (*Meristolohmannia* has two pairs), by an incomplete transverse suture of the genital plates (*Meristolohmannia* has a suture), and by its 8 pairs of genital setae (*Meristolohmannia* has 10 pairs). 17 (1), 200 (2).

*Papillacarus hirsutus* (Aoki), 1961.  
143 (2).

*Meristacarus sundensis* n.sp.; fig. 10.  
Length about 1.15 mm. Colour light brown to brown.

This species can be distinguished from other *Meristacarus* species by the shape of the setae of the dorsal side, fig. 10a. The setae have a short, smooth proximal part, thereafter they are set with coarse bristles, in profile set unilaterally, in a dorsal view set along both sides. The tip is

pointed and smooth. The length of the smooth tip varies. Thus the setae of the dorsum have no smooth tip, the marginal setae a long, smooth tip. Fossulae vittiformes are absent or undiscernible in the posterior part of the dorsum. The sculpture of the integument is very characteristic. Figure 10 shows the six areae porosae situated between the setae e1. They are very deep and the pores at the bottom make the deep rim appear striped. Between the deep areae porosae there are light areae porosae at the level of the integument, resembling those of the fossulae vittiformes. Between the deep pores and the shallow pores there are darker "plates" separated by narrow spaces. The plates are densely punctate. There is both a very fine punctation and a coarser, deeper one.

Ventral side, fig. 10c. Epimeres III and IV are separated by a broad undulating ridge. All the setae are faintly barbed, 3b are thicker than the others. There are large punctate areas, i.e., at the base of Leg I, along the anterior border of Epimeres III, across the ridge between Epimeres III and IV, and on the posterior part of Epimeres IV. The antiaxial genital setae 1 and 4 are longer than 2 and 3. They are barbed proximally and end in a long, smooth tip. The paraxial genital setae are shorter and also barbed. The adanal setae are smooth proximally, thereafter bushy for half their length. The long, distal tip is smooth, fig. 10d.

Remarks. This species can be distinguished from *M. tahitiensis* Ham., 1972 by the appearance of the fossulae vittiformes, by the shape of the setae psl, densely hairy in *M. tahitiensis* but with a long smooth tip in *M. sundensis*, and by the broad ridge between Epimeres III and IV in *M. sundensis*. It differs from *M. madagascarensis* Bal., 1961, likewise by its broad ridge separating Epimeres III and IV, and by the shape of the notogastral setae, which in *M. madagascarensis* all have a long, smooth tip; only the marginal setae in *M. sundensis* terminate in a smooth tip. Balogh, 1961 illustrates the dorsal side of *M. rubescens*

(Can.), 1897. The notogastral setae are very thin and pointed. The areae porosae are partly large, partly small, almost punctiformed. This does not agree with the areae porosae in *M. sundensis*. 5 (1), 117 (1), 139 (1), 143 (1), 194 (1).

*Meristacarus bogorensis* n.sp.; fig. 11.

Length about 1.12 mm. Colour reddish-brown.

This species can easily be distinguished from all other *Meristacarus* species by its thick, hairy setae; fig. 11a shows e2. The proximal part of these hairy setae is smooth and the secondary bristles are more or less unilateral. The tip is often bent ventrally. Some of the setae differ from the thick ones by ending in a smooth tip, viz., the rostral setae, the interlamellar and the posterior exopseudostigmatic setae, fig. 11b. The fossulae vittiformes form an almost circular figure between d1-d1. On either side of this figure there is a gland(?) at a deeper level. The pores are not so deep as in the preceding species. Between the areae porosae there are smaller light areae porosae, shown in the area behind e1-e1 (similar to those in *M. sundensis*, fig. 10b).

Ventral side, see fig. 11c that shows the anogenital region. Of the four antiaxial setae, numbers 1 and 4 are a little longer than numbers 2 and 3. Of the paraxial setae, the posterior one is the longest. They are all smooth. The adanal setae, fig. 11d, terminate in a smooth tip that is shorter than in the preceding species. The posterior setae, which is bent dorsally, is short and thick like many of the dorsal seta. The fused Epimeres III are separated from Epimeres IV by a strong, transverse undulating ridge similar to that in *M. sundensis*. On all Epimeres there are numerous light areae porosae, especially laterally.

185 (3), 186 (3), 187 (4), 188 (3), 189 (3), 190 (5), 196 (7), 197 (3), 198 (5), 199 (9).

#### Epilohmanniidae

*Epilohmannia pallida* Wallw. 1962a, subsp. *pacifica* Aoki, 1965c.

Length about 0.31 m.

The Javanese specimens differ from the subsp. *pacifica* by their smaller size (*pacifica* 0.37-0.48 mm). Furthermore there is no transverse ridge in front of the receding Apodemata II, which is also the case in the main form. Neither is there a transverse ridge behind the genital field. 127 (1), 128 (2), 130 (1), 141 (1), 142 (1), 143 (3), 144 (2).

#### Nothridae

*Nothrus oceanicus* Selln., 1959.

1-3 (1), 105 (2), 155 (9), 156 (13), 157 (6), 158 (7).

*Nothrus flagellum* Csiszar, 1961.

180 (2), 230 (1), 231 (1).

#### Camisiidae

*Camisia segnis* (Herm.).

105 (1).

*Heminothrus exaggeratus* n.sp.; fig. 12.

Length varying from 0.58 to 0.68 mm. Colour light brown.

The lamellar setae, which are situated on short apophyses connected by a ridge, are 3-4 times longer than their mutual distance and densely barbed. The interlamellar setae are extremely long (hence its specific name), longer than the prodorsum, and one third of their length projects beyond the rostrum. The broken line indicates the length from another specimen. The sensillus is expanded distally into a longish disk set with short papillae. The integument is densely pitted and finely punctate.

The notogastral setae are smooth and very long. They are situated on apophyses. The distance c1-c1 is the same as d1-d1. D2-d2 is slightly shorter than e1-e1. In the integument there are scattered small, light, indistinct pits. There are thin longitudinal ridges on either side of the dorsum but no ridges in the middle of the dorsum.

Ventral side, fig. 12a, which shows only the

posterior part. Some of the epimeral setae, i.e., 1b, 3b, 4a and 4c, are as long as the aggenital setae. There is a very narrow split between Epimeres IV. The posterior part of the genital plates is a faint, light brown colour. The number of genital setae is apparently 14–15; they are of the same length as the aggenital and the anal setae. The adanal setae are longer and thicker. This is especially the case with ad1, which are extremely long, crossing behind the posterior end of the mite. Trochanter III has three long, rough setae as long as the joint.

Remarks. The new species is very similar to *H. yamasakii* Aoki, 1958, but it can be distinguished from the latter by its longer interlamellar setae, by its much longer genital setae, and especially by the extremely long ad1 (no longer than ad2–ad3 in *H. yamasakii*).

168 (1), 217–218 (1), 221 (2), 225 (2).

*Heminothrus apophysiger* n.sp.; fig. 13.

Length about 0.63 mm. Colour light brown.

The rostral setae, situated on apophyses on the slightly projecting rostrum, are thick and feathered. The lamellar setae, situated on long apophyses connected by a ridge, together form a high arch in front of the rostrum. They are thick and densely barbed. The interlamellar setae are similar to the lamellar setae and reach the apophyses of the latter. I am unable to tell their exact length as the tip may be broken off. They are situated on short apophyses. From the lamellar apophyses, crests on either side run obliquely backwards to the pseudostigmata. The area between these crests is foveolate and densely punctate. The pseudostigma is a deep brown cup. Sensillus is short, only slightly expanded in its distal half.

Notogaster. The sides are parallel, the posterior end broadly rounded, and the anterior border almost straight. All the notogastral setae are situated on apophyses, the size of the latter varying according to the thickness of the seta in question. All the setae are barbed. C1 and e1 are approximately equally strong, e1 a little longer

than c1. C2, d1 and d2 are thinner, c2 and d2 shorter than d1. The distance c1–c1 is the same as d1–d1. D2–d2 is slightly longer. D1–d2 is half as long as d2–e1. All the setae along the sides of the notogaster are very long, thick and barbed, situated on long apophyses. For most of their length they project beyond the outlines of the notogaster, their thin tips bending slightly medially. Those on the posterior border are shorter than the lateral ones and do not end in a long thin tip. They are strongly bent, forming arches like the lamellar setae.

Ventral side, fig. 13a. There are about 15–16 pairs of thick smooth genital setae. The aggenital setae are thinner than the genital setae. The preanal plate is rectangular. The anal setae are thick and slightly barbed; the adanal setae, which are thicker and strongly barbed, are situated on apophyses. Op1 and op2 are likewise thick and barbed. They are curved. Op2 are directed medially, op1, which are twice as long as op2, are directed backwards, their tips medially. Coxa III apparently only bears two barbed setae. Monodactylous.

225 (1).

#### Trhypochthoniidae

*Allonothrus russeolus* Wallw. var. *reticulatus* Ham., 1972.

129 (1), 133 (88), 134 (3), 144 (1).

*Archeozetes magnus* (Selln.), 1925c.

130 (6), 192 (5), 193 (7), 194 (1), 203 (5).

*Trhypochthonius javanus* Csiszar, 1961.

194 (8), 198 (2), 199 (2).

#### Malaconothridae

*Malaconothrus keriensis* Ham., 1966.

149 (1).

*Malaconothrus geminus* Ham., 1972.

22 (1).

*Malacothrus hexasetosus* Ham., 1971.  
27 (2).

*Malacothrus dorsofoveolatus* n.sp.; fig. 14.

Length about 0.38 mm. Colour white-yellowish.

The rostrum is rounded. The rostral setae are smooth, thin and as long as their mutual distance. A short distance behind the tip of the rostrum is a narrow transverse ridge connecting the lamellar ridges. The lamellar and the interlamellar setae are short, the former reaching the transverse ridge. The exopseudostigmatic setae are minute. The lamellae are almost parallel for their whole length, the area between them is finely foveolate covered by an extremely finely granulate cerotegument. The prodorsum is posteriorly as broad as the notogaster.

The notogaster is evenly rounded at the posterior end without incurvation off h2. The notogastral setae are smooth and moderately long. D1, e1, e2 and h2 are longer than the others. The middle of the dorsum is foveolate, the pits being large and located with a proportionately long mutual distance. Being white on a grey ground, they are very distinct. The foveolate area is limited by faint lines resulting from a different level of the integument. The cerotegument surrounding the foveolate area is irregularly granulate.

Ventral side, fig. 14a. The number of epimeral setae is 3:1:3:3. Most of the setae are short stubs, 3b and 3c being a little longer. There are five (?) pairs of genital setae, the four anterior ones with the same mutual distance, the posterior one displaced twice this distance. The genital setae are smooth, transparent and difficult to discern. No anal setae. The adanal setae, also smooth and transparent, are a little longer than the genital setae. The ventral side is very finely punctate. There are thin transverse lines on the posterior half of Epimeres II.

Remarks. This species may be identical with *M. pseudolamellatus* Willm., 1931, but Willmann's incomplete description and figures do not per-

mit an identification. Both have the transverse lamellar ridge.

129 (2), 130 (16).

*Malacothrus aureopunctatus* n.sp.; fig. 15.

Length about 0.40 mm. Colour yellowish-grey.

The rostrum is rounded, projecting a little beyond the anterior end of the lateral ridges, which bear the smooth, slightly curved rostral setae. The lamellar setae are very thin, hardly discernible. The interlamellar setae, which are about half as long as their mutual distance, are also very thin. The exopseudostigmatic setae are hardly discernible. The lamellae do not seem to bend medially off the lamellar setae. The whole surface between the lamellae is densely punctate with large golden dots, disappearing or becoming very small behind the broken line.

The notogaster has a straight anterior border, parallel sides and a rounded posterior end. The notogastral setae are very thin, smooth and of different lengths. C1, d1, e2 and h2 are rather long, e1 and h1 a little longer. D2 is located further medially than is usual in *Malacothrus* species. There is no line between h1 and h2. Ia is very long. The integument is densely golden punctate, but the dots are much smaller than those of the prodorsum.

Ventral side, fig. 15a. The number of epimeral setae is 3:1:2:3. The epimeres are densely punctate, but only in the areas shown in fig. 15a. There are six pairs of smooth genital setae increasing in length towards the posterior end of the plates. The anal setae are rather thick. The adanal setae are not much longer than the genital setae. Ian was not observed. The integument behind the anal plates is wrinkled.

11 (2), 112 (1), 172 (1), 177 (4), 178 (2), 179 (1), 180 (1), 208 (1).

*Trimalacothrus prahuensis* n.sp.; fig. 16.

Length about 0.39 mm. Colour whitish.

The lamellae form a translamella on the anterior edge of which are situated the smooth,

thin rostral setae. The lamellar setae, which are as long as their mutual distance, are also smooth and very thin towards their tip. The interlamellar setae reach the lamellar setae and are smooth and very thin distally like the latter. The lamellae undulate slightly. The cerotegument between the interlamellar setae is faintly reticulate as a result of secretitious granules.

Notogaster. All the notogastral setae are smooth, the marginal ones bent outwards and forwards. E1, e2, h1 and h2 are slightly longer than the others. There is a faint ridge along the sides of the dorsum. The cerotegument is reticulate.

Ventral side, fig. 16a. I am unable to discern other epimeral setae than 2:1:3:4. The medial ones are absent or minute apart from 4a. 3b, 3c, 4b and 4c are long and smooth. There are five pairs of rather long, smooth genital setae, the four anterior ones with the same mutual distance, the fifth, located close to the posterior border of the plates, is directed forwards. The anal setae are as thick as the genital setae but shorter. The adanal setae are a little thicker and smooth. The preanal plate is indistinct.

This species belongs to the opisthosea group within *Trimalacoethrus* in which the posterior genital seta is displaced posteriorly and directed forwards. The species within this group always (?) have well developed anal setae and a faintly reticulate cerotegument. Species of this group have so far been found only in South America and New Zealand.

162 (2), 164 (1).

#### Nanhermanniidae

##### *Bicyrthermannia* n.gen.

The new genus differs from *Cyrthermannia* by having 16 pairs of notogastral setae, two of which are located close together on a dorsal-posterior tubercle. The posterior crest of the prodorsum has a double-tooth. There are 8 pairs of genital setae.

Type: *Bicyrthermannia duodentata* n.sp.; fig. 17.

Length about 0.60 mm. Colour brown.

The rostral setae, which are bent ventrally, are short and thick. Also the lamellar setae, situated on a short transverse ridge, are short and bent ventrally. They are more than twice as long as their mutual distance and almost reach the tip of the rostrum. The interlamellar setae, located off the posterior part of the pseudostigmata, are sickle-shaped with a proximal spur. Sensillus is slightly thicker at the tip and there set with minute bristles. Behind the pseudostigmata on either side there is a strong almost semicircular ridge that carries the two parts of the crest. The lateral part is very broad at its base, the medial one has parallel sides. The integument is foveolate, but smooth on the rostrum. Between the pseudostigmata it is densely punctate, the punctation being disrupted by a deep furrow with two rows of seven light pits.

The notogaster has a semicircular smooth anterior border and is broadest across the middle. In its posterior part there are three pairs of very large tubercles. On the anterior dorsal tubercle there are two closely set setae (hence the generic name); there is only one in *Cyrthermannia*. The setae have a proximal spur resembling that of the interlamellar setae fig. 17a. The sculpture consists of alveoles of different shapes and sizes.

Ventral side, fig. 17b. The number of epimeral setae is 3:1:3:4. The setae 1b, 3b, 3c, 4b, 4c and 4d are thick and barbed. The paraxial setae are short, conical. The border between Epimeres III and IV is set with chitinous tubercles. There are eight pairs of smooth genital setae and two pairs of long, smooth aggenital setae. The anal setae are short and conical, the three pairs of adanal setae resemble the aggenital setae. The sculpture is similar to that of the dorsum with alveoles. Between some of the alveoles there are narrow fissures as shown in fig. 17b.

The legs. Many of the setae are sickle-shaped

and smooth, some unilaterally barbed. Most of the setae of the tarsi are short and smooth. Monodactylous.

27 (6), 129 (12), 130 (16).

*Cyrthermannia parallela* (Aoki), 1961.

104 (1), 105 (2), 156 (3), 157 (1), 181 (1), 214 (2).

*Nanhermannia thaiensis* Aoki, 1965a.

162–163 (1), 177 (3), 178 (5), 180 (1), 217 (1), 221 (2).

*Masthermannia mammillaris* Berl., 1913.

1 (2), 5 (2), 142 (1), 189 (1), 198 (1), 200 (17).

#### Hermanniiidae

*Phyllhermannia javensis* n.sp.; fig. 18.

Length about 0.69 mm. Colour brown.

The rostral setae, located anteriorly on the rounded rostrum, are curved and bent ventrally. The lamellar setae, located on apophyses on the sides of the prodorsum, are also curved and bent ventrally. The interlamellar setae, which are smooth, sickle-shaped and bent medially, fig. 18a, are situated in front of a very broad punctate area. Sensillus is equally thick throughout, thin and smooth, slightly uneven at the tip. Notogaster. The setae are arranged as shown in fig. 18. The latero-anterior setae are directed forwards, the others backwards. Most of them are curved at the tip and the latter is bent ventrally. The setae are faintly serrate for most of their length, coarsely serrate at the tip, fig. 18b. Those on the latero-posterior corner are directed towards each other, the tips meeting. There are no semilunar ridges in the anterior part of the notogaster as found in several *Phyllhermannia* species. Ventral side, fig. 18c. The number of epimeral setae is 3:1:5:7. The setae vary in length and thickness. Those on Epimere I are very thin, 1b being the longest. 2a is absent. 3a is short and thin. Further laterally there are four long, stiff setae on Epimere III. On Epimere IV there are seven thin setae, the middle one very

short, the remainder very long. They are not located along the anterior border of Epimere IV, but in a zig-zag line almost in the middle of the epimere. The distance between the posterior border of Epimere IV and the genital field is as long as the width of the sejugal apodema.

There are 6 + 3 pairs of genital setae, the anti-axial ones thicker than the para-axial setae. There are two pairs of aggenital setae, the anterior one thinner and longer than the thick conical posterior one. The anal setae are setaceous, the three pairs of adanal setae short, conical.

Remarks. *P. javensis* belongs to those *Phyllhermannia* species in which the the latero-anterior notogastral seta is directed forwards, i.e., *P. kanoi* (Aoki), 1959, *P. gladiata* Aoki, 1965a and *P. similis* Bal. & Mah., 1967. The first two have semilunar ridges on the anterior part of the dorsum. In *P. kanoi* and *P. similis* the tips of the latero-posterior setae meet in a knot as in *P. javensis*. *P. similis* differs from the new species in the number of epimeral setae (3:1:5:6), in the position of the them and in their appearance (Epimere IV with 6 long, stiff, thick setae).

1–6, 9, 11–15, 22, 25, 185, 189. Most numerous in 1 (34), 3 (27), 4 (8), 5 (11), 6 (8), 9 (12), 189 (8), the remainder 1–2.

*Phyllhermannia bimaculata* n.sp.; fig. 19.

Length about 0.70 mm. Colour light brown.

The rostral and the lamellar setae are short and thin, whereas the interlamellar setae are broadly foliate and set with cilia. The interlamellar setae are directed backwards above the two oval punctate areas in the posterior part of the prodorsum. These areas have on their posterior border a brown chitinized tubercle. Sensillus is equally thick throughout, at the tip set with minute bristles.

Notogaster. The 16 pairs of notogastral setae are foliate with a middle rib and ciliate. Most of them are turned so that they are seen in profile, fig. 19a, only a few in a dorsal view, fig. 19b.



They are approximately equally long. On the anterior part of the prodorsum there are two semicircular ridges.

Ventral side, fig. 19c. Only the posterior part is shown. The Epimeres are faintly foveolate-reticulate and densely punctate. The epimeral setae are extremely difficult to see. They are proportionately short. On the genital plates there are 6 pairs of short paraxial setae and 3 pairs of longer antiaxial setae. Of the latter, the anterior pair is about one and a half times longer than the middle one, the posterior one being much shorter. The anal setae are short and thin, the adanal setae perhaps a little stronger. The distance ad1-ad2 is twice as long as ad2-ad3. The legs are reticulate, most of their setae are short spines.

228 (1).

*Phyllhermannia quadrirotunda* n.sp.; fig. 20.

Length about 0.95 mm. Colour brown.

The prodorsum is very broad. Its anterior part is tripartite, the rostrum not projecting much more than the swollen lateral parts. The rostral and the lamellar setae are approximately equally long, the latter situated on short apophyses. The interlamellar setae are broadest proximally, tapering towards the bent tip. They are faintly barbed. Sensillus is very long, thin and smooth. Behind the pseudostigmata there is a very large almost triangular densely punctate area. It is limited on the sides by lateral ridges ending in a tooth opposite a tooth on the anterior border of the notogaster. Along the latero-anterior border of the punctate area is a yellowish band that continues into a yellow area in the middle of the prodorsum between the swollen lateral parts.

The notogaster is a little longer than broad. Behind its anterior border there are four almost closed circles within which the integument is densely punctate. Between them there is a longitudinal yellow line reaching further backwards beyond the circles. The 16 pairs of notogastral

setae are broadest proximally, curved and thin at the tip and finely barbed, fig. 20a. C2 is directed forwards. Four, at the latero-posterior corner are situated close together, their tips meeting. Ventral side, fig. 20b. The epimeral setal formula is 3:1:5:7. The setae of Epimeres I-II are hardly discernible. Epimere III has four long, stiff lateral setae and a tiny medial one. On Epimere IV there are six long setae, all located near the anterior border of the epimere, the longest most laterally. Near the posterior border of the epimere is a tiny hair. The broad transverse ridge in front of the genital field consists of an anterior shorter ridge with tongued posterior border, and a posterior ridge with stronger tongues. The three pairs of antiaxial genital setae are located close to the thickened medial genital border. They are thick proximally like the notogastral setae. The six pairs of paraxial setae are shorter and thinner. The aggenital and the adanal setae are similar to the antiaxial genital setae. The anal setae are very small.

The legs are very strong and have partly long, curved spine-shaped setae, partly short, broad spines. The whole mite is covered with a secretion that forms a network on the legs.

217 (3), 218 (3), 231 (2).

#### Hermannelliidae

*Hermannella orbiculata* n.sp.; fig. 21.

Length about 0.63 mm. Colour light brown.

The rostral and the lamellar setae are situated with the same mutual distance. The rostral setae are rather thick, pointed at the tip and curved medially. The lamellar setae, which are longer than their mutual distance and almost twice as long as the rostral setae, are straight, almost equally thick throughout and uneven. They are situated on low apophyses. The interlamellar setae, which are longer than their mutual distance and shorter than the lamellar setae, are densely barbed. They are located close to a ridge surrounding the pseudostigmata. The latter are unusually close together. Sensillus is bent slight-

tly backwards. It is slender, expanded at the tip, which is set with small bristles. The area between the interlamellar setae is smooth, but further anteriorly and laterally there are dark tubercles.

The notogaster has 14 pairs of similar, slightly clavate and densely barbed setae, fig. 21a. On the posterior border there are eight, equally long setae in a row. The sculpture of the notogaster is foveolate, the pits being round to triangular, often with a light Y-shaped figure inside, fig. 21a. At a deeper level there are darker circles located halfway between and beneath the foveae. The borders of the dark circles can be seen through the foveae thus giving the impression of Y-shaped figures.

Ventral side, fig. 21b. There are seven pairs of smooth genital setae, six of which are located along the medial border, while the seventh g3 is located almost in the middle of the plates approximately off g4. The distance g4–g5 is longer than that between any other two setae. G3 and g6 are a little longer than the others. An1 is thicker than an2. The latter is more pointed. Ad1 and ad2 are approximately equally thick and densely barbed, ad3 is slightly thinner. Both the genital and the anal plates are tuberculate. The medial half of the latter is faintly longitudinally striped.

213 (1), 231 (1).

#### Plasmobatidae

*Plasmobates javensis* n.sp.; fig. 22.

Length about 0.39 mm. Colour light brown.

The thick rostral setae, situated without apophyses on the end of a thin keel along the side of the rostrum, are bent medially. The interlamellar setae are rod-shaped. The sensilli, which are about as long as their mutual distance, are broadest distally, although pointed at the tip. In the middle of the prodorsum there is a short, transverse greyish band that has a bright anterior border and a curved band at either end. In front of this structure there are two longitudinal rows of low tubercles with a furrow between

them. Laterally to this furrow the integument is foveolate.

The notogaster is smooth at the middle. This middle area, which is a greyish colour, is limited from the anterior and lateral parts of the dorsum by a rather distinct line. Beyond this line the integument is brown, further laterally bright brown as a result of the foveolate structure. There are large irregular foveae and many smaller foveae, the latter located medially. On the posterior border of the dorsum is an irregular, strongly chitinized, transverse ridge apparently carrying three pairs of notogastral setae, i.e., two medial ones with globular setae (?) (2–3), the lateral one (4) indicated only by its insertion pore.

Ventral side, fig. 22a. There are seven pairs of rather long smooth genital setae, two pairs of shorter anal setae and three pairs of adanal setae, the latter indicated by their insertion pores. Aggenital setae were not observed. On the ventral side of the posterior dorsal ridge there is another ridge with perhaps six pairs of notogastral setae, some of them only indicated by their insertion pore. In the middle are two long apophyses each with a thin seta (5–6), further laterally a much smaller hair (7). The fourth is represented by a pore only (8), the fifth by a globular seta (?) (9) and also the sixth only by its pore (10) (I may have misinterpreted these hair pores). If correct, it means that there are 10 pairs of notogastral setae.

110 (2), 122 (1).

#### Lioididae

*Liodes alatus* n.sp.; fig. 23.

Length about 0.86 mm. Colour red-brown.

The rostral setae are situated on the anterior margin of the very broad rostrum. They are strongly curved, smooth and a little longer than their mutual distance. Across the prodorsum there is a dark transverse ridge and behind the ridge some indistinct longitudinal ridges. In the middle of the prodorsum there are two well-

defined longitudinal ridges bordering a rectangular area at the base of which are inserted the interlamellar setae. The pseudostigma is a deep cup, the wall of which is strengthened by thin crossing ribs. In a dorsal view the pseudostigmata appear like two oblong ovals surrounded by a black border. From the posterior border of the pseudostigmata a reddish-brown triangular plate penetrates between the interlamellar setae. Its anterior border is a strong ridge. The sensillus has a slender stem and a fan-shaped distal head set with fine barbs, fig. 23a. I am unable to discern the exopseudostigmatic setae. Behind the black triangular plate there is a very distinct black line.

The tritonymphal scalp, fig. 23b. The smooth, light yellow, middle keel, tapers a little towards its posterior end, which is decorated with some small tubercles. Its sides are steep, indicated by oblique lines. At a lower level, the integument is reticulate, the reticulation being replaced along the lateral borders of the scalp by radiating lines. The lateral parts are a brownish colour. In the anterior part of the scalp, the middle part has very steep sides up to the marginal part. This semilunar part embracing the yellow posterior keel is a dense reddish colour. The integument located laterally to the keel and in front of the radiating lines is a lighter colour and decorated with small tubercles, the rising sides with larger tubercles. At the posterior end of the scalp there are two crossing lanceolate setae. Along the posterior border there are five pairs of stiff setae, one of which is inserted on the dorsal surface. One seta of the middle pair is missing.

Ventral side, fig. 23c. The epimeres and the ventral plate are strongly chitinized with furrows and light holes on a yellow ground. The epimeral setal formula is 3:1:2:3. 1b is much longer than the others. The setae are moderately long, thin at the tip, and perhaps have a middle rib. There are 10 (11) pairs of genital setae, arranged paraxially with 6 (7) on the anterior plate, 4 on the posterior one. They are smooth, thin at

the tip and about twice as long as their mutual distance. The anterior pair is a little shorter. The integument of the genital plates is obliquely striped, the lines forming a faint reticulation. The lateral part of the plates, which are a deep reddish colour, is separated from the middle part by a deep irregular furrow. The aggenital setae are located at the latero-posterior corner of the genital field. The preanal plate is longish. The anal plates have deep longitudinal, curved furrows. There are three pairs of lanceolate anal setae, about as long as the distance between the two posterior ones. Iaa is located in the anterior smooth part of the plate. Iad is long, located off the latero-anterior corner of the anal field. There are three pairs of adanal setae. Figure 23d shows the right Femur I. Distally on its medial side there is a broad rounded crest or wing (hence the specific name) that continues backwards to the proximal seta. The setae have a very thin membrane along their anterior border, fig. 23e. A smaller wing is present distally on the lateral side of the femur. The integument is distinctly reticulate, the wings irregularly striate. All tarsi have three equally strong claws. 23 (1), 25 (1).

#### Plateremaeidae

*Plateremaeus* (sensu Trägårdh, 1931) *rotundatus* Berl., 1913.  
15 (1), 16 (1), 22 (5), 23 (8), 24 (2) 26 (1).

*Plateremaeus* (sensu Trägårdh, 1931) *excavatus* n.sp.; fig. 24.

Length about 0.50 mm. Colour brown.

The anterior half of the prodorsum is regularly foveolate, the posterior half has smaller pits and thicker irregular ribs. The interlamellar setae are short spines. Sensillus is rather short and very broad, the head set with scales, fig. 24a.

Notogaster. Behind the anterior rounded border there are irregular winding ribs with smaller and larger pits in between. The middle part of the dorsum is at a higher level than the latero-

posterior excavated parts. The latter are separated by a dorsal keel that almost reaches the posterior end of the notogaster. The elevated dorsal part has large, regular, round pits, the excavated lateral parts smaller pits separated by irregular ribs. There are four pairs of narrow, foliate notogastral setae. There is no incurvation between the two posterior setae as in *P. rotundatus* Berl. Ventral side. The whole ventral side is foveolate, the epimeres irregularly foveolate, the ventral plate with large regular round pits. There are seven pairs of short genital setae, located along the medial border, one pair of short aggenital setae, two pairs of moderately long anal and three pairs of adanal setae. Ad1 are postanal, ad2 and ad3 are located off the sides of the anal field, ad2 at the latero-posterior corner, ad3 off the middle of the field. A very thick layer of secretion prevents me from determining the shape of the broad foliate setae set distally on the different joints. Tridactylous, the middle claw being much thicker than the lateral ones.

118 (1).

*Plateremaeus* (sensu Trägårdh, 1931) *callosus* n.sp.; fig. 25.

Length about 0.69 mm. Colour brown.

The rostral and the lamellar setae are long, smooth and thin distally. The broad middle area of the prodorsum is almost regularly foveolate. Further posteriorly there are some small irregular pits. Immediately behind the border of the rostrum there are polygonal meshes each having a light dot. The interlamellar setae are short, thick spines. The sensillus has a rather long stalk that becomes evenly broader towards its end. It is set with broad transparent scales, on the stalk with narrower scales, fig. 25a.

Notogaster. The anterior border forms a brown band that is slightly arched in the middle. *P. callosus* is so strongly chitinized that the pits become narrow, irregular, often triangular slits instead of round pits, the slits being separated by thick irregularly running ridges, fig. 25b. In the

posterior border of the notogaster there is a rather deep incurvation. There are four pairs of notogastral setae. Figures 25c and 25d show a lateral seta in profile and a posterior seta half from above, respectively. They are narrow, foliate with a slightly serrate border.

Ventral side. The epimeres are irregularly wrinkled. The integument on the anterior part of the ventral plate is also wrinkled, whereas there are large round pits along the posterior border of the ventral plate. The genital plates are reticulate, the anal plates have large round pits in oblique longitudinal rows. The frames of the genital and the anal field touch each other. There are seven pairs of long, very thin genital setae, one pair of aggenital setae similar to the genital setae, two pairs of anal setae and three pairs of long, thin adanal setae. Ad1 are postanal, located on either side of the incurvation in the posterior border of the ventral plate, ad2 are located at the latero-posterior corner of the field, ad3 off the middle of the field, twice as far from the field as ad2.

Distally on all femora and all genus there is a broad foliate seta with ribs. It is also present on Tibia IV and Tarsus IV. Because of adhering debris I am unable to determine whether it is also present on Tibiae I-IV and Tarsi I-III. Tridactylous, the claws being almost equally thick.

1969: 162 (3), 168 (4), 169 (2), 117 (2).

#### Belbidae

*Belba macropoda* Berl., 1904.

Length about 0.78 mm.

Most characteristics of the only adult specimen found agree with *Berlese's* fig. 50. The rostral and the lamellar setae are, however, much longer and curled medially. There are four large tubercles on the posterior part of the prodorsum, and opposite the outer tubercles similar ones on the notogaster. The eight radiating notogastral setae on either side of the dorsum are almost equally long.

13 (1), 17 (1 nph.).

## Cepheidae

*Sadocephus dubius* n.sp.; fig. 26.

Length about 0.65 mm. Colour dark brown.

It proved impossible to show details of this mite in a dorsal view; by dissecting it most details could, however, be seen. The lamellar setae, situated on the rounded end of the lamellae, are thin and smooth, crossing. The interlamellar setae, located at the base of the lamella, are apparently also smooth. The sensillus is slightly thicker at the tip and there set with dark stiff bristles, fig. 26a.

The notogaster is broader than long. Its anterior margin is straight. The shoulders project anteriorly as broad pointed triangular plates as far as the opening of the pseudostigmata. Further posteriorly, the shoulders are narrower hiding the base of Legs II–IV. The shoulders have a fine sculpture, fig. 26b, and are strengthened by ridges, fig. 26c. There are apparently seven pairs of smooth notogastral setae, viz., five near the lateral border, radiating, and two shorter ones on the posterior border, fig. 26c and d.

The ventral side, fig. 26e, resembles that of *S. undulatus* Aoki, 1965b. There are six pairs of genital setae, fig. 26f. The anterior pair is considerably longer than the others. The aggenital, the anal and the adanal setae are minute. Iad, which is curved, is located in front of ad3. Figures 26g–i show Legs I, II and IV. Genu II has two short spines distally. Coxa IV has a long distal spine. In the middle of Tarsus IV there is a short ventral spine. Monodactylous. On the outer border of the claw of Tarsus IV there are minute teeth.

Number of Solenidia	Tarsus	Tibia	Genu	Femur
I	2	2	1	0
II	2	1	1	0
III	0	1	1	0
IV	0	1	1	0

Remarks. As *S. undulatus* Aoki apparently has five pairs of notogastral seta (at least five, Aoki),

the new species may not belong to the genus *Sadocephus*.

110 (2).

## Idiozetidae

*Idiozetes javensis* n.sp.; fig. 27.

Length about 0.243 mm. Colour black.

*Idiozetes* was established by Aoki, 1976, from West Malaysia. This is a very complicated genus. Its members are covered with thick cerotegument which, together with the black pigment, makes it extremely difficult to discern details. This is also evident from Aoki's figures. For this reason the following figures must be judged with some indulgence. The species from Java is characterized by the same peculiar structures as *I. erectus* from Malaysia, but at the same time it is very different.

The lamellae can be traced backwards to the pseudostigmata, which are hidden beneath the proximal part of the lamellae. Their anterior part or the cuspis is broad, surrounded by a tongued, thin membranous rim. Their tip is bent medially. The lamellae proper are separated by an arch, in front of which are located two small setae. The lamellar setae may be located on the medial part of the cusps, where two fine setae can be discerned. Rostral setae were not observed. The sensillus has a long thick stalk and a flat dark club-shaped head.

Pedotecta I and II are very well developed, II projecting laterally as far as the much narrower pteromorphae. Behind the lamellae there is a light spot that seen in profile appears to be a transparent vesicle, fig. 27a. From its posterior border issues a narrow furrow that continues backwards to the posterior border of the dorsum. On either side of the vesicle there is an appendage, the exact shape of which it is difficult to see. They are probably more or less like butterfly wings. The pteromorphae are narrow, pointed at the tip, which is bent ventrally. In a lateral view, fig. 27a, the dorsum is more or less flat, its posterior border steep. Eight pairs of short notogastral setae were observed. Apart

from the four posterior ones (3+1), the setae are located differently from those of *I. erectus*.

Ventral side, fig. 27b. In front of the infracapitulum project two dark slightly converging plates, almost reaching the tip of the cusps. It is not known whether the rostral setae are located on the tip of these, or immediately in front of the infracapitulum as in *I. erectus*. I am unable to see more than 7 pairs of genital insertion pores and one pair of anal pores. No aggenital and adanal pores, all setae absent or impossible to see. There are faint pits in the cerotegument covering large parts of the mite. The legs are short and well protected: I beneath pedotectum I and the lamellae; II beneath pedotectum II; III beneath the pteromorphae. In a ventral view leg IV is covered by a plate (?) of secretion. Monodactylous. The distal setae of the tarsi are club-shaped.

179 (1).

#### Microtegeidae

*Microtegeus reticulatus* Aoki, 1965a.

15 (1), 17 (2), 18 (2), 20 (1), 23 (2), 24 (1).

#### Microzetidae

*Microzetes auxiliaris* Grndj var. *pachyseta* Ham., 1971.

26 (2), 107 (3), 108 (1), 109 (2), 110 (11), 117 (1), 186 (1), 187 (1), 197 (1).

*Szentivanyella szentivanyi* n.sp.; fig. 28.

Length about 0.215 mm. Colour light brown.

The long, curled rostral setae are situated at a short mutual distance on the anterior border of a ring-shaped ridge immediately behind the margin of the rostrum. This ring can best be seen in a ventral view, fig. 28b. In this position, the species differs from the type species *S. latilamellata* Bal. & Mah., 1969, in which the rostral setae disappear below the lamellae laterally to the rostrum and far behind the tip of the latter. The lamellar setae, which are located immediately below the anterior border of the

broad cusps, reach the tip of the rostrum. They are stiff spines and almost twice as long as their mutual distance. The lamellae are very broad, the cusps meeting for their full length in a straight line. The anterior borders of the cusps are incurved, ending laterally in a smooth tip on a level with the rostral setae. The interlamellar setae, which are situated at the base of the lamellae, are setaceous and almost as long as the lamellar setae. The sensillus is fusiform, set with thick black cilia at the tip and along its posterior border, fig. 28a. At the posterior border of the prodorsum there are two small light areas with a few tubercles.

Notogaster. There are eight pairs of fine notogastral setae. In front of r1 and r3 there is a small pore.

Ventral side, fig. 28b. I am unable to discern any epimeral setae other than those shown in the figure. There are six pairs of genital setae, the anterior pair is stiff and thick, almost reaching to 4a, the others are minute. Two of the pairs are located very far laterally. The genital and the anal fields are approximately equally large. *Balogh & Mahunka* write: "genital aperture large, much bigger than the anal opening", but they do not show the ventral side. Laterally on the ventral plate there are some light areas resembling areae porosae.

This species is named in gratitude to Dr. *H. J. Szentivany*, who gave his name to the genus.

4 (1), 6 (1).

#### Eremulidae

*Eremulus avenifer* Berl., 1913.

5 (1), 105 (2), 106 (3), 108 (2).

*Eremulus truncatus* Ham., 1971.

196 (1).

*Eremulus densus* n.sp.; fig. 29.

Length about 0.33 mm. Colour yellowish – light brown.

The rostral and the lamellar setae are long,

smooth and bent medially. The interlamellar setae, which are located close together, are about three to four times longer than their mutual distance, meeting or crossing at the tip. The exopseudostigmatic setae are rather short. The sensillus is extremely long, densely set with short spines as far as the bend, where there are only a few spines, thereafter again set with dense spines, the tip bare. There are many pits on the prodorsum and some very large ones medially to Leg I.

There is a latero-anterior crest on either side of the notogaster. The notogastral setae are dark, bent medially, the lateral ones being almost semicircular. The pits in the belt across the dorsum are very close together. The specific name of this mite refers both to the densely set spines on the sensillus and to the densely set pits in the transverse belt. The distance 1a-1a is the same as 1m-1m and 1p-1p. Both prodorsum and dorsum are densely punctate or granulate (?).

Ventral side, fig. 29a (drawn on a larger scale than the dorsal side). The number of epimeral setae is 3:1:3:3. Apart from 1c, all setae are star-shaped, some with two branches, others with three. All the genital setae are star-shaped and so are the three pairs of aggenital setae. The adanal and the anal setae are setaceous. The ridge in front of the genital field is pitted, also pedotectum I is pitted.

109 (2), 155 (1), 188 (3).

*Eremulus tenuis* n.sp.; fig. 30.

Length about 0.29 mm. Colour yellowish-grey.

This species can be distinguished from the preceding one by its smaller size, its slender habitus, its lighter colour, its shorter interlamellar setae, by the few and more scattered pits both on the prodorsum and in the transverse belt on the notogaster and especially by the shorter and thinner sensilli, the cilia being longer and more scattered. There is a faint reticulation laterally to the lamellar ridges.

Notogaster. The notogastral setae are a light colour. Their distal half is very thin and bent strongly medially and forwards, especially da and dm. Dp are longer and almost meet at the tips. Da is located almost on a level with 1m; dm with 1p, i.e., the medial setae are located further posteriorly than in *E. densus*. This makes the distance cl-da very long. The integument is covered with a thick layer of granules.

The ventral side much resembles that of *E. densus*. Apart from 1c, the epimeral setae are star-shaped. Also the genital and the three pairs of aggenital setae are star-shaped. The anal and the adanal setae are setaceous. Ad3 is located almost off the middle of the anal field, ad2 at a distance as long as the seta behind ad3. Both are directed medially reaching beyond the anal frame. Iad is located at a good distance in front of ad3, off the anterior anal seta. In front of the genital field there is a broad densely pitted ridge, much broader than that of *E. densus*.

128 (1), 155 (1), 157 (1), 158 (1).

#### Damaeolidae

*Fosseremus laciniatus* (Berl.), 1905.

107 (5), 108 (3), 109 (7), 110 (8), 141 (6), 196 (1).

#### Eremobelbidae

*Eremobelba* (?) *capitata* Berl., 1913; fig. 31.

The specimens found differ from the type species by their smaller size (0.425 mm, *Berlese's* 0.485 mm), by the shape of the sensillus, which is not so strongly bent, and by the longer exopseudostigmatic seta. The posterior notogastral setae correspond to those of the type, but only the anterior straight part of the others is illustrated, probably because it has been difficult to see the whole length of these very thin setae. Ventral side, fig. 31a. The number of epimeral setae is 3:1:3:3. 1b, 3b and 3c are star-shaped. On the ventral plate there are 14 pairs of setae. The four posterior pairs are considerably longer

than the others and slightly curly. Tubercles are arranged in rings round the base of most of the setae.

24 (1), 25 (1).

*Eremobelba flexuosa* n.sp.; fig. 32.

Length about 0.56 mm. Colour brown.

The lamellar setae are thin and situated on apophyses. The interlamellar setae, which are very long and thin, reach beyond the base of the lamellar setae. In front of them there is a transverse ridge that continues into the ridges that half surround the pseudostigmata. Behind the interlamellar setae there are two small twisted chitinous figures. The sensillus is slightly curved, its tip not bent medially like that of *E. capitata*. The exopseudostigmatic seta is moderately long.

Notogaster. Its anterior border has distinct latero-anterior corners. The notogastral setae are all very curly, often with loops. The anterior ones are directed forwards. The tubercles on the integument are small and evenly scattered over the dorsum, not forming a pattern. Behind the anterior border of the notogaster there is a light furrow.

Ventral side, fig. 32a. The exact length and shape of the setae of the ventral side are sometimes difficult to see. The number of epimeral setae is 3:1:3:3. 1b, 3b, 3c and 4b are star-shaped. On the ventral plate there are 14 pairs of rather thin aggenital-adanal setae. The three posterior ones are very long, thin and curly. The anterior part of the anal frame is thickened. The tubercles on the ventral side are small and not arranged in a pattern.

109 (2), 110 (1).

#### Heterobelbidae

*Heterobelba galerulata* Berl., 1913; fig. 33.

Length about 0.43 mm (the type specimen 0.34 mm).

Only a few characteristics of the specimens found differ from the type. The interlamellar

setae are longer. The rostral setae show sexual dimorphism, being smooth in the female, fig. 33, and proximally bushy in the male, fig. 33a. The whole dorsum is covered by a reticulate veil (see detail fig. 33b) that projects anteriorly to the interlamellar setae. On either side of the dorsum there is a glandular tube from which issue secretitious bands.

Ventral side, fig. 33c. The number of epimeral setae is 3:1:3:4. The setae are rather long and rough. There are 7 pairs of genital setae, one pair of aggenital setae, two pairs of anal and three pairs of adanal setae. Iad is located off the middle of the anal field. The legs are short and provided with tough spines, fig. 33d.

Number of

Solenidia	Tarsus	Tibia	Genu	Femur
I	2	2	1	0
II	2	1	1	0
III	0	1	1	0
IV	0	1	0	0

Number of claws: I-III one claw, IV three claws. 142 (1nph), 146 (1 ♂), 173 (1 ♀), 174 (1 ♀).

#### Basilobelbidae

*Xiphobelba margosetosa* n.sp.; fig. 34.

Length about 0.73 mm. Colour light brown.

The rostral setae, which are located on the broad proximal part of the rostrum, are smooth and reach beyond the tip of the very long pointed part of the rostrum. The lamellar setae are situated on apophyses at the same level as the rostral setae. They are very strong, ending in a spine and laterally set with about 7 long smooth spine-shaped branches. They reach beyond the rostral setae. The interlamellar setae, also situated on apophyses, are located laterally to the pseudostigmata. They are thick, barbed spines. The exopseudostigmatic setae are long spines, thinner than the interlamellar setae. The sensillus is thread-shaped, its distal half set with long, smooth, secondary bristles.

Notogaster. Anterior border rounded. There



are nine pairs of minute stiff hairs, fig. 34a, arranged as shown in fig. 34. H1, h2 and h3 are on or just below the latero-posterior border, ps1, ps2 and ps3 on the ventral side of the posterior border, all six being located rather close together on the border (hence the specific name). Im is located behind Ia. Further posteriorly off Im there is a glandular opening and in front of Ip a chitinous scale. Ia was not observed, ip can be seen between ps2 and ps3. In the middle near the posterior border there is a small projection. The integument is smooth.

Figure 34b shows the exuvium, the buckle of which can still be seen on fig. 34, carrying c2. Seven pairs of long smooth setae were observed on the tritonymphal scalp. La and Im are situated on the sides of the exuvium, Ip, h1-h3 and ps1 in a row on the posterior border. La is apparently shorter than the others. They are all surrounded with a broad fringe of secretion. The exuvium is decorated with an almost regular pattern of deep pentagonal cells. C1 and c2 can be seen near the anterior border of the deutonymphal scalp. They are as long as the distance c1-c1.

Ventral side, fig. 34c. Apodemata I and II are short bent ridges. The sejugal apodemata form a narrow transverse ridge ending on either side in a backwards-directed tooth; opposite there is another tooth, a little duller, located on Epimeres III. On Epimere I there are three setae, on Epimer II one seta, which is thinner than those of Epimere I. I am unable to distinguish the setae of Epimeres III-IV from the aggenital-adanal setae; all are alike, rather long, thin and slightly barbed. There are six pairs of genital setae, the anterior pair, directed forwards, is thinner than the others. There are apparently 12-14 pairs of aggenital setae and three pairs of adanal setae. The three pairs of anal setae are thin and as long as the aggenital setae. Iad is displaced at some distance from the anal field and is located off the middle anal seta. Pedotecta I-II are well developed. On all the joints of the

legs there are some very strong branched spines with up to eight branches, i.e. on Femur I. Monodactylous.

19 (1), 180 (1 nph.).

#### Zetorchestidae

*Zetorchestes pacificus* Selln., 1959.

1969: 165 (1).

#### Astegistidae

*Cultroribula lata* Aoki, 1961.

105 (1), 107 (3), 110-112(1), 131 (1), 156 (1), 173 (1), 176 (1), 231 (1).

*Cultroribula bicultrata* (Berl.), 1904.

133 (1).

#### Metrioppiidae

*Austroceratoppia* n.gen.

*Austroceratoppia* is very similar to *Ceratoppia* and *Pseudoceratoppia*, but differs from both in the appearance of the ventral side, having no transverse ridge in front of the genital field. A light furrow issuing from the anterior border of the genital field runs laterally and forwards meeting a backwards-directed ridge or keel from Acetabulum IV. The ridge continues very faintly to the genital frame. There are two long setae at the posterior end of the notogaster. Six pairs of genital setae, one pair of aggenital, two pairs of anal and three pairs of adanal setae.

Type: *Austroceratoppia dentata* n.sp.; fig. 35.

Length about 0.49 mm. Colour light brown, yellow between the lamellae.

The rostral setae, situated on either side of the triangular rostral tip, are barbed, very thick and about three times longer than their mutual distance. There are two teeth laterally to the rostral setae. The sides of the prodorsum behind the teeth are smooth. The lamellae and cusps resemble those of *Ceratoppia*. The lamellar setae are thick, barbed and almost twice as long as the cusps. The interlamellar setae, which are a little

thinner than the lamellar setae, reach beyond the tip of the rostrum. The sensillus is barbed, thinner than the interlamellar setae, and almost as long as the latter.

The notogaster has a straight anterior border, otherwise it is almost globular. At the posterior end there are two pairs of very long, thick, barbed setae. Five pairs of pores were observed along the sides of the notogaster.

Ventral side, fig. 35a. The apodemata are separated from those of the opposite side by a very large distance. 1a, 2a and 3a are setaceous, the others are longer, thick and barbed, 3c being by far the strongest. The genital plates are angular, bordered latero-anteriorly by a small triangular plate. There are six pairs of fairly long, thin, smooth genital setae, viz., three paraxial in the anterior third of the plates and three anti-axial with the same mutual distance arranged from the anterior to the posterior end of the plates. On either side of the anterior border of the genital field, a light furrow runs laterally meeting a keel issuing from Acetabulum IV. From the posterior end of the keel a faint dark line runs medially to the genital frame. The thin aggenital seta is located on this line. There are two pairs of thin anal setae and three pairs of thick, barbed adanal setae. Ad1 and ad2 are located on a line behind the anal field. In the type specimen (♂) ad1 is longer than ad2-ad3, in another specimen (♀) ad1 and ad2 are equally long. Ad3 is situated off the middle of the anal field. Iad is close to ad3. Pedotecta I-II are well developed. Coxa III has a long, thick barbed spine as in *Ceratoppia*. Genu, Tibia and Tarsus IV all have a very thick barbed, distal outer spine. Tridactylous.

Remarks. *A. dentata* much resembles *Ceratoppia crassiseta* Bal. & Mah., 1967, but it can be distinguished from the latter by the tip of the rostrum and the two rostral teeth, by its much longer rostral and lamellar setae, by the different appearance of the ridges near the genital

field, and by its larger size (*C. crassiseta* 0.395 mm).

12 (1♂), 14 (1♀).

#### Carabodidae

*Aokiella rotunda* n.sp.; fig. 36.

Length about 0.31 mm. Colour greyish.

The rostral and the lamellar setae are short, smooth and curved medially. The interlamellar setae, situated on the medial border of the lamellae, are curved outwards and forwards reaching the base of the lamellar setae. The tip of the sensillus is split up into a few meeting branches. The integument between the lamellae is foveolate, the pits often confluent forming faint ridges between them. The notogaster has a straight anterior border and small shoulders divided into two parts, the anterior one carrying a short thick seta, the posterior one with a very long thick seta. In the anterior half of the dorsum there are three pairs of long, thick setae, the anterior one directed forwards reaching beyond the base of the interlamellar setae, the other two directed backwards. In the posterior half of the dorsum there are twelve pairs of similar long setae arranged in transverse rows (4+4+2+2), their tips all meeting in a knot near the end of the dorsum. Furthermore, there are four pairs of short, thick setae along the posterior border. The sculpture consists of greyish scales arranged in rosettes of 6-7 scales (hence the specific name). Ventral side, fig. 36a. The sternal plate is broad, the apodemata narrow. The epimeres are distinctly reticulate, the alveoles cutting into the sternal plate. Laterally, the integument is finely granulate. The number of epimeral setae is 2:1:2:4 (I am unable to discern others). In front of the genital field there is a broad arch. There are six pairs of short genital setae, one pair of short thick aggenital setae, two pairs of thin anal and three pairs of short, broad adanal setae. The anal plates end in a sharp posterior tip. Along their medial border there is

a striped membrane. The integument of the genital and the anal plates is granulate. The ventral plate has irregular, indistinct ribs. Iad is short and located close to ad2. The legs are short. Genus I-II have a strong medial spine. The dorsal part of Femora III-IV is distally drawn out into a broad tongue, which half covers Genus III-IV. Monodactylous.

25 (1).

*Gibbicepheus ventrostriatus* n.sp.; fig. 37.

Length about 0.61 mm. Colour light brown.

The rostral setae are broad, their dorsal side ribbed. The lamellar setae are depressed, smooth. The interlamellar setae, fig. 37a, which are located at some distance from the lamellae, are as long as their mutual distance, foliate with ribs set dorsally. A keel runs across the lamellae on a level with the interlamellar setae. In front of this keel the lamellae recede to a lower level. The lamellae are pitted. The integument between the lamellae is folded, wrinkled. The sensillus, fig. 37b, becomes gradually thicker towards the tip. It is densely set with papillae on its outer surface. Its distal third is bent backwards and medially. The notogaster has a straight anterior border. The shoulders do not project beyond the outlines of the sides of the notogaster, but recede to the level of the pseudo-stigmata. The 14 pairs of notogastral setae are arranged as shown in fig. 37. The setae are foliate, slightly pointed at the tip and provided with thin ribs on their dorsal side, fig. 37c. As seen from the ventral side or half in profile, they are smooth, fig. 37 d. The tubercles of the integument are arranged in more or less regular rings.

Ventral side, fig. 37e. Between Apodemata II and the sejugal apodemata there is an almost full circle.

The medial part of all epimeres is reticulate. The number of epimeral setae is 2:1:3:3. The setae 1a, 2a and 3a are absent, the others are

thin and curly, as also the aggenital setae. There are four pairs of thick genital setae. The anal setae are thin, whereas the adanal setae are lanceolate with a middle rib. Iad was not observed. Across the ventral plate there is an H-shaped, heavily chitinized figure. The anterior part of the ventral plate is irregularly striped. Also the epimeres are striped laterally.

Coxae III-IV have a posterior keel; Femora III-IV a keel that projects and half covers the genus. The distal setae of all the tarsi end in a knob.

107 (2), 108 (1), 109 (1), 111 (1), 112 (1).

*Gibbicepheus fenestralis* n.sp.; fig. 38.

Length about 0.67 mm. Colour brown.

The rostral and the lamellar setae are similar and provided with a middle rib. The interlamellar setae are longer and broader, with two ribs. The sensillus is thin, densely set with small spines on its outer side, its tip bent medially backwards, fig. 38a. The sculpture between the lamellae consists of small pits in oblique rows.

Notogaster. The shoulders hardly project beyond the outline of the dorsum. There is only one middle rib on the broad foliate notogastral setae, fig. 38b. All the setae are alike. In the integument there are large round pits, set more or less in oblique rows.

Ventral side, fig. 38c. The epimeres are reticulate. The number of epimeral setae is 2:1:3:3. Setae 1a, 2a and 3a are absent, the others are thick, pointed and slightly curved. In the middle of the very broad sternal plate there is a light area at a deeper level off Epimeres III. The chitinous arch in front of the genital field is displaced a short distance from the latter. Behind Acetabulum IV in continuation of this chitinous arch, at a deeper level, there is a blackish structure, but its exact shape is difficult to see (punctate in fig. 38). There are four pairs of long genital setae. The aggenital setae are stiff and thick, whereas the adanal setae are long,

broad with a dorsal middle rib. The anal setae are short and stiff. Iad was not observed. Behind ad3 is a transverse light furrow that continues backwards along the side of the anal field. Behind the furrow there radiate some indistinct, greyish stripes that reach the posterior border of the ventral plate. Thinner stripes radiate from the dark lateral structures. Between the genital and the anal field there are two oval light areas resembling windows (hence the specific name). The legs are similar to those of the preceding species.

1969: 164 (1); 118 (1), 120 (1).

#### Tectocephidae

*Tectocephus velatus* (Mich.).

Found in 42 samples, but always in small numbers, the largest being 6. Present in the following series of samples, but not in every sample:

1-11, 101-109, 118-129, 141-158, 178-189.

*Tectocephus sarekensis* Trgdh.

This species was not separated from the preceding one except in a few samples.

2 (1), 103 (1), 158 (1), 172 (1).

#### Dampfiellidae

*Dampfiella angusta* n.sp.; fig. 39.

Length about 0.64 mm. Colour light brown.

The rostrum is very narrow as far as the base of Leg I (hence the specific name). It has almost parallel sides and a truncate, transparent, anterior border. A transparent membrane surrounds the rostrum for two-thirds of its length. The transition between the rostrum and the broader posterior part of the prodorsum runs transversally. The rostral and the lamellar setae are smooth and moderately long. The interlamellar and the exopseudostigmatic setae are not discernible. The sensillus has a slender, lanceolate, smooth black head on a very thin stalk.

Notogaster. The shoulders are long and sloping. A deep incurvation lies immediately behind the shoulder. There are four pairs of stiff

marginal setae and four pairs of slightly longer curved dorsal setae (ti, ms, r2, r1). Ta and te are missing or not discernible. The insertion pore of ta is located off the shoulder, te laterally to the longitudinal ridge near the anterior end of the latter, and far from im. The distance ti-ms is the same as ms-r2. R2-r1 is a little shorter. P1-p1 is the same as p1-p2; p2-p3 the same as p3-r3.

The ventral side is similar to that of *D. similis* Ham., and *D. dubia* Ham. both 1971, and *D. euaensis* Ham., 1973, i.e., a broad transverse band in front of Apodemata II, none in front of the genital field. Ad3 are preanal, located with a mutual distance of the width of the anal field and removed the same length from the latter. Ad1 are postanal and moderately long. Ad2 are located at the sides of the anal field. The setae ad2-ad3 are not discernible.

The new species is related to the above-mentioned three species from the Pacific with the smooth sensillus, the sloping shoulders and the absence of a transverse band in front of the genital field. It can be distinguished from the Pacific species by its very narrow rostrum and the position of te being located far anteriorly. These four *Dampfiella* species may represent a separate genus.

1969: 165 (1).

#### Oppiidae

*Amerioppia vicina* Ham., 1971.

16 (1).

*Amerioppia ventrosquamosa* n.sp.; fig. 40.

Length about 0.25 m. Colour light brown.

The lamellar setae are as long as their mutual distance. Sensillus clavate, pointed at the tip and set with coarse bristles.

Notogaster. The setae ti, te, ms, r3, and r2 are equally long and very thin. The distance ti-ti is a little longer than ms-ms. The latter is about one and a half times longer than r2-r2; r3-ms is half as long as ms-ms.

Ventral side, fig. 40a (drawn in a larger

magnification than the dorsal side). The species is characterized by having two small scales or lobes projecting over the sejugal apodemata, one on either side of the sternum. Opposite them there are two teeth or lobes issuing from the anterior border of the fused Epimeres III-IV. 3a are situated immediately behind these teeth.

133 (1).

*Amerioppia javensis* n.sp.; fig. 41.

Length about 0.26 mm. Colour: dorsum yellowish, prodorsum light brown.

It has all the characteristics of an *Amerioppia* species, therefore only the most important features will be mentioned.

The lamellar setae are very thin and about as long as their mutual distance. The sensillus is unusually long and thick ending in a spine, which is longer than those along the border of the head. There are about 7-11 equally long spines on the anterior margin, 9 on the posterior margin. The sensillus is directed straight outwards.

Notogaster. There are five pairs of equally long notogastral setae (ti, te, ms, r2 and r3). In some specimens these setae are slightly shorter than in fig. 41. R1 is a little shorter than the above-mentioned setae. The distance ti-ti is equal to ms-ms; te-te as long as r3-r3. R2-r2 is more than twice as long as r1-r1.

1969: 166 (2), 168 (11), 172 (1); 4 (3), 8 (1), 9 (1), 22 (2).

*Arcoppia arcualis* (?) (Berl.), 1913, fig. 42.

Length about 0.37 mm. Colour light brown.

The present species corresponds fairly well with *Oppia arcualis* (Berl.) in Balogh & Mahunka, 1967, Vietnam. It differs, however, from Berlese's fig. 69 by its tripartite rostrum, its much shorter interlamellar setae and by the three branches on the sensillus. Furthermore, it is smaller (*O. arcualis* 0.42 mm). As there are numerous closely related species within the gen-

us *Arcoppia*, and the variation within each species is unknown, I will at present include the Javanese specimens in Berlese's species. In fig. 42 the notogastral setae ti, te, and ms are slightly longer than r1-r3. Iad is located so close to the anal frame that the latter has receded.

22 (1), 125 (1), 136 (1).

*Arcoppia bidentata* n.sp.; fig. 43.

Length varying from 0.43 (male) to 0.51 (female). Colour brown.

The tip of the rostrum is tripartite, the middle part projecting beyond the short lateral parts. The rostral setae are about twice as long as their mutual distance and slightly uneven. The lamellar arch is incomplete, being very faint in its anterior part and missing posteriorly. The lamellar setae are a little shorter than their mutual distance, the interlamellar setae are longer and much thicker. Between the latter there are four light spots. In front of the interlamellar setae there is a light furrow. The sensillus has a moderately long stalk that widens into an angular head with one long branch and two tiny tips or teeth (hence the specific name), fig. 43a. One specimen (no. 110), which I am otherwise unable to distinguish from the type specimen, has a sensillus with one long and two short branches, fig. 43b. On the posterior part of the prodorsum are two faint keels, or ribbons, and some greyish shadows. The integument on the sides of the prodorsum is covered with tubercles.

The notogaster is almost as broad as it is long. In front of the anterior border there are two large areae porosae behind which the tiny ta are located. The slightly uneven notogastral setae are of different lengths, ti, te and ms being longer than the remainder. R2 is longer than r1, r3 and p1-p3.

Ventral side, fig. 43c. There are six pairs of short genital setae. The aggenital setae are longer than the adanal setae. Iad is short.

101 (5), 102 (3), 107 (3), 110 (2), 111 (1), 112 (1), 178 (3), 186 (1), 187 (1), 190 (2), 203 (2).

*Arcoppia varia* n. sp.; fig. 44.

Length about 0.34 mm. Colour light brown.

The tip of the rostrum is tripartite. The rostral hairs, which are twice as long as their mutual distance, are slightly barbed. The lamellar arch differs from that of the preceding species by being shorter, angular and not arched in front of the lamellar setae. The latter are located on the tongued anterior part of the arch. The lamellar setae are stiff, uneven and a little longer than their mutual distance. The interlamellar setae are thick, slightly barbed and about twice as long as their mutual distance. Behind the lamellar field there are two rows of chitinous scales. The sensillus has a flat head with 4–5 distal branches, the anterior ones much shorter than the posterior one. The latter is almost twice as long as the neighbouring branch, fig. 44a.

The notogaster has 10 pairs of notogastral setae. As they are semi-erect they appear to be shorter than in actual fact. They are almost as long as the interlamellar setae, but much thinner. Apart from *ta*, which is short and stiff, they are equally long. The distance *r1–r1* is unusually long. The ventral side, fig. 44b, is characteristic of the genus. The aggenital setae are apparently thinner than the crooked adanal setae. *Ad1* are located on either side of a small "tail" on the ventral plate. The anal setae are thinner and longer.

101 (1), 186 (17), 187 (7), 198 (1).

*Arcoppia vittata* n.sp.; fig. 45.

Length about 0.27 mm. Colour light brown.

The tip of the rostrum is tripartite. The rostral setae are smooth. In fig. 45 the mandibles project beyond the rostrum. The costulae form a regular arch that is longer than broad. The lamellar setae, which are about as long as their mutual distance and slightly barbed, are located behind the arch. The interlamellar setae are longer and thicker than the lamellar setae, fig. 45a. The sensillus has a short stalk that expands

into a triangular plate, on the distal border of which there are four long slender branches, the two posterior ones being almost twice as long as the anterior one. Between the pseudostigmata there are four short, conspicuous chitinous ribbons (hence the specific name) and further laterally a few scales.

The notogaster is only a little longer than broad. There are 10 pairs of notogastral setae, which are moderately long, finely barbed and very thin at the tip. *Ta* is thinner and shorter than the others. The distance *ms–ms* is a little longer than *r2–r2*. The setae *p1* are situated rather close together.

Ventral side, fig. 45b. There are six pairs of short genital setae. The aggenital setae are shorter than the adanal setae, all are slightly barbed. *Ad1* is postanal, *ad2* latero-anal, and *ad3* preanal, located far laterally. *Iad* is adjacent to the anal field.

183 (2).

*Arcoppia rotunda* n.sp.; fig. 46.

Length about 0.66 mm. Colour light brown to brown.

An easily recognisable species because of the large round notogaster, the semicircular, strong, lamellar arch, and the few long notogastral setae.

The rostrum is slightly pointed and not tripartite. The rostral, the lamellar and the interlamellar setae are normal for the genus. The lamellar arch is very broad and evenly developed throughout. The sensillus has a small swollen head ending in a long, thin, curved thread.

The notogaster is as broad as it is long. Its anterior border is narrow. There are apparently 10 pairs of notogastral setae, three of which, viz., *ti*, *te* and *ms*, are much longer than the remainder. *R3* and *r2* are equally long, *r1* shorter. On the posterior border of the dorsum there are three pairs of short apophyses, of which the lateral one carries a tiny seta, probably *p3*. The

yellow legs are very slender compared to the thick round body.

1969: 166 (1).

*Oppiella nova* (Oudms.).

Found in 23 samples but seldom more than 1–2 specimens in each sample. Exceptions are 133 (11), 181 (29), 182 (14). The following series of samples contained *O. nova*: 1–25; 101–142, 177–188, 201–203.

*Oppia minutissima* Selln., 1950.

136 (1), 181 (1).

*Oppia lanceosetoides* Ham., 1971.

1969: 175 (1); 27 (2).

*Oppia condylifer* n.sp.; fig. 47.

Length about 0.32 mm. Colour yellowish.

The rostral setae, which are located laterally, are a little longer than their mutual distance, slightly curved and barbed. The very thin lamellar setae, which are as long as their mutual distance, are situated at the end of very short, faint, greyish ridges. In front of the latter there are several indistinct transverse bands. The interlamellar setae, located with the same mutual distance as the lamellar setae, are about twice as long as their mutual distance, thick and slightly barbed. In front of them there are some light spots on a greyish ground. Two dark tips project backwards behind the spots. On the posterior border of the pseudostigma there is a dark lobe. The stalk of the sensillus widens evenly into a lanceolate head set with bristles for almost its whole length. On the posterior border the bristles are more scattered than on the anterior border, at the tip they are close together, fig. 47a. The sensillus is directed upwards and outwards and at the same time slightly backwards. Laterally to the pseudostigmata the integument is rough and covered with tubercles.

The notogaster is globular. Its anterior border is chitinized. Ta is absent. There are 10 pairs of notogastral setae. Ti, te, ms, r3 r2 and r1 are long, equally thick throughout, unilaterally barbed, the tip dull. R1 is a little longer than the others, ti and ms longer than the other thick setae. P1–p3 are much shorter, p2–p3 also thinner. The ventral side, fig. 47b, is characterized by the four condyles in front of the sejugal apodemata. The fused Epimeres III–IV are covered by a membrane that is best seen in front of the genital field, where the two membranes from the two sides almost touch each other. The epimeral setae are slightly uneven. There are five pairs of genital setae. The aggenital and the adanal setae are alike, rather long and uneven. The fissure iad is short and located off the middle of the anal field.

102 (1), 106 (1), 109 (1).

*Oppia stigmata* n.sp.; fig. 48.

Length about 0.60 mm. Colour chestnut brown.

The rostrum is rounded and has a triangular slit on its dorsal surface. The rostral setae, which are situated on a transverse band, are about twice as long as their mutual distance, curved and coarsely serrate. The costulae reach only halfway to the pseudostigmata. They are connected by a faint translamella. The lamellar setae are about two and a half times longer than their mutual distance and rather thick and uneven. A deep furrow runs from their insertion to the medial border of the costulae. In the posterior part of the lamellar area there are two small light spots behind which are located the short interlamellar setae. Between the latter there are two dark indistinct scales, projecting backwards. The medial border of the pseudostigma is thick, brown-blackish ending in a posterior lobe opposite a similar dark lobe on the anterior border of the notogaster. The sensillus is short, its head lanceolate, set with a few scattered bristles. The sides of the posterior

part of the prodorsum, which are covered with tubercles, are a darker brown colour than the middle part, which is greyish.

The notogaster is globular. Along its latero-anterior border there is a blackish rim on either side. There are 10 pairs of notogastral setae that apart from the absent ta are thick, curved and unilaterally serrate. Ti, te, ms and r2 are longer than r1 and r3, ti the longest. P1 is as long as r1 and much longer than p2-p3.

Ventral side, fig. 48a. Apodemata II and the sejugal apodemata are broad and dark brown. The epimeres are a lighter colour and reticulate. The epimeral setae differ in length and appearance, the paraxial being rather short and stiff, the antiaxial, viz., 1c, 3c and 4c being long and barbed. 1b, 3b and 4b are also barbed, but thinner. There are six pairs of genital setae. The distal half of the aggenital setae are very thin. Ad2-ad3 are thick and barbed. Ad1 are shorter and stiffer, located on a small curved ridge. Iad is strongly curved and removed from the anal field. This unusual fissure or stigma has given the mite its specific name.

The legs are long and slender. Tibiae I-II have strong, barbed spine-like setae set ventrally. Coxa III has two small teeth dorsally. 152 (1), 166 (1), 175 (1), 180 (1), 224 (1).

*Oppia sundensis* n.sp.; fig. 49.

Length about 0.21 mm. Colour light brown.

The rostral setae are parallel, thick, barbed and only a little longer than their mutual distance. The lamellar ridges are thin, forming sharp latero-anterior edges. The lamellar setae, which are situated behind the transverse part of the lamellar ridges, are short and faintly barbed. The interlamellar setae resemble the lamellar setae but have a longer mutual distance. There are four large round spots between the lamellar ridges. The sensillus has a flat, disk-shaped head set with 11 almost equally long spines on its outer border, fig. 49a.

Notogaster. Its anterior margin is narrow, its posterior end broad, almost truncate. There are

very faint shoulders. There are 10 pairs of notogastral setae. Ta, on the anterior border of the notogaster, is tiny; the others are alike, being short and faintly barbed. Some of them are bent and appear shorter. In front of ms is a large pore.

Ventral side, fig. 49b. There are five pairs of genital setae, i.e., three close together on the medial border in the anterior third of the plates and two very close to the posterior border. They are hardly discernible. Also the aggenital setae are minute. Ad1 and ad2 are thicker than ad3. The latter is located only a short distance behind the aggenital setae. Ad1 is postanal, ad2 is located off iad. The solenidion of Tibia II is very thick and short. Tarsus II has a strong ventral spine.

125 (1).

*Oppia* sp.; fig. 50.

Length about 0.23 mm. Colour yellowish-grey.

Because only one specimen was found and as I am unable to show the sensillus (the right one is missing), this mite will not be established as a new species. A short description will be useful for its later identification. The rostral setae are parallel and rather thick. The lamellar and the interlamellar setae are alike, much shorter and thinner than the rostral setae. The sensillus has a flat, disk-shaped head with bristles on its outer border. Between the interlamellar setae there is a faint transverse ridge. Laterally to the pseudostigmata a ridge runs backwards ending in a small tooth opposite a similar tooth on the anterior border of the notogaster.

The notogaster is about one and a half times longer than broad. In the posterior border there are two shallow incurvations. There are 10 pairs of short, thin, smooth notogastral setae. Im is located immediately in front of r3.

Ventral side, fig. 50a. There are five pairs of very small genital setae (six on the left plate). Behind the genital field there is a short semilunar ridge. The aggenital setae, which are located far laterally, are hardly discernible. Ad3 are



preanal and also very short, their mutual distance is about as long as the width of the genital field. The frame surrounding the anterior border of the anal field continues backwards as a curved ridge at the end of which iad is located. Ad2 is situated immediately behind iad. Ad1 is postanal. Ad1 and ad2 are much thicker and longer than ad3.  
128 (1).

*Pulchroppia* n. gen.

Lamellar and interlamellar setae present. The sensillus is expanded distally carrying several long slender branches; 10–13 pairs of notogastral setae. Ventral side without an arch in front of the genital field (Apodemata IV). Five pairs of genital setae, one pair of aggenital, two pairs of anal and three pairs of adanal setae. Iad positioned obliquely to the anal field. Ventral side reticulate. Mandibles slender, chewing. Tarsi II–IV with barbed spines. Monodactylous.

*Pulchroppia elegans* n.sp.; fig. 51.

Length about 0.46 mm. Colour yellow.

The rostrum is rounded. The rostral setae, which are as long as their mutual distance, are uneven. The lamellar setae, as long as their mutual distance, are located within an area limited laterally by faint light lines. In front of the lamellar setae there is an indistinct curved line. The interlamellar setae are a little longer than their mutual distance. Between them there are two rows of light spots. The pseudostigma has a small posterior lobe. The sensillus is expanded distally into an oblong flat head on the posterior border of which are 7–8 slender branches, the proximal ones much longer than the distal ones, fig. 51a.

The notogaster is oblong, its anterior border almost straight, the posterior end slightly pointed. There are 10 pairs of long, thin, uneven notogastral setae. C1 is minute. P1–p2 are a little shorter than the others.

Ventral side, fig. 51b. The sternal plate is short, broadest between Apodemata II. The

latter and the sejugal apodemata are broad brown bands. Behind the sejugal apodemata there are two small condyles with the setae 3a. The genital field is small and has five pairs of rather strong setae. The anterior pair is situated on two small projections on the anterior border of the plates (fig. 52c). The ridge from the genital field to Acetabulum IV, present in most *Oppia* species, is absent. Thus the fused Epimeres III–IV are confluent with the ventral plate. The number of epimeral setae is 3:1:3:3. There is one pair of short aggenital setae, located midway between the genital and the anal field. The three pairs of adanal setae are barbed and rather long. Ad3 is preanal, ad2 located off the middle of the anal field, and ad1 is postanal. The anal setae are shorter than the adanal setae. Iad is located off ad2, obliquely to the sides of the anal field. The middle of the ventral side is reticulate, apart from a triangular area in front of the anal field.

The legs are slender with thick barbed setae. Tarsi II–III have ventrally a strong barbed spine, Tarsus IV two spines, which are broadest distally.

3 (1♂), 26 (1♂).

*Pulchroppia similis* n.sp.; fig. 52.

Length about 0.53 mm. Colour yellow.

This species is very similar in many characteristics to the preceding species. In addition to its larger size it differs in the position of the interlamellar setae. The latter are located further anteriorly and with a mutual distance half as long as the setae. Medially to the pseudostigma there is a dark scale. The sensillus has a slender head, not much thicker than the branches, fig. 52a. The number of branches varies from 5 to 7.

The notogaster has 13 pairs of setae, i.e., an extra medial row of three setae (da, dm, dp). The setae are similar to those of the preceding species.

The ventral side, fig. 52b, corresponds exactly to the ventral side of *P. elegans*. The genital

plates have an anterior tip on which the anterior genital seta is located, fig. 52c. The number of setae is the same as that of *P. elegans*, and they are arranged in the same way. The decoration of the ventral side is the same in the two species. Also the legs are similar to those of *P. elegans*.

Remarks. These two very similar species constitute an example of a genus in which the number of notogastral setae differs in the two species. The two species are recorded from two different localities, i.e., *P. elegans* from Central Java, *P. similis* from East Java.

117 (1♀), 118 (2♀).

*Quadroppia circumita* Ham., 1961.

177 (1), 188 (1), 196 (1), 229 (1).

*Quadroppia monstruosa* n.sp.; fig. 53.

Length about 0.19 mm. Colour light brown.

The new species is characterized by its very rough lamellae and by its thick, broken translamella. On the dorsal side of the rostrum there is an oblong figure with chitinous walls and on either side of it a transverse ridge from which issues a backwards-directed V-shaped ridge. On the lateral border of the transverse ridge there is a broad tooth. On the anterior part of the lamellae, which are very clumsy, the insertion for the lamellar seta can be seen. Between the lamellae there are two plates, the anterior one with a ridge (the translamella (?)) on its anterior border. The posterior plate has faint ridges along its lateral borders. The interlamellar setae are located inside this plate.

Notogaster. The outer ridges of the anterior projection are much longer than the medial ones and continue almost to the posterior end of the dorsum. A few pores can be seen on the dorsum, i.e. between *ti* and *te* and in front of *r1* (?).

107 (2), 108 (4), 109 (1), 115 (1), 143 (1), 168 (5).

*Ramusella chulumaniensis* Ham., 1958.

2 (2), 3 (2), 181 (13), 182 (3).

*Ramusella sengbuschi* Ham., 1968.

22 (3).

*Macrosoma* n.gen.

The lateral borders of the notogaster converge, ending in two teeth on the anterior border. Dorsum with furrows and ribs. Lamellar and interlamellar setae present. Sensillus clavate. 10 pairs of notogastral setae. 6 pairs of genital setae, one pair of aggenital, two (3) pairs of anal and three pairs of adanal setae. Iad near the posterior end of the anal field. Monodactylous.

Type: *Macrosoma rugosa* n.sp.; fig. 54.

Length about 0.62 mm. Colour chestnut brown.

The rostrum is broadly rounded, with a slit on its dorsal surface, widening in front of Leg I, becoming twice as broad as the anterior part. The rostral setae, which are situated dorsally, are a little longer than their mutual distance and unilaterally barbed. The rather broad lamellae, connected by a tongued translamella, do not reach the pseudostigmata. The lamellar setae, which are as long as their mutual distance, are thick and barbed. The interlamellar setae resemble the lamellar setae. The former are located in a light spot surrounded by dark pigment. Between the interlamellar setae there are four small spots separated by a furrow with minute round dots. The sensillus is curved outwards and backwards. It has a slender stalk and a slightly clavate head, which is pointed at the tip and set with a few, rather long secondary bristles, fig. 54a. There is a posterior lobe on the pseudostigma. The exopseudostigmatic seta is short. The integument on the rostrum is scaly-foveolate, behind the translamella almost smooth. There is a light transverse furrow some distance in front of the interlamellar setae. The prodorsum is partly covered with secretion.

The notogaster is as broad as it is long. Its anterior margin is straight, its posterior end rounded, slightly tongued. The lateral sides converge anteriorly, ending in two teeth, the

distance between which is less than one third of the distance across the middle of the dorsum. There are 10 pairs of notogastral setae (ta is absent). The setae are straight, almost equally thick throughout and faintly barbed. Te, ms, r2-r3 are longer than ti and shorter than r1. P1-p3 are short, p1 longer than p2-p3. Dark, irregular, longitudinal, indefinite, rugged ribs cover the whole dorsum. The ribs radiate along the lateral borders. Between ti and te there is a pore.

Ventral side, fig. 54b. Issuing behind the sejugal apodemata a faint chitinous plate projects forwards on either side reaching beyond 2a. Limited by these plates and posteriorly by a faint line there is an oblong area, anteriorly almost reaching 1a. The epimeral setae: 3:1:3:3 are long and barbed. Apodemata II and the sejugal apodemata are broad, the sternal plate between them broad, further posteriorly very narrow. There is a faint arch separating the fused Epimeres III-IV from the ventral plate. The genital field is small and very narrow. There are six pairs of rather thick, barbed genital setae, most of them located along the lateral borders. The aggenital setae, which are long, thin and barbed, almost reach the genital field. The adanal setae are like the aggenital setae. They are situated in a row laterally to the anal field, directed medially, and they are parallel. Iad is located near the latero-posterior corner of the anal field. The number of anal setae is three on the left plate, two on the right. The ventral plate is very roughly sculptured with a thick tongued dark border along its posterior end. Further anteriorly the integument is irregularly foveolate interspersed with darker ribs.

The legs are slender and provided with long barbed setae. Monodactylous.

Remarks. *Dameosoma multisulcata* Berl., 1913, Java, belongs to the new genus. It differs from *M. rugosa* by its size (0.58 mm) and by its very short notogastral setae.

101 (1).

*Machuella ventrisetosa* Ham., var. *plicata* n.var.; fig. 55.

Length about 0.192 mm. Colour warm ochre.

The variety differs from the type by its stronger notogastral setae, which are slightly barbed, but especially by the appearance of the ventral side, fig. 55a. The setae of the ventral side are thicker and the layer of secretion is folded (hence its specific name). The folds are separated by lighter areas. Those of the long setae, which reach the middle of the body, are apparently curled in a spiral at the tip, but this is not possible to see except when the setae are torn out of their usual position. Also in the type the setae are curled at the tip. The number of epimeral setae is 3:1:6.

23 (1), 105 (1), 107 (5), 108 (2), 117 (3), 177 (2), 178 (3).

#### Suctobelbidae

*Discosuctobelba* n.gen.

Dorso-sejugal suture with two pairs of teeth. Three lateral rostral teeth present. Rostral setae knee-bent. Tectopedial fields narrow, not always well defined. The area between the tectopedial fields coarsely reticulate. Lamellar knob present, compact. Sensillus disk-shaped. 9 pairs of notogastral setae often of different lengths and shapes. 6 pairs of genital setae.

Type: *Discosuctobelba acutodentata* n.sp.; fig. 56.

Length about 0.255 mm. Colour light brown.

The distal part of the rostral setae together form a broad arch as if fused, only pressure can disunite them as their tips are twisted together, fig. 56a. The rostral lobe is conical. There are three rostral teeth, all of them pointed, the anterior one separated from the two posterior ones by a broad incision. The tip of the rostrum is almost flat. Behind the tip the integument is coarsely reticulate. The tectopedial fields are narrow, the area between them incompletely reticulate. Lamellar knob irregular, its interior hole hardly discernible. The lamellar setae are

short, the interlamellar setae absent. The interpseudostigmatic ridges are broad, reaching the pseudostigmata. Their posterior part form broad lobes opposite the notogastral teeth. The sensillus has a disk-shaped, apparently smooth head.

The notogaster is not much longer than broad. Its anterior straight border with two pairs of strong teeth, the medial ones rounded, the lateral ones very pointed, their posterior ridges standing erect, continuing backwards to ta. There are 9 pairs of notogastral setae, all setaceous and moderately long. The distance ti-ti is a little longer than ms-ms. R1-r1 is half as long as r2-r3. Ta is located at a good distance behind the lateral tooth. P1 and p2 are located ventrally.

Ventral side, fig. 56b. Laterally and half covering the base of Leg II-III there is a membrane with a slit. The six pairs of genital setae are arranged in three pairs. The two anterior pairs are directed forwards, the two in the middle backwards, and the two posterior ones outwards. The number of epimeral setae is 3:1:3:3. Behind the genital field there is a transverse row of small chitinous arches. The aggenital and the adanal setae are alike, smooth. The adanal setae are located with a shorter mutual distance than the aggenital setae. The distance ad2-ad2 is the same as ad1-ad1, ad3-ad3 shorter. Iad is parallel to the side of the anal field. A trachea can be seen on the side of the ventral plate. Apparently issuing from the medial side of Femur IV there is a long soft seta ending in a brush, reaching the distal half of Tibia IV, fig. 56c. This seta could only be seen in two of the four specimens found. Tibia I has a distal process with the solenidia.

181 (4).

*Discosuctobelba sexsetosa* n.sp.; fig. 57.

Length about 0.25 mm. Colour light brown.

The tip of the rostrum protrudes slightly. The rostral setae are shorter than in the preceding species and do not meet. There are three poi-

nted rostral teeth, fig. 57a. The tectopedial fields are not well defined, their outer ridges longer than the proper fields. Between the tectopedial fields there are a few rounded reticulate meshes. The lamellar knob is rounded, almost compact, the lamellar setae moderately long. The lamellae are broad, located immediately in front of the interpseudostigmatic ridges. The latter are thin plates, their posterior lobes opposite the medial notogastral teeth are displaced laterally. The lobe on the pseudostigmata is long, corresponding to the lateral notogastral teeth. The interlamellar setae are situated inside the interpseudostigmatic ridges. The sensillus has a disk-shaped head set with thick short spines, the head bent medially. The notogaster has two pairs of teeth, the medial ones are very small and continue backwards as faint keels. The lateral teeth are long and strong, reaching backwards beyond ta. There are nine pairs of notogastral setae of which p1 and p2 can only be seen in a ventral view. Te, ti and ms are thicker than the others, lanceolate and distally slightly hairy, fig. 57b. R2 and r3 are a little longer than ta, r1-r3, all are setaceous.

Ventral side, fig. 57c. The genital setae are arranged in three pairs as in the preceding species, but are shorter. Ad1 is located off the posterior end of the anal field. Tibia I with a distal process.

105 (2), 155 (9), 157 (3), 158 (1).

*Discosuctobelba latodentata* n.sp.; fig. 58.

Length about 0.25 mm. Colour light brown.

This species has so many characteristics in common with the two preceding species that only the more important features will be mentioned. The tectopedial fields are short and not well defined. On the lamellae there are large tubercles that almost reach some tubercles on the posterior border of the tectopedial fields. The lamellar and the interlamellar setae are strong. The sensillus only has cilia on the distal half of the head. The lobes on the pseudostig-

mata are very long. Those opposite the medial notogastral teeth are apparently at a lower level than the interpseudostigmatic ridges.

Notogaster. The two teeth on either side of the anterior border of the notogaster are fused forming one broad tooth on either side, the lateral part of these teeth is stronger than the medial part. The notogastral setae are setaceous. Ta, r1 and p1-p2 are a little shorter than the remainder. P1 and p2 can be seen only in a ventral view. They are directed forwards. Laterally to ti there is a small pore, and a similar one in front of r3.

Ventral side, fig. 58a, is similar to that of the preceding species.

4 (1), 13 (1), 18 (2), 227 (1).

*Discosuctobelba variosetosa* (Ham.), 1961; fig. 59.

Within this species there is some variation in the appearance of r3 that ranges from being thin and setaceous, as in the type specimen, to thick and clavate, fig. 59. Both forms can be found in the same locality. Very common and found in 33 of the following series of samples: 1-18; 102-119; 136; 170-201. The largest number of these mites in one sample was 190 (13).

*Discosuctobelba bivittata* n.sp.; fig. 60.

Length about 0.22 mm. Colour light brown.

The rostrum is flat. The rostral teeth can best be seen in a ventral view, fig. 60a. Between the tectopedial fields there is a kind of reticulation, although the meshes are not closed. The lamellar knob is compact, the lamellar setae well developed. There are no true lamellae, but a few tubercles in two rows directed towards the lamellar knob. The interpseudostigmatic ridges are narrow and anteriorly connected by a keel reaching the lamellar knob. No interlamellar setae. The sensillus has a disk-shaped head set with cilia.

Notogaster. On the anterior border of the notogaster there are two broad parallel bands (vittae) with a slightly curved lateral border, the

anterior half of which is very distinct as if there is a slit. The bands reach beyond ta but their posterior part is indistinct. On their anterior end there is a short tooth opposite the interpseudostigmatic lobe. The lateral teeth are located opposite the lobes on the pseudostigmata. Laterally to the dorsal bands on either side, there is a faint tongued line indicating light spots, almost reaching ti. The notogastral setae are equally thick throughout and dull. They are unilaterally set with short bristles. Ms are longer than the others, ta a little shorter than most of them. R1 very short. P1 and p2 can only be seen in a ventral view, fig. 60b. There are six pairs of genital setae. Ad1 is located behind iad.

186 (1).

*Flagrosuctobelba* n.gen.

Dorso-sejugal suture with two pairs of teeth. Two nostral teeth present. Rostral setae knee-bent. Tectopedial fields large. Lamellar knob with large interior aperture. Sensillus flagellate, set with cilia (hence the generic name). Nine pairs of notogastral setae that vary in the same species from setaceous to plumate and foliate. Ta set far anteriorly. P1-p2 can only be seen in a ventral view. Six pairs of genital setae.

Type: *Flagrosuctobelba multiplumosa* n.sp.; fig. 61.

Length about 0.185 mm. Colour light brown.

The prodorsum is almost as long as the notogaster. The rostrum projects like a nose. The rostral lobe is pointed, the two rostral teeth separated by a broad incision. The anterior one is pointed, the posterior one broad, conical, fig. 61a. The rostral setae are knee-bent, the proximal part hairy, the distal part setaceous. The tectopedial fields are large. The lamellar knob is broad and has a large interior aperture. Lamellar setae short. The lamellae with two anterior tubercles do not reach the lamellar knob. The interpseudostigmatic ridges are broad, touching the pseudostigmata, and faintly chitinized. Their posterior lobe is small. Interlamellar setae

absent, their insertion pores located within the interpseudostigmatic ridges. The sensillus is a long flagellant densely set with cilia. It is bent outwards and then medially.

Notogaster. The anterior border has two pairs of teeth, the medial pair short and rounded, the lateral more pointed and continuing backwards as a faint line to te. Between the medial teeth there is an indistinct light spot. There are nine pairs of notogastral setae, ta small and setaceous, the remainder plumose, of various lengths. Ti, te and ms are shorter than r1-r3. The outer border of the setae is set with more barbs than the inner border. P1-p2, which can only be seen in a ventral view, are very small and apparently smooth. Between r1, r2 and r3, a lump of debris usually adheres to these hairs. There is a pore set medially to the fissure im and another laterally to r3.

Ventral side, fig. 61b. The number of epimeral setae is 3:1:3:3. All the setae of the ventral side are smooth. There are six pairs of genital setae. The ventral side is in no way characteristic, apart from a few reticulations behind the anal field.

Remarks. To the new genus belong the following species: *Suctobelba semiplumosa* Bal. & Mah., 1967; *Suct. semiplumosa* var. *tahitiensis* Ham., 1972 and *Suct. ponticula* Ham., 1971. All of them differ from the type species in the appearance of the notogastral setae.

Found in 24 samples from the following series of samples: 1-27; 102-110; 127-136; 143-184; 186-199. In some samples, up to 10 individuals were found: 107 and 198, and 20 in 110.

*Flagrosuctobelba diversosetosa* n.sp.; fig. 62.

Length about 0.21 mm. Colour light brown.

The rostrum projects like a nose. The rostral lobe and the two rostral teeth are pointed, fig. 62a. In front of the large tectopedial fields there are some rather large tubercles, and in front of the lamellar knob one tubercle and a small semilunar plate. The tectopedial fields are at the

middle rather close together. The lamellar knob has a large interior aperture and a truncate anterior border. The lamellae are well developed and set with two tubercles. The interpseudostigmatic ridges are narrower than in the preceding species and do not reach the pseudostigmata. Interlamellar setae absent. Sensillus flagellate, set with cilia.

The notogaster is globular. The medial notogastral teeth are broadly rounded, the lateral ones small, conical. There are nine pairs of notogastral setae of different shapes. Ta is short, setaceous. Te is thicker and barbed, ti and ms foliate, barbed, pointed at the tip. R3 is probably like ms but appears to differ when seen in a different view. R1 and r2 may also be like ms. P1-p2, which can only be seen in a ventral view, differ, p2 is like te but smaller, p1 broad and thick resembling ms. There is a light spot between the medial notogastral teeth.

Ventral side, fig. 62b. It differs from that of the preceding species by having a dark brown thickening on either side of the sejugal apodema, the thickenings are connected by a membrane(?). Some trachea can be seen on the ventral plate.

109 (1), 110 (6).

*Flagrosuctobelba memorabilis* n.sp.; fig. 63.

Length about 0.195 mm. Colour light brown.

This very peculiar mite has a nose-like projection. On the dorsal surface of the rostrum there are a few more or less fused tubercles. In front of the broad lamellar knob there is a large tubercle. The aperture in the lamellar knob is large. The lamellae have two tubercles. The interpseudostigmatic ridges are broad, their posterior lobe dentate. Interlamellar setae absent. Sensillus flagellate.

Notogaster. The medial teeth are very short and together with the stronger conical lateral teeth form two very broad crests, the medial borders of which continue as faint lines half round the very distinct light aperture. Behind

the latter there are two oblique folds from which issue four thin lines, reaching backwards to ms. There are nine pairs of notogastral setae. Ta absent, its insertion immediately behind the anterior crest. Te short and setaceous, ti also setaceous but much longer. Ms is almost club-shaped with a middle rib, its posterior half set with stiff spines. R3 is foliate, transparent, faintly dentate along its border. R2, which are directed half medially and seen in an oblique lateral view, probably resemble ms. R1 is like r2 but bent ventrally. P1-P2 are setaceous, p1 directed backwards, p2 forwards.

Ventral side, fig. 63a. Behind the fused Epimeres III-IV there are some thin lines like those of the dorsal surface, but not the same number on the two sides.

18 (1).

*Flagrosuctobelba setosa* n.sp. fig.; 64.

Length about 0.22 mm. Colour light brown.

Rostrum projecting. The rostral lobe is small, pointed, the two rostral teeth also pointed, fig. 64a. Many large tubercles on the dorsal surface of the rostrum. Similar tubercles can be seen in a row between the tectopedial fields. The latter are large and only have small tubercles along their medial border. The lamellar knob is large, pointed anteriorly. The aperture in its middle is rather large, the lamellar setae located in front of the latter. On either side of the lamellar knob there is a small tubercle. Lamellae with two tubercles. The interlamellar setae are small, located behind the lamellae. The interpseudostigmatic ridges do not reach the pseudostigmata. Their posterior lobe is tooth-like and corresponds to a strong medial tooth on the anterior border of the notogaster. Sensillus flagellate, set with cilia.

Notogaster. The lateral teeth are small, their medial border continuing backwards beyond ta. The medial teeth are broadly rounded and much stronger than the lateral ones. The nine pairs of notogastral setae are all setaceous, ta, r1

and p1-p2 a little shorter than the others. There is a pore laterally to ti and another between r2 and r3.

Ventral side, fig. 64b, is much like that of the preceding species.

152 (2).

*Flagrosuctobelba plumata* n.sp.; fig. 65.

Length about 0.15 mm. Colour yellowish-grey.

The rostrum is shorter than that of the preceding species. The rostral lobe and the rostral lateral teeth are apparently much like those of the other *Flagrosuctobelba* species. The tectopedial fields are very large. There are no tubercles on the dorsal surface. The interpseudostigmatic ridges are rather narrow and do not reach the pseudostigmata. Their posterior lobes correspond to the two medial teeth on the anterior border of the notogaster. The sensillus is long, thin, flagellate.

Notogaster. The lateral teeth are short, the medial ones rounded, their lateral border continuing backwards beyond ta. Between them there is a faint light spot. Most of the notogastral setae are feathered, te apparently with bristles on the outer border only. Ta is small, setaceous.

Ventral side, fig. 65a. Most of the setae of the ventral side are very small and difficult to see.

8 (1).

*Parasuctobelba elegantissima* n.sp. fig. 66.

Length about 0.19 mm. Colour light brown.

The tip of the rostrum protrudes slightly. The rostral setae are curved, their proximal part hairy, the distal part setaceous. There are no rostral lobes or rostral teeth. The lamellar knob is narrow without an aperture in the middle. The lamellar setae are strong, located near the posterior border of the knob. The tectopedial fields are reduced, their medial borders replaced by short ridges. The dorsal surface of the rostrum and the broad area between the tectopedial fields are decorated with transverse, irregular, rough ridges forming broad open mesh-

es. There are two lamellar ridges on either side, both issuing from the pseudostigmata. The lateral ridge ends anteriorly in a tooth opposite a backwards-directed tooth on an anterior ridge. The medial ridge is directed towards the lamellar knob. It carries the interlamellar seta on its end. The interpseudostigmatic ridges are narrow, ending posteriorly in a tooth or lobe opposite the medial tooth on the anterior border of the notogaster. The pseudostigmata have a posterior lobe corresponding to the lateral notogastral teeth. The sensillus has a smooth, club-shaped head on a long stalk that is directed obliquely forwards. The exopseudostigmatic setae are unusually long.

The notogaster is very elegant with complicated structures consisting of twisted lateral ridges, which anteriorly end in the strong medial teeth, and posteriorly reach between *ti* and *te*. Issuing from these ridges, two very long ridges run backwards in the middle of the notogaster. They run parallel for most of their length and fuse at their posterior end. Between their anterior ends there is a light spot. The lateral teeth of the notogaster represent the broad anterior end of a strong crest behind the pseudostigmata. There are 10 pairs of notogastral setae. The setae *te*, *ti*, *ms*, *r2* and *r3* are long, slightly serrate, soft and curved. *Ta* is short and setaceous and located far anteriorly between the notogastral teeth. *R1*, *p1*–*p3* are short and rather thin. *P1*–*p3* can only be seen in a ventral view.

Ventral side, fig. 66a. There are two chitinous tips on the medial border of the fused Epimeres III–IV and behind the tips a few tubercles. There are five pairs of genital setae, the two anterior ones shorter than the posterior ones. The aggenital setae are longer than the adanal setae. A trachea can be seen along the side of the ventral plate.

Remarks. This species has much in common with *Suctobelba medialis* Bal. & Mah., 1974, from Malaysia. The species from Malaysia has five strong club-shaped setae (*te*, *ti*, *ms*, *r2* and *r3*),

whereas the corresponding setae in the Javanese species are long and curved.

18 (1).

*Parasuctobelba complexa* (Ham.), 1958.

1 (1), 3 (1), 27 (11), 181 (2).

*Suctobelbella subcornigera* (Forssl.), 1941.

6 (1), 104 (1), 106 (1), 112 (4), 133 (1), 138 (3), 140 (1), 227 (1).

*Suctobelbella kaliurangensis* n.sp.; fig. 67.

Length about 0.18 mm. Colour yellowish-grey.

The "nose" is long, i.e., the rostral setae are situated at a good distance behind the tip of the rostrum. Apparently there are a conical rostral lobe and three pointed rostral teeth. The rostral setae are knee-bent, the proximal part coarsely barbed, the distal part setaceous. On the medial borders of the tectopedial fields there are very pointed tubercles that almost meet those from the opposite side, and between them there are a few large tubercles. The lamellar knob is pointed anteriorly, its posterior border closed. The lamellae are faintly developed, set with two tubercles. Lamellar and interlamellar setae present. The distal half of the sensillus is flagelliform, the proximal part of the head swollen. It is set with cilia that are longer than in *Flagrosuctobelba*. The head is directed medially. The interpseudostigmatic ridges are small with a large mutual distance. Their posterior lobe is broad.

Notogaster. The lateral teeth are short and conical, the medial ones rounded. The latter continue backwards to *ta*. The 9 pairs of notogastral setae are long, curved, smooth and very thin at the tip. *Ta* is located further posteriorly than in *Flagrosuctobelba*. *Ms* is a little longer than *ta*, *te*, (*ti* missing), *r3* and *r2*. *R1*, *p1*–*p2* are much shorter. Ventral side, fig. 67a, is not characteristic in any way. On each side of the ventral plate a trachea trunk can be seen.

8 (1), 181 (1).



*Suctobelbella dispersosetosa* n.sp.; fig. 68.

Length about 0.20 mm. Colour yellowish-light brown.

The rostrum is short, the rostral setae knee-bent. The rostral lobe is short, the two rostral teeth strong, separated by a broad incision, fig. 68a. Between the tectopedial fields there are a few tubercles, one immediately in front of the lamellar knob and one each on either side of the latter. On the dorsal side of the rostrum there are granules. The lamellar knob is rounded and has a large interior hole. The lamellar setae are short and located in front of the hole. The lamellae have two tubercles. The interpseudostigmatic ridges are faintly developed, but have a distinct posterior lobe. The sensillus has a long, smooth, forwards-directed stalk ending in a lanceolate smooth head.

The notogaster is almost as broad as it is long and the lateral teeth are separated by a long distance. The lateral teeth are long and pointed, their medial border continuing as strong keels to ta. The medial teeth are very short, also their medial borders continue backwards but only for a short distance. The nine pairs of setae are alike, being rather short and setaceous. P1 and p2 are very short and can be seen only in a ventral view. The location of the notogastral setae differs from that of other *Suctobelbella* species by being displaced towards the sides of the dorsum leaving the latter bare. Ti, ms and r3 are situated unusually far posteriorly. On the right side of the type specimen r3 is located behind r2 instead of behind ms.

Ventral side without any characteristic features. All setae are thin and rather short.

105 (2), 106 (3), 110 (1).

*Suctobelbella biangulata* n.sp.; fig. 69.

Length about 0.20 mm. Colour light brown.

The rostrum is rounded. The rostral teeth cannot be studied because of the adhering debris. Between the short tectopedial fields there is a dense network. The lamellae are

faintly developed, but rough with pointed tubercles on their anterior margin. The lamellar knob consists of two separated irregular plates more or less fused with the network in front of them. The lamellar setae are long, the interlamellar setae short. The small interpseudostigmatic ridges are faintly chitinized, the posterior lobe more strongly chitinized. The sensillus has a flat semilunar head set with fairly strong bristles on the outer border. It ends in a thin tip, fig. 69a.

The anterior border of the notogaster bears two pairs of teeth, the lateral ones rounded, continuing backwards beyond ta. The medial teeth represent the anterior part of two strong angular structures (hence the specific name), located between ta. The notogastral setae, 10 pairs, are strong, slightly barbed, dull at the tip, which is bent medially. The six anterior ones are equally long, r1 a little shorter, and p1-p3 half as long as r1.

The ventral side is of the usual *Suctobelbella* type. There are six(?) pairs of genital setae.

Remarks. This species may not belong to *Suctobelbella* as it has 10 pairs of notogastral setae.

26 (1).

*Suctobelbella biarcuata* n.sp.; fig. 70.

Length about 0.22 mm. Colour yellowish-light brown.

The rostrum is broad and protruding. The rostral setae are knee-bent of the usual type. There is a small rostral lobe and two large rostral teeth, which have not been studied in detail. The dorsal surface of the rostrum is densely covered with small tubercles. There are a few tubercles in front of the lamellar knob. The latter is broad with a large interior hole. The lamellae have two tubercles on their anterior border. The interpseudostigmatic ridges are broad, almost round and touch the pseudostigmata. The sensillus has a flat lanceolate head ending in a very thin tip. It is set with cilia.

Notogaster. The lateral teeth are strong and pointed, the medial ones also pointed, but very short. The latter are situated on short arches. The notogastral setae are setaceous, moderately long, very thin at the tip. The six anterior ones are of the same length, r1 and p1-p2 a little shorter.

The ventral side does not show any characteristic features. There are six pairs of genital setae. 104 (1), 168 (1).

*Suctobelbella crispisetosa* n.sp.; fig. 71.

Length about 0.26 mm. Colour light brown.

The rostrum is rounded, only slightly protruding. There are a strong anterior tooth and three pointed posterior teeth, which I was not able to study in the only specimen found. Between the tectopedial fields there is a network. The lamellar knob is square, the interior aperture is rather large. The lamellar setae are located off the hole. No interlamellar setae. The lamellae are very narrow with one tubercle only. The interpseudostigmatic ridges are faintly chitinized, triangular, touching the pseudostigmata and they end in a well developed lobe. The sensillus is very slender, the head twice as thick as the stalk, pointed and smooth, fig. 71a.

Notogaster. The four teeth are short and rounded. The medial teeth continue as faint ridges backwards for a good distance. Between them there is a pore. There are nine pairs of setae. They are long, curled and very thin at the tip. The setae of each pair are bent symmetrically. There is a large pore in front of r3, another in front of r2.

Ventral side, fig. 71b (drawn on a larger scale than the dorsal side). This is very characteristic having a semicircular, medially opening chitinous ring across the sejugal apodemata. A membrane is suspended across the ring half covering the apodemata. There are six pairs of genital setae, i.e., four in the anterior half of the plates, the anterior one much longer than the others, and two pairs further posteriorly. The setae of the ventral plate are moderately long

and uneven. Coxae III-IV and the discidium are covered with granules.

179 (1).

*Suctobelbella paralleloidentata* n.sp.; fig. 72.

Length about 0.18 mm. Colour yellowish-grey.

The rostrum protrudes slightly. A few granules on its dorsal surface. There are 4-5 rostral teeth, the anterior one broad, conical and separated from the 3-4 posterior ones by a very broad incision. The posterior teeth are parallel and do not seem to be separated for their whole length. Behind the teeth there is an oval window, fig. 72a. In a dorsal view the teeth recall a comb. Due to their extremely small size, I was unable to study them in detail. In front of the tectopedial fields there are a few tubercles, fusing and forming irregular short ridges. The lamellar knob is triangular, its posterior border open and the interior aperture rather large. The lamellar setae are located in front of the aperture. The interlamellar setae are minute. The lamellae have two tubercles. There is a well chitinized anterior tip and a small posterior lobe on the interpseudostigmatic ridges. The sensillus has a thin stalk that suddenly widens into an almost sickle-shaped head ending in a thin tip. The head, which is densely set with cilia, is bent medially.

Notogaster. The two teeth on either side almost fuse forming a broad crest, the borders of which continue backwards as faint ridges, the lateral border almost reaching ta. The notogastral setae are setaceous, rather long and smooth. The six anterior ones are approximately equally long, r1, p1-p2 shorter. The tips of r2 and r3 are bent ventrally round the border of the notogaster.

Apart from the genital setae the ventral side is of the usual *Suctobelbella* type. Figure 72b shows the genital field with its six pairs of setae. The two anterior pairs are thick and directed forwards. They are parallel for most of their length, the setae of the anterior pair crossing distally.

1 (1), 2 (1), 16 (1), 26 (1), 107 (1), 172 (2).

*Suctobelbella inenodabilis* n.sp.; fig. 73.

Length about 0.245 mm. Colour yellowish - light brown.

Although this peculiar mite is no true *Suctobelbella*, it will for the moment be described as a *Suctobelbella* species. The tectopedial fields are reduced to lateral ridges, disappearing at their anterior end. Also the interpseudostigmatic ridges are reduced and apart from their posterior lobe they are hardly discernible.

The tip of the rostrum protrudes like a "nose". The anterior rostral tooth is very strong and separated by a deep incision from the three very pointed posterior ones. The lamellar knob is rounded with a fairly large aperture in the middle. The lamellar setae are very strong, the interlamellar setae small. No exopseudostigmatic setae were observed. The sensillus has a long smooth stalk expanding evenly into a narrow, lanceolate, smooth head. It is directed forwards. On the lateral border of the pseudostigma there is a small tubercle, on its posterior border a lobe.

The notogaster is much longer than the prodorsum. The lateral teeth are conical, the medial teeth shorter and more rounded. There are nine pairs of setae, seven of which are very long, slightly uneven and dull at the tip. They are of different lengths, r2 being the longest. P1 and p2 are much shorter. On the dorsum there is a pattern of an irregular reticulation, the meshes of which vary in size, being long and narrow in the anterior part of dorsum, much smaller on the sides of the latter. There is a pore between ti and im, another between r2 and r3.

Ventral side, fig. 73a. There are six pairs of genital setae. Ad1 and ad2 are a little stronger than ad3 and the aggenital setae. On the ventral plate there is an irregular reticulation. Behind the fused Epimeres III-IV there are small tubercles. On Coxae III-IV there is a distal crest with a strong seta. The setae of the legs are thick, long and barbed.

Remarks. The new species has much in common with *Suctobelba transitoria* Bal. & Mah., 1974, but can be distinguished from the latter by

its nose, by the long lamellar setae, the more slender sensillus, the curved notogastral setae and its six pairs of genital setae (*S. transitoria* has five pairs).

1969: 162 (2); 9 (1f).

*Suctobelbilla*. There are some species within *Suctobelbilla* that have a tooth on the anterior border of the notogaster like *S. dentata* (Ham.), 1961, and some that have no tooth like *S. squamosa* (Ham.), 1961. In Java there are representatives of both forms. As the ridges and tubercles on the prodorsum usually show great variations within each species, the dorsum and the ventral side show the specific characteristics far better.

*Suctobelbilla fissurata* n.sp.; fig. 74.

Length about 0.195 mm. Colour dirty, light brown.

On the prodorsum there are irregular transverse ridges forming regular meshes. The insertions for the lamellar setae are located within two scales. The transverse ridge between the pseudostigmata has two forwards-directed tubercles. Along the outer border of the head of the sensillus there is a broad rim.

The notogaster has a long anterior tooth on either side. Behind the tooth there is a long light furrow or fissure. Between the teeth there are two indistinct high arches each with a light spot in the middle. There are nine pairs of notogastral setae. Ta is located off the anterior third of the fissure, te at the posterior end of the latter, ti within a smooth area medially to te. Ms are also located within a smooth area, the areas being separated by a short distance only covered with tubercles. Both setae r2 are situated within one common area. There is a large pore between ms and r3. Tubercles are scattered over the dorsum, but not everywhere and there are comparatively few of them.

Ventral side, fig. 74a. This is very characteristic as the ventral plate is regularly reticulate (not found in any of the other *Suctobelbilla* species examined). Across the fused Epimeres III-IV

there are secretitious membranes that reach Epimeres II. A part of the ventral plate laterally to the genital field is covered with tubercles. The middle of the ventral plate is without any sculpture.

109 (1).

*Suctobelbilla undulata* n.sp.; fig. 75.

Length about 0.225 mm. Colour brown.

The rostral setae, which are rather strong, almost meet in front of the tip of the rostrum. The latter is covered with tubercles. The pattern on the prodorsum is anteriorly very irregular consisting of broad clumsy scales, the arrangement of which varies within the specimens. Posteriorly the structure is more regular with transverse ridges, one in front of the other. On the transverse ridge between the pseudostigmata there are four round tubercles. The sensillus is slender with a broad outer rim on the head.

The notogaster has two anterior teeth. The notogastral setae are strong, spine-shaped. *Ti*, *ms* and *r2* are located within oblong areas connected by undulating, longitudinal lines of rather large rounded tubercles. There are many tubercles on the dorsum, most large.

Ventral side, fig. 75a, is very characteristic having two distinct short transverse lines laterally to *iad*. There are two large areas on the ventral plate without tubercles, but there are tubercles on the middle of the plate. In all other species investigated there are no tubercles on the middle of the ventral plate.

163 (6).

*Suctobelbilla multituberculata* n.sp.; fig. 76.

Length about 0.185 mm. Colour dirty, light brown.

In the middle of the prodorsum there are some rounded scales that do not form a regular pattern. The transverse ridge between the pseudostigmata is tongued. The sensillus has a slender lanceolate head with a narrow outer rim.

The notogaster has on either side a strong

tooth located behind the broad lobe on the pseudostigma. Most of the notogastral setae, except those on the posterior border, are each situated within a smooth area surrounded by a more or less circular ridge; when seen in profile these appear as tubercles. There are small tubercles scattered all over the dorsum.

Ventral side, fig. 76a.

128 (2).

*Suctobelbilla minima* n.sp.; fig. 77.

Length about 0.155 mm. Colour dirty, light brown.

On the dorsal side of the rostrum there are irregular transverse ridges forming oblong meshes. The lamellar setae are located within a circular scale, the interlamellar setae on a tubercle on the transverse ridge between the pseudostigmata. The sensillus has a broad outer brim.

Notogaster. There are no teeth on the anterior border of the notogaster. Most of the nine pairs of notogastral setae are situated within smooth areas surrounded by proportionately large rounded tubercles. The tubercles along the borders of the dorsum are very small. Some of the areas (tubercles) are connected by faint transverse ridges, i.e., the tubercles with *ti* and *te*, and those with the setae *r2*.

Ventral side, fig. 77a. The ridges along the posterior part of the sternum, reaching the arched ridge in front of the genital field, are very strong. The aggenital setae, which are as long as the width of a genital plate, are very thick. The other setae of the ventral plate are not discernible.

105 (1), 106 (1).

*Suctobelbilla ornata* n.sp.; fig. 78.

Length about 0.15 mm. Colour dirty, light brown.

There is very little sculpture on the dorsal side of the prodorsum. It consists of three faint transverse ridges and two scales carrying the

lamellar setae. Interlamellar setae were not observed. The notogaster has no teeth on its anterior border. The sculpture of the dorsum is stronger than in the preceding species and consists of strong, curved lateral ridges carrying the setae *ta* and *ti*. There are similar but indistinct ridges radiating from the anterior margin of the notogaster. The setae *ms* and *r2* are set in pairs within cicular ridges, *r3* within semicircular ridges. There are only a few small tubercles on the dorsum.

Ventral side, fig. 78a. The ridges, which are parallel to the posterior part of the sternum, are not so well defined as in the preceding species. The aggenital setae, which are as long as the width of a genital plate, are very strong and stiff. 25 (1), 26 (1), 105 (2), 177 (1), 190 (5).

#### Oxyameridae

*Oxyamerus hyalinus* n.sp.; fig. 79.

Length about 0.36 mm. Colour light brown.

The small pointed rostrum projects between the thick hyaline rostral setae. The latter are slightly pointed at the tips, which are directed outwards. On the sides of the prodorsum there is a dark plate, turtorium (?), which reaches beyond the base of the rostral seta anteriorly. The lamellar setae, which are setaceous, reach the pointed rostrum. They converge and are longer than their mutual distance. The interlamellar setae located between the pseudostigmata are very small and thin. A ridge issuing under the pseudostigma projects forwards between the short, thick exopseudostigmatic seta and the interlamellar seta. The pseudostigma is partly closed by a lid. The sensillus, which is thick, thread-shaped, slightly thinner at the tip and set with bristles on its anterior border, is directed outwards and slightly backwards, fig. 79a.

The notogaster is only a little longer than broad. There is a broad dark band on its anterior border, which is not well defined. From its latero-anterior corner a faint keel runs obliquely backwards to *te*. There are 10 pairs of

thin, smooth, curled notogastral setae. The posterior ones are bent ventrally round the latero-posterior border. P1–p3 are directed forwards over the ventral plate and can only be seen in a ventral view. *Ta* is small. *Im* is located laterally to *ti*.

Ventral side, fig. 79b. Epimeres III–IV from the two sides are fused. The number of epimeral setae is 3:1:3:4. Some of them, i.e. 4a, are very long. There are six pairs of genital setae, the anterior pair being longer than the others. The posterior pair is both shorter and thinner than the middle ones. The aggenital setae and *ad1* and *ad3* are short. *Ad2* absent. *Ad1* are located on either side of a dark brown chitinous tongue. In the type specimen *iad* is surrounded by a ring. It is located obliquely behind *ad3*. Pedotecta I–II are well developed. Coxa III is very narrow proximally, swollen distally. The legs are provided with short, smooth spines, the tarsi and tibiae of all legs have strong spines. Monodactylous. Figures 79 c–e show legs I–III. Figure 79f shows the mandible in different views.

171 (1), 177 (12), 178 (6).

*Oxyamerus truncatus* n.sp.; fig. 80.

Length about 0.47 mm. Colour chestnut brown.

The tip of the rostrum is a short “nose” on either side of which is a triangular flat plate forming a truncate rostrum. The transparent, lanceolate, rostral setae are inserted ventrally under these plates. The very thin lamellar setae are situated on the triangular plates laterally to the rostral setae. Apart from the anterior part of the rostrum just mentioned this species much resembles the preceding one. The sensillus is coarser and the distance between the pseudostigmata is the same as the width of the latter. The notogastral setae are arranged alike in the two species. The setae *te* are very long, meeting in the middle of the dorsum. The latero-anterior keel reaches beyond *te*, almost to *ti*. *Im* is located close to *ti*, set longitudinally.

The ventral side resembles that of *O. hyalinus*.

The aggenital and the adanal setae are equally long and longer than in *O. hyalinus*. Ad2 absent. Anal setae are not discernible. There is no posterior tongue between ad1. Iad is parallel to the anal field, located off the middle of the latter. Femora I–II have a branched dorsal spine.

Remarks. The two new species both differ from *O. spathulatus* Aoki, 1965a, in the appearance of the anterior part of the prodorsum, but most of the other features are similar. As a generic characteristic Aoki mentions the narrow projecting rostrum and the lamellar setae being directed outwards and the tip medially, located in the middle of the narrow rostrum. After the find of the two Javanese species, both with a much broader rostrum and the very different position of the lamellar setae, the narrow rostrum and the outwards-directed lamellar setae can be specific characteristics only.  
178 (1).

#### Rhynchoribatidae

*Suctoribates carinatus* n.sp.; fig. 81.

Length about 0.43 mm. Colour brown.

This species so much resembles *S. suctorius* Bal., 1963, that only the differences will be mainly mentioned. The rostral setae are longer, first directed laterally and then forwards; medially they almost meet. The position of the lamellar setae varies, as shown by Balogh, from behind one another, which is most common, to beside and close to one another, fig. 81a. The sensillus is pointed at the tip. Laterally to the lamellar setae there is a curved ridge at a deeper level. Another faint ridge runs in front of the pseudostigmata towards a light spot between the interlamellar setae.

Notogaster. Ta, which is much longer than the other setae, is thin, especially distally. The remaining setae are lanceolate, transparent, slightly serrate on the border. In *S. suctorius*, p1 and p2 are small, setiform and ta is no longer than the other notogastral setae. Im is located laterally to te.

Ventral side, fig. 81b. It much resembles that of *S. suctorius*, although some of the epimeral setae, i.e., 3b and 4b, are much longer than in the former species.

Seen in a dorsal view, Femora I–III are provided with crests covered with tubercles, fig. 81. Figures 81c–d show leg I and the distal part of leg II. In tarsi II–IV the setae u are reduced to short tips. Tarsi III–IV have a strong dorsal spine. The number of solenidia for the four legs is as follows:

Number of Solenidia	Tarsus	Tibia	Genu	Femur
I	2	2	1	0
II	2	1	1	0
III	0	1	1	0
IV	0	1	1	0

181 (6), 182 (4).

#### Eremellidae

*Fijirella mollis* Ham., 1971.

105 (1).

#### Arceremaeidae

*Tecteremaeus bogorensis* n.sp.; fig. 82.

Length about 0.39 mm. Colour clear brown.

The rostrum is conical, the rostral setae smooth and shorter than their mutual distance. The lamellar setae, located in the middle of the prodorsum, are approximately as long as their mutual distance and smooth. The interlamellar setae are like the lamellar setae. They are located on either side of two faint lines directed anteriorly, bordered by some light spots. The sensillus is flagellate, bent strongly outwards and then medially. It is set with cilia. The pseudostigma is a broad cup opening outwards.

The notogaster is only a little longer than broad. Its posterior end is broadly rounded. On its anterior border there is a broad arch, the lateral sides of which continue backwards as long, light stripes. The arch proper is only distinct for a short distance. There are 12 pairs of notogastral setae. They are alike, short, thick

and smooth. P2 and p3 can be seen only in a ventral view. There is a small pore behind the insertion of the setae.

Ventral side, fig. 82a The sternal plate is faintly chitinized. On either side of it there is an undulating, longitudinal ridge with three setae, 2a–4a. A membrane is suspended across the concave parts of the ridge. All the apodemata are well developed. The number of epimeral setae is 3:1:3:4. The epimeral setae are similar to the notogastral setae. The genital field is imbedded in a broad oval plate. There are five pairs of genital setae, one pair of aggenital, two pairs of anal and three pairs of adanal setae. The aggenital setae are a little shorter than the anal and the adanal setae. Ad–ad2 are postanal, ad3 located off the middle of the field. Iad is located posteriorly, in front of ad2. Figures 82b–d show legs I, II and IV. All the femora are very broad with an anterior sharp tip and a very broad crest, decorated with stripes and small tubercles. The genus are very short, the tibiae and the tarsi closely connected. The thick claw has a proximal spur. The middle of its outer border is uneven. The solenidion of the genus is very short. The same is the case with the solenidion of Tibia II. 191 (1).

#### Machadobelbidae

*Machadobelba serrata* n.sp.; fig. 83.

Length about 0.49 mm. Colour brown.

This species is so similar to *M. tuberculata* Csiszar, 1961, that mainly differences will be mentioned. The rostral setae are thick and bent like horns and situated on strong, round tubercles (this is not the case in *M. tuberculata*). The lamellar ridges are very complicated. The lamellar setae (thin, smooth in *M. tuberculata*) and the interlamellar setae (thin, ciliate in *M. tuberculata*) are thick, short and barbed. What is most conspicuous is the very rough, serrate border of pedotectum I (smooth in *M. tuberculata*). This cannot be overlooked.

Notogaster. Only the lateral parts of the keels on the anterior part of the notogaster are

distinct (in *M. tuberculata* the medial and the lateral borders are equally strong). The notogastral setae are barbed (smooth in *M. tuberculata*). Ms a little longer than the others, p3 very short.

Ventral side, fig. 83a, is strongly chitinized. Within the fused Epimeres III–IV there are two oval areas limited posteriorly by the transverse band in front of the genital field. The number of epimeral setae is 3:1:3:4. They are thick and finely barbed. In Epimeres I there are two light spots like “windows”, which can also be seen in a dorsal view. Small tubercles cover the anterior one, which is located within pedotectum I. There are six pairs of genital setae, of which the anterior one is very long and directed forwards. On either side of the genital field there is a slightly curved ridge, the anterior part of which projects as a rounded tubercle. The aggenital and the adanal setae ad3–ad2 are as long as the epimeral setae and curved. Ad1 is much longer and straight. Iad is parallel to the anal field, located off ad2 near the posterior end of the field. Monodactylous.

186 (1), 218 (1).

#### Thyriosomidae

*Oribella paolii* Oudms.

168 (1).

#### Cymbaeremidae

*Scapheremaeus semiornatus* n.sp.; fig. 84.

Length about 0.53 mm. Colour brown.

The rostral setae are smooth and curved medially. The lamellar setae, located on the tip of long cusps, are tiny black clubs. There is a distinct pattern of ridges in the middle of the prodorsum consisting of a narrow arch between the pseudostigmata from which issue two longitudinal lamellae. The latter are connected by a faint translamella. Both the lamellae and the translamella are irregularly reticulate and not well limited. Laterally to the lamellae and behind the arch is an irregular network of more or less obliterated pits. The sensillus, which is directed laterally, has a long, slender, greyish-brown club

covered with long scales. The sides of the prodorsum bulge out behind pedotectum I. Pedotectum II is very narrow, distally bipartite. Behind it there is a brush-like seta.

**Notogaster.** The anterior border is slightly arched. The lenticular spot is located immediately behind the anterior border. The middle zone of the dorsum is not separated from the marginal zone posteriorly. However, the pits covering the whole marginal zone are here arranged in curves, so that the separating line between the two zones apparently continues to the posterior border of the dorsum. Like the marginal zone the middle zone is provided with a reticulation of brown meshes surrounded by dark walls, fig. 84a. The reticulation is, however, arranged in a pattern that leaves bare three areas on either side of the middle line. The pattern is not well limited, being more or less obliterated. There are apparently 11 pairs of short, ball-shaped, notogastral setae, viz., two in the middle area off the transverse rows of reticulation, one near the lenticular spot, five in an irregular row in the marginal zone and three pairs along the posterior border of the dorsum. The whole ventral side is reticulate. The tarsi have no brush-shaped setae. There are three claws, the lateral ones very thin.

1969: 165 (1).

*Scapheremaeus striatomarginatus* n.sp.; fig. 85.

Length about 0.37 mm. Colour brown.

No rostral or lamellar setae were observed. However, there are insertion pores for the latter on two low tongues on the anterior border of a square, reticulate middle field. There is no true translamella. Surrounding the lateral and the anterior border of the reticulate field there is a striated rim, which is concave anteriorly. In front of this rim is another striped rim almost following the contour of the rostrum. On the posterior part of the prodorsum there are irregular faint ridges and a half-obliterated reticula-

tion. The sensillus, which is bent slightly backwards, has a longish, thick club on a short stalk.

The notogaster has a straight anterior border with distinct humeral edges. The whole dorsum is covered by a reticulation of irregularly shaped yellow meshes of various sizes surrounded by brown walls. There is no distinction between a middle and a marginal zone, but the middle of the dorsum within the broken lines is slightly raised above the lateral and the posterior parts. Only four pairs of notogastral setae were observed, all located along the posterior border of the dorsum. These setae, fig. 85a, issue from a low apophysis. They are rather thin proximally then widen into a thick rough stalk covered with scales and ending in a flat cover. Pedotecta I-II have a striped outer rim. The femora have a similar rim. There are long feathered setae on the legs.

The ventral side is reticulate like the dorsal side. The anal field is removed from the posterior border of the ventral plate by a distance of approximately the same width as the anal plates. The anal setae are short, ball-shaped, and brown.

1969: 161 (1).

*Scapheremaeus convexus* n.sp.; fig. 86.

Length about 0.34 mm. Colour brown.

The rostral setae are bent medially, meeting. In the middle of the prodorsum there are some faint longitudinal ridges. On the tip of the lateral ones there is a short apophysis on which the tiny thick lamellar seta is located. Between the pseudostigmata there is an arch, the middle part of which forms a cross with the anterior ridges. The sensillus, which is directed laterally, has an almost round, black head on a short stalk.

**Notogaster.** Its anterior border is convex with small humeral edges. The light anterior lenticular spot is located immediately behind the anterior border. Within the spot there is a smooth plate half covering the opening on either side.



Furthermore there are two smaller spots, one on either side of the middle spot, surrounded by a rough ridge. The border of the marginal zone is roughly tongued, especially posteriorly, each tongue being formed by a folded ridge. The middle zone is tongued all the way round. It is separated from the marginal zone by a light line and its whole surface is covered with deep pits, the pits being especially deep along the raised middle part. Seen in profile the middle zone is strongly convex (hence the specific name), falls steeply posteriorly and ends in a short backwards-directed projection, fig. 86a. Four pairs of thick dark notogastral setae were observed. All the tarsi have a brush shaped seta with a long stalk. The rounded head of this brush is much more strongly developed on Tarsus I than on the other tarsi. The lateral claws are very thin.

Ventral side. There are six pairs of genital setae, i.e., four in a longitudinal row in the anterior half of the plates, one near the medial-posterior border and one midway between the anterior and the posterior setae. The anterior seta is very long, the others tiny. The distance between the genital and the anal field is approximately as long as the anal field. The latter is removed from the posterior border of the ventral plate by a distance the same as the width of an anal plate. There are two pairs of anal setae, three pairs of adanal setae. Ad1 are postanal, ad2 located off the posterior third of the anal field, and ad3 at a level between the anal setae. Only the insertion pores of these setae were observed. Iad is located off the latero-anterior border of the field.

194 (1).

#### Micreremidae

*Micreremus macrofissura* n.sp.; fig. 87.

Length about 0.27 mm. Colour yellowish-grey; the posterior part of the dorsum greyish-brown. The rostral border is transparent. The rostral

setae, which are as long as their mutual distance, are barbed and bent medially. The lamellar setae, located in the middle of the prodorsum, are minute. They are situated on the anterior border of an oval area from which faint lines run obliquely backwards to the pseudostigmata. The interlamellar setae, which are short, uneven and thick, are located on the posterior of these lines. The sensillus is globular, the stalk very short. A lateral ridge runs from the pseudostigma to the rostral seta. The integument is faintly reticulate or pitted.

The notogaster is broad, almost truncate at the posterior end, its anterior border arched. There are 14 pairs of short, stiff, curved setae, two of which can be seen in a ventral view only. The dorsum is decorated with large, irregular light meshes, which disappear towards the anterior end of the dorsum. The fissure im is very long (hence the specific name).

Ventral side, fig. 87a. The number of epimeral setae is 3:1:2:1. The setae are very thin and moderately long. There are four pairs of genital setae, i.e., two pairs at either end of the field. Aggenital setae absent. There are two pairs of thin anal setae (one seta is missing on the left plate). The adanal setae are short and stiff. Ad3 is preanal and located laterally to the long fissure iad. Ad1 and ad2 are postanal and situated close together in the narrow part of the ventral plate. There are faint lines on the genital and the anal plates. Behind and along the anal field there are two ridges that meet behind ad1-ad2. Further anteriorly on the ventral plate there is a faint striate to reticulate pattern. The fissure ip is also very long. Tibia I has a short distal process. All tarsi are tridactylous and homodactylous.

Remarks. The new species much resembles *M. gracilior* Sverchu. It can be distinguished from the latter by its truncate posterior end of the dorsum, by fissure im being located further posteriorly, and by having only three pairs of

setae on the ventral plate (*M. gracilior* has four or five (?) pairs).

104 (1).

#### Licneremaeidae

*Licneremaeus linieatus* n.sp.; fig. 88.

Length about 0.18 mm. Colour yellowish-grey.

The anterior border of the rostrum is transparent. The rostral setae are situated on the dark, slightly serrate border behind the transparent part. There are several transverse ridges on the prodorsum, i.e., anteriorly an almost straight ridge located in front of the lamellar setae and further posteriorly a shorter curved ridge. The latter is located midway between the straight ridge and the V-shaped ridge in front of the anterior border of the notogaster. Between the ridges there is an indistinct reticulation. Besides these ridges there are some stronger ridges issuing from the pseudostigmata, running forwards to the curved ridge, and further laterally another ridge that reaches the anterior transverse ridge. The lamellar and the interlamellar setae are moderately long. Sensillus of the usual type.

The notogaster has an indistinct pattern mainly consisting of some large spots, the medial borders of which are thickened so that the greyish ground between the lighter spots stands out much more clearly than the spots themselves. Behind the third dorsal pair of notogastral setae *dm*, there is a curved ridge that continues laterally as short transverse ridges. In the integument there are a few pores, i.e., two near *la* and one between *h2* and *h3*. The notogastral setae, 13 pairs, are smooth and surrounded by secretion. The marginal setae bend round the lateral and the posterior border of the dorsum.

Ventral side, fig. 88a. Three curved ridges or lines (hence the specific name) issue from the posterior border of the camerostome and run backwards, reaching the middle of the fused Epimeres III–IV, sending branches out between

the base of Legs I and II. There are some faint lines and small tubercles on the ventral plate.

Remarks. The dorsal pattern of the new species more recalls *L. novaeguineae* Bal., 1968 than any of the other *Licneremaeus* species.

20 (1).

#### Oripodidae

(?) *Truncopes luminosus* n.sp.; fig. 89.

Length about 0.42 mm. Colour yellowish - light brown.

The rostrum is conical. The rostral setae are barbed and as long as their mutual distance. The lamellae are rather narrow and almost equally broad throughout. The lamellar setae are barbed and as long as the lamellae. The interlamellar setae, also barbed, are erect and therefore appear too short. The sensillus has an oval head on a very thin, short stalk. The head appears in its full length in front of the incurvation between the pteromorphae and the anterior border of the notogaster. The pseudostigma is hidden beneath the pteromorphae.

Notogaster. Its straight anterior border projects beyond the anterior border of the pteromorphae almost reaching the interlamellar setae. The notogaster is almost twice as long as the distance  $p3-p3$ . Its posterior end is rounded. The pteromorphae are immobile, rather long, posteriorly reaching the level of *ms*. There are 10 pairs of thin, short, smooth setae. Four pairs of sacculi. *Im* is located in front of *ms*. There are numerous luminous dots (hence the specific name) in the integument, those on the prodorsum being of different sizes and larger than those on the notogaster.

Ventral side, fig. 89a. Apodemata II and the sejugal apodemata are narrow and straight. The former reach the faintly chitinized, short sternal plate, the sejugal apodemata reach the genital frame. The number of epimeral setae is 3:1:3:3. The setae are very thin, of different lengths and hardly discernible. There are two pairs of short genital setae, both inserted in the anterior half

of the plates, near the anterior border. One pair of short, thin aggenital setae. The two pairs of anal setae and the three pairs of adanal setae are long, smooth and very curly, their tips sometimes ending in a loop. Ia is located off ad2. Small luminous dots are scattered in the integument. The femora have a broad ventral keel. All tarsi with three claws, the middle one about twice as thick as the lateral ones.  
25 (1).

*Vesiculobates* n.gen.

Costulae present. Complete dorso-sejugal suture. Sensillus globular. Pseudostigma hidden. Pteromorphae absent. 11 pairs of notogastral setae. 4 pairs of sacculi. 4 pairs of genital setae. Aggenital setae absent. One pair of anal and three pairs of adanal setae. Tridactylous. Tibiae with a long sensitive seta ending in a vesicula.

Type: *Vesiculobates silvaticus* n.sp.; fig. 90.  
Length about 0.28 mm. Colour yellowish.

The prodorsum is broad, triangular, the tip of the rostrum slightly projecting. The laterally located rostral setae are longer than their mutual distance, curved, thin, and faintly barbed. The lamellar setae are similar to the rostral setae. There is a ridge, prolamella, between the rostral and the lamellar seta. The costulae are narrow. The pseudostigma is hidden below the anterior border of the notogaster. The sensillus is globular, just reaching beyond the border of the notogaster. The interlamellar setae are thicker than the lamellar setae, erect, slightly barbed and at least as long as their mutual distance. The exopseudostigmatic setae are tiny. There is an area porosa lamellaris.

The notogaster is broadest across the middle. There are two incurvations in the posterior border. The anterior border is straight with a rounded latero-anterior corner that forms a broad band. There are apparently 11 pairs of notogastral setae (on the left side only 10). The setae are short and smooth, most of them

located in the posterior third of the dorsum. Two pairs are situated within each incurvation. There are four pairs of sacculi. The integument is smooth.

Ventral side, fig. 90a. The sternal plate is broad and faintly chitinized. Apodemata II are very short. The sejugal apodemata and Apodemata III are equally well developed. The number of epimeral setae is 3:1:3:3. All the medial setae are short. 1b is long and thin. There are four pairs of hardly discernible genital setae. No aggenital setae. The anal field is much larger than the genital field. Totally, there is only one anal seta, located in the middle of the left plate. There are three pairs of adanal setae, ad1 being postanal, ad2 latero-anal and ad3 preanal. Iad is located behind ad3. Figures 90b–c show Tibia and Tarsus of Legs I and IV. The sensitive seta of Tibiae III–IV ends in a small round vesicula. All the genus have a short solenidion. The tarsi of all legs have three claws. Mandibles normal.  
210 (1).

*Piffliella* n.gen.

Costulae present. No dorso-sejugal suture. Immobile pteromorphae. Sensillus hidden beneath pteromorphae, globular. 10 pairs of notogastral setae. Four pairs of areae porosae. Four pairs of genital setae, no aggenital setae, one pair of anal and three pairs of adanal setae. Monodactylous.

Type: *Piffliella eduardi* n.sp.; fig. 91.

Length about 0.31 mm. Colour yellowish-grey.

The prodorsum is broad, triangular, anteriorly truncate. The tip of the rostrum is dull and straight, projecting a little beyond the sides in front of which the end of the mandibles can be seen. The rostral setae, which are inserted dorsally near the rounded latero-anterior edge of the prodorsum, are thin, smooth and a little longer than their mutual distance. The costulae are narrow, slightly curved and as long as their mutual distance, but only reach halfway to the tip of the rostrum. The lamellar setae resemble

the rostral setae. A prolamella is apparently present. The erect interlamellar setae are stiff, thicker than the lamellar setae, slightly barbed, and about as long as their mutual distance. The sensillus, which has a globular head on a short stalk, is completely hidden beneath the pteromorphae. From the pseudostigma a thin ridge runs forwards to the interlamellar seta and meets the anterior border of the pteromorphae.

Notogaster. The dorso-sejugal suture is indicated by a faint straight line and by a different colour, in front of the line it is yellowish, behind greyish. The anterior border of the notogaster projects to the interlamellar setae. The notogaster is almost as broad as it is long, the posterior end rounded. The anterior borders of the pteromorphae recede in an even curve from the interlamellar setae to the rounded shoulders. There are 10 pairs of thin setae and four pairs of areae porosae arranged as shown in fig. 91. On the sides of the notogaster between Aa and ta-te there are some greyish spots.

Ventral side, fig. 91a. Sternal plate absent. Apodemata II, the sejugal apodemata and Apodemata III are very short, the first two almost reach the genital field. The number of epimeral setae is 3:1:2:2, 1b being longer than the others. There are four pairs of thin genital setae. Aggenital setae absent. Only one pair of thick, barbed, anal setae, which are inserted into the middle of the plates. The adanal setae are a little thinner and shorter than the anal setae. Ad3 is preanal, ad1-ad2 are postanal, the distance ad1-ad1 being twice as long as ad1-ad2. Iad is short and located near the latero-anterior corner of the anal field. The circumpedial ridge is very distinct on the light, smooth, integument. The discidium is hardly pronounced. Pedotecta I-II are well developed. The legs are rather long and slender with strong setae. Femur II has a strong ventral crest. The solenidia of Tarsi I-II, Genu I and all tibiae end in a small expanded plate, fig. 91b. Monodactylous.

This small but very interesting mite is named

after Dr. *Eduard Piffel*, Austria, in gratitude for his selfless help to all oribatologists.  
104 (1).

#### Oribatulidae

##### *Wallworkiella* n.gen.

Notogaster oval. Pteromorphae absent. Dorso-sejugal suture unbroken. Costulae present, complicated. Pseudostigma hidden. 10 pairs of notogastral setae. 5 pairs of sacculi. 4 pairs of genital, one pair of aggenital, two pairs of anal and three pairs of adanal setae. Tridactylous. A vesicle at the base of the claws. Tactile setae ending in a knob.

Type: *Wallworkiella nasalis* n.sp.; fig. 92.

Length about 0.45 mm. Colour yellowish – light brown.

The rostrum is drawn out into a long “nose”. The rostral setae, located on the anterior border of a plate covering the side of the prodorsum, are unilaterally barbed and as long as their mutual distance. Half their length reaches beyond the tip of the rostrum. The lamella consists of two parts, viz., a distal part parallel to the corresponding part, and a proximal curved part located above the distal part. It issues from the pseudostigma and reaches to the level of the interlamellar seta, where it disappears or fuses with the distal part. The lamellar and the interlamellar setae are approximately equally long, barbed and rather thick. The sensillus has a small, ball-shaped head on a very thin, short stalk. The head just reaches beyond the border of the notogaster. The exopseudostigmatic seta is very long. The integument has no sculpture.

Notogaster is oval. Its anterior border has a double contour. The latero-anterior border seems to fuse with the proximal part of the lamella growing into one with it. There are 10 pairs of short, smooth setae, all equally long. All the setae are located near the border of the notogaster. There are five pairs of sacculi. Sa is considerably longer than the others. S1 is repre-

sented by an anterior and a posterior sacculus, one on either side of ms. S2 and S3 are located in their usual position.

Ventral side, fig. 92a. The sternal plate is broad and faintly chitinized. Apodemata II are very short, the sejugal apodemata broad, but slightly chitinized and Apodemata III are narrow, none of them reaching the genital field. The number of epimeral setae is 3:1:3:3. These setae are very small. The epimeres are reticulate. The genital field is broadest anteriorly. Its anterior border is transparent. There are four pairs of very thin setae located near the border of the plates. The aggenital, the anal and the adanal setae are short and thin like the genital setae. Ad 1 is postanal, ad2 is located almost off the middle of the field and ad3 off the latero-anterior corner of the field. Iad is parallel to the anal field, located behind ad3.

The legs are slender. The solenidia of Tibiae III–IV end in a knob. This may also be the case with the solenidia of Tibiae I–II, but if so they are broken off. Figure 92b shows the distal part of Leg II. At the base of the three equally strong claws there is a vesicle. Figures 92 c–d show the distal part of Tarsus I from beneath and Tarsus IV in profile, respectively.

The number of solenidia for the four legs is as follows:

Number of Solenidia	Tarsus	Tibia	Genu	Femur
I	2	2	1	0
II	2	1	1	0
III	1	1	1	0
IV	0	1	1	0

This new genus is named after my very good friend and colleague Dr. *J. A. Wallwork*, London, who has helped me in several ways throughout the years.

1969: 177 (1).

*Zygoribatula lineata* n.sp.; fig. 93.

Length about 0.31 mm. Colour light brown.

The tip of the rostrum is very pointed. The rostral setae, which are longer than their mutual distance, are thin and faintly barbed. The lamellar setae, which are almost twice as long as their mutual distance, are equally thick throughout, thicker than the rostral setae and densely barbed. The costulae converge so that the distance between their ends is only half as long as between their proximal parts. The costulae consist of two parts, a long, narrow, medial part and a lateral part only half as long, ending near the area porosa lamellaris. The translamella is a very thin line (hence the specific name). The interlamellar setae, which are as long as their mutual distance, are equally thick throughout and set with barbs especially at the tip. In the area between the costulae there are several light pits. The exopseudostigmatic seta is long, thin and barbed. The sensillus is a slender club, thickest distally, set with minute bristles in six rows on the dorsal surface. It is directed outwards.

Notogaster. Its anterior border is highly arched reaching beyond the pseudostigmata. The shoulders are hardly pronounced. The notogaster is narrow anteriorly, broadly rounded at the posterior end. There are 14 pairs of setae, two of which can only be seen in a ventral view. C1 is much shorter than the others, thin and rough. The setae, which are inserted in very bright pores, are slightly bent, equally thick throughout and coarsely barbed. The anterior setae: C2, 1a, da, 1m, dm and 1p are thicker than the posterior ones. There are only three pairs of areae porosae, A3 being absent. In front of Aa there is a short oblong and a few small, round, light spots.

Ventral side, fig. 93a. Apodemata II and III are short, the sejugal apodemata form a broad transverse band at a short distance in front of the genital field. The number of epimeral setae is 3:1:3:3. The setae of the fused Epimeres I–II are thin, faintly barbed and moderately long. Those of Epimeres III–IV are apparently thinner.

There are four pairs of very thin, smooth

genital setae. Also the aggenital setae are very thin. The anal and the adanal setae are shorter, thicker and barbed. Iad is located in front of the anal field. The sculpture consists of short, light longitudinal slits. Only on the infracapitulum are the slits transverse. The medial parts of the epimeres are reticulate, the meshes each have a slit. The slits are hardly discernible on the genital plates but more distinct on the anal plates. Tridactylous, heterodactylous.  
133 (17), 134 (2).

*Sellnickia caudata* Oudms.  
230 (1).

*Tuberemaeus* (?) *perforata* (Willm.), 1931; fig. 94.

The specimens found by me differ from *Willmann's* type species in the size of the luminous dots, which are very small and of the same size on the prodorsum and notogaster in *Willmann's* type. In my specimens the dots are larger in the middle of the prodorsum and disappear more or less towards the tip of the rostrum. The sensillus is set with stiff bristles, fig. 94.

The ventral side was not described by *Willmann*. On the epimeres, there are a few scattered luminous dots and on the genital plates a very few dots. The anal plates are densely dotted like the ventral plate. The latter has larger dots or small pits laterally to the genital field. The integument is smooth between the genital and the anal field.

137 (10), 138 (1), 139 (1), 143 (8), 144 (56), 155 (6), 156 (4), 157 (7), 159 (2), 186 (2), 194 (5), 201 (1), 202 (1), 203 (2).

*Tuberemaeus perforatoides* n.sp.; fig. 95.

Length about 0.46 mm. Colour light brown.

This species differs only little from the preceding one. The pits on the prodorsum are large from the tip of the rostrum to the posterior border. Anteriorly, the pits are in regular rows; between the lamellae they are irregularly scattered. Seen in a dorsal view, the sensillus is broad

distally, then suddenly tapers into a thin spine. Its anterior border is set with stiff bristles for the whole length of the head, fig. 95a (in *T. (?) perforata* the part of the head set with bristles is much shorter).

The notogaster has slightly protruding shoulders. In the anterior part of the dorsum the pits are approximately as large as on the prodorsum, further posteriorly the pits are smaller, and near the posterior end they are more like narrow slits.

Ventral side. The epimeres are pitted. Epimere I has only a few minute pits in its medial half, laterally to Ib there are larger pits. The whole width of epimere II is pitted. Epimere III reticulate with only a few small pits. Epimere IV with small pits, which become uniformly larger on the ventral plate. Between the genital and the anal fields the pits are very small. The genital plates are smooth, the anal plates have very small pits, especially in their anterior and medial part.

3 (1), 5 (1), 12 (1), 22 (1), 23 (1).

*Tuberemaeus deletus* n.sp.; fig. 96.

Length about 0.43 mm. Colour light brown.

*T. deletus* can be distinguished from the two preceding species by its long interlamellar setae, which are equally thick throughout, slightly undulating and almost smooth. The lamellar setae are rather thick, short and rough. The sensillus is shown in fig. 96a. The pits on the prodorsum are rather large, being indistinct on the tip of the rostrum. The notogaster has small shoulders carrying the short, stiff setae. The posterior border of the notogaster is slightly undulating.

The pits are very small behind the anterior border of the notogaster. In the middle of the dorsum in front of the pits almost disappear (hence the specific name). On the posterior half of the dorsum the pits are round and regular.

Ventral side. Epimeres I have a few lateral pits, otherwise there are no pits on the epimeres. The genital plates are smooth. There are very

small pits on the anal plates. The ventral plate has large pits on its sides, but no pit in the area between the genital and the anal fields.

218 (1), 231 (2).

*Fijibates rostratus* Ham., 1971.

8 (1).

#### Haplozetidae

*Berlesiella* n.gen.

The new genus is characterized by mobile pteromorphae, complete dorso-sejugal suture, lamellae, 4 pairs of sacculi, 10 pairs of notogastral setae, 3 pairs of genital, one pair of aggenital, two pairs of anal and three pairs of adanal setae. Monodactylous.

Type: *Berlesiella scutata* n.sp.; fig. 97.

Length about 0.22 mm. Colour yellowish.

The rostrum is narrow and conical. The rostral setae are located laterally on ridges issuing near the end of the lamellae. The tips of the ridges are pointed and the two tips almost embrace the rostrum, fig. 97a. The rostral setae are thin, barbed and half their length reaches beyond the tip of the rostrum. The lamellae, located on the sides of the prodorsum, consist of an erect proximal part and a deeper-lying, distal, almost transparent part. The lamellar setae are situated on the end of the lamellae. Seen in a dorsal view, they are about one and a half times longer than the lamellae, thicker than the rostral setae and slightly barbed. The interlamellar setae, located off the middle of the lamellae, are longer than the lamellar setae when stretched out and barbed. The pseudostigmatic cup is half hidden below the anterior border of the notogaster. The sensillus has a short stalk and a rather large angular head, which is dull and slightly serrate at the tip in dorsal view. In profile, the head is a regular oval, fig. 97a.

Notogaster. Its anterior border is arched, almost reaching the level of the interlamellar setae. Laterally, the anterior border withdraws

evenly into the anterior border of the mobile pteromorphae. Only a little edge is bent ventrally, posteriorly it almost reaches r3. There are 10 pairs of short, thin notogastral setae, located as shown in fig. 97. There are four pairs of sacculi and two pairs of fissures, viz., im and ip. Im is located in front of r3, ip between p1 and p2. The integument is smooth.

Ventral side, fig. 97b. There is no true sternum, but a large shield-shaped greyish area in front of the genital field (hence the specific name). This area continues evenly into the ventral plate. Apodemata II and the sejugal apodemata reach the border of this area. Apodemata III are much shorter, Apodemata IV not developed. 2a and 3a are located within the shield-shaped area. The number of epimeral setae that I can discern is 3:1:2:2. They are all short and thin. The genital field is narrow and only about half as large as the anal field. There are three pairs of thin genital setae, located in two longitudinal rows in the middle of the plates. The aggenital setae are short and thin like the genital setae, the anal and the adanal setae. Ad1 are postanal, ad2 are located almost off the middle of the anal field and ad3 are preanal. Iad is located between ad2 and ad3. The integument is smooth. The circumpedal ridge reaches forwards to Apodema I. Genae striped.

Legs. Pedotecta I–II are well developed. Discidium rounded. The legs are short. The tarsi are compressed. Tibiae I–II have a short distal process with the tactile setae. All the femora have a broad ventral keel. The number of solenidia for the legs is as follows:

Number of Solenidia	Tarsus	Tibia	Genu	Femur
I	2	2	1	0
II	2	1	1	0
III	0	1	0	0
IV	0	1	0	0

Monodactylous. Mandibles of the normal chewing type. This genus is named after the late

Dr. A. *Berlese*, who described many oribatids from Java at a very early time.

17 (7), 18 (2), 19 (3).

*Magyaria javensis* n.sp.; fig. 98.

Length about 0.33 mm. Colour light brown.

The tip of the rostrum is pointed and best seen in a ventral view. The rostral setae, which just reach beyond the tip of the rostrum, are thin and finely barbed. The lamellar setae are much thicker and coarsely barbed. They are situated on the end of the lamellae, only a short distance behind the rostral setae. On the ends of the lamellae are small lateral teeth and medially a projecting ridge reaching the border of the rostrum. No interlamellar setae. The sensillus has a lanceolate head on a long thin stem. The pseudostigma, which is inserted into the proximal part of the lamella, has a large lateral projecting lobe. The integument is regularly reticulate between the lamellae apart from a broad posterior belt between the pseudostigmata. On the tip of the rostrum there are small granules.

The notogaster is as broad as it is long. There are 10 pairs of setae, i.e., only the insertion pores, as the setae are absent. There are four pairs of sacculi. The insertion pores and the sacculi are located as in other *Magyaria* species, fig. 98. Along the anterior border of the notogaster there is a row of large cellular areoles, removed a little from the border. The pteromorphae and the dorsum are reticulate apart from an irregular smooth area in the middle of the dorsum. The cellular areoles are mostly pentagonal, fig. 98a, but of different sizes.

Ventral side, fig. 98b. There is a faintly chitinized broad sternal plate, darker in colour than the reticulate epimeres. In its middle there is a longitudinal row of areoles, laterally to which the plate is smooth. All epimeres are reticulate, their setae short. The formula is 3:1:3:2(?3). Pedotecta I–II are smooth. There are four pairs of genital hair pores, one pair of aggenital, two pairs of anal and three pairs of adanal setae, the

setae being hardly discernible or absent. Ad1 and ad2 are postanal, located in a row along the posterior border of the ventral plate, ad3 are preanal. Iad is located off an2. The genital plate is greyish, without sculpture, the anal plates also greyish, but with a hardly discernible reticulation. The ventral plate is reticulate like the dorsal side apart from a small area between the aggenital setae. All tarsi have two claws, viz. Tarsi I–II a medial thin claw and an outer strong claw, Tarsi III–IV a medial strong claw and a thin lateral claw.

Remarks. According to *Balogh, 1963, Magyaria* has only one claw. The new species differs by having two claws.

201 (1).

*Xylobates capucinus* Berl.

6 (1), 27 (11), 106 (4), 112 (1), 182 (1), 198 (1), 203 (1).

*Perxylobates vermiseta* Bal. & Mah., 1968.

143 (1), 200 (1).

*Perxylobates barbatus* Ham., 1972.

172<sub>x</sub> (1), 215 (1).

*Xylobates* sensu lato. Within the larger species of *Xylobates* sensu lato there is a great variation in the number of notogastral setae, the number of genital setae and the number of claws. However, as I find no coherence between these characteristics, the species found in Java will at present be established under *Xylobates*.

*Xylobates luteus* n.sp.; fig. 99.

Length about 0.43 mm. Colour yellowish.

The rostral setae, which are inserted on the dorsal surface, are as long as their mutual distance and barbed. The lamellar setae are located medially to the end of the lamellae. They are longer than their mutual distance, barbed and much thinner at the tip. The lamella consists of a medial short ridge and a much stronger sublamella, fig. 99a, that does not reach the



lamellar seta. A short exopseudostigmatic seta is present. In a dorsal view the lamellae appear rather broad. The interlamellar setae are a little thicker and a little shorter too than the lamellar setae. The sensillus, fig. 99b, is long, slender and has a slightly thicker distal part. Along its outer border there are about 23–25 bristles, on its inner border about 7 bristles located in the distal half of the sensillus.

The notogaster is oval, its anterior border slightly arched. Together with the anterior border of the pteromorphae the anterior of the notogaster forms an even curve. The pteromorphae reach backwards as far as the glandula. They are finely marked with radiating stripes. The 10 pairs of notogastral setae are minute, the insertion pores bright and surrounded by a greyish ring. The four pairs of areae porosae are rather small.

Ventral side, fig. 99c. The sternum is not defined. Apodemata II are short, the sejugal apodemata almost reach the genital field and Apodemata III are about half as long as the sejugal apodemata. All the epimeres have light spots medially; they form a kind of reticulation. The number of epimeral setae is 3:1:3:3. These setae are moderately long. The genital field is limited from the epimeres by some light spots.

There are five pairs of genital setae, the two anterior ones being thick and barbed, directed forwards, the three posterior ones shorter and thinner. The aggenital setae are hardly discernible. Ad1 and ad2 are postanal, ad1 longer than ad2. Ad3 is preanal and shorter and thinner than ad2. The anal setae resemble ad3. The legs are much like those of *X. duoseta*, fig. 100e, apart from being didactylous. Tarsi I–II have a thick lateral and a thin medial claw. Tarsi III–IV have a thin lateral claw and a thick medial claw.

1969: 177 (1); 24 (2), 184 (1).

*Xylobates duoseta* n.sp.; fig. 100.

Length varying from 0.49 to 0.68 mm (holotype, a female, sample 105: 0.68 mm), the females

being much larger than the males. Colour light brown.

The rostral setae, the lamellar and the interlamellar setae are barbed, the two former approximately as long as their mutual distance, the interlamellar setae about two-thirds as long as their mutual distance. The lamellar setae are located medially to the tip of the lamellae. The latter are twisted as in *Plenoxylobates* (fig. 102a). Figure 100a shows the lamellae, to the right a lateral view, to the left a more dorsal view, with an area porosa off the middle of the lamella. The distal third of the sensillus is slightly clavate ending in a curved tip. On its outer border there are upstanding bristles, fig. 100 b.

Notogaster. The anterior border is almost straight forming one long line with the anterior border of the pteromorphae. The latter are long, reaching as far as gl, and finely radiatingly striate. The 10 pairs of notogastral setae are hardly discernible, their pores are, however, bright. Ms is located immediately behind A1.

Ventral side, fig. 100c. The sternum is replaced by a longitudinal wrinkle. Apodemata II are short, the sejugal apodemata reach the genital field. All the epimeres are yellow, reticulate and finely punctate. The number of epimeral setae is 3:1:3:3. These setae are short and smooth. There are five pairs of genital setae (six on the right, five on the left plate). Figure 100d shows a genital plate from a paratype. The integument is a light brown colour on either side of the genital field and backwards as far as a faint transverse line. The aggenital setae are hardly discernible. The anal setae, located in the posterior half of the plates, are small. Ad3 is shorter than the anal setae, ad2 longer, and ad1 much longer, projecting beyond the posterior end of the ventral plate. Iad is located between ad2 and ad3. Figure 100e shows the distal part of Leg I. Tridactylous, the lateral claws much thinner than the middle claw.

103 (1), 105 (3), 106 (4), 107 (1), 108 (3), 109 (7), 110 (5).

*Xylobates acutus* n.sp.; fig. 101.

Length about 0.68 mm. Colour shining reddish-brown.

The rostrum projects a little. The dorsally located rostral setae are thin at the tip, unilaterally barbed and a little longer than their mutual distance. The lamellae are located laterally and appear very narrow. The lamellar setae, located beside the tip of the lamellae, resemble the rostral setae but are longer. The interlamellar setae are approximately two-thirds as long as their mutual distance, otherwise similar to the former setae. The distal third of the sensillus is thickest. It is lanceolate but the tip is very pointed. In the middle of the transparent head there is a little spot, fig. 101a. Along its outer border the sensillus is set with minute bristles. The distal bristles are much stronger than the more proximal ones. The notogaster is arched and its anterior border is a curved line. The pteromorphae are narrow, reaching almost to im. The notogastral setae are hardly discernible, their insertion pores bright. The four pairs of areae porosae are bright, the two posterior ones have well defined borders.

Ventral side, fig. 101b. It resembles the ventral side of *X. duoseta*. 3c and 4c are longer than the other epimeral setae. There are five pairs of genital setae. The aggenital setae are small. Ad1–ad3 are equally long, ad1 perhaps a little longer. Tridactylous, the lateral claws being much thinner than the middle claw.

12 (1), 13 (1), 22 (2), 223 (1).

*Plenoxylobates* n.gen.

Dorso-sejugal suture present. Lamellae present. Pteromorphae mobile. 14 pairs of notogastral setae, furthermore a minute seta on the pteromorphae. 4 pairs of areae porosae. Five pairs of genital setae, one pair of aggenital, two pairs of anal and three pairs of adanal setae. Mandible normal. Tridactylous.

Type: *Plenoxylobates ramosus* n.sp.; fig. 102.

Length varying from 0.49 to 0.65 mm. Colour yellowish - light brown.

The rostrum is broadly rounded and the rostral setae, located on the dorsal surface, are as long as their mutual distance. They are rather thin and set with long branches, fig. 102a. The lamellar setae, situated beside the tip of the lamellae, are longer and thicker than the rostral setae and, like these, ramose. The interlamellar setae resemble the lamellar setae. In a dorsal view, the lamellae are twisted, the proximal part being erect, the distal part horizontal. When laid bare, their shape can be seen in a lateral view, fig. 102a. The well chitinized anterior part almost reaches the lamellar seta. Posteriorly, it surrounds an area porosa, medially it continues as a faint keel to the transparent, hardly chitinized, proximal part of the lamella. The sensillus, fig. 102b, has 15–16 bristles on its outer border, the bristles being as long as the width of the stem, and a few proximal tiny bristles. It ends in a slightly curved tip. Laterally to the pseudostigma there is a round scale or lobe.

The notogaster has an almost straight anterior border and a round posterior end. The pteromorphae are mobile. In the middle of the pteromorphae there is an area limited by radiating lines in which a tiny seta c3 and the fissure ai are located. There are 15 pairs of notogastral setae that are rather thin and set with upstanding, scattered bristles, fig. 102c. Im, 1p, dp, h1, h2 and h3 are longer than those in the anterior part of the dorsum. C1, c2 and c3 are particularly short. There are four pairs of areae porosae. Medially to Aa there is a reticulation of glandular tissue. The integument is faintly pitted at a deeper level; above the pits it is finely punctate.

Ventral side, fig. 102d. The sternum is replaced by irregular longitudinal wrinkles. Apodemata II are short oval plates. The sejugal apodemata and Apodemata III reach the genital field. Apodemata IV undeveloped. The epimeres are reticulate and densely punctate. The number of barbed epimeral setae is 3:1:3:3. The anterior

part of the ventral side is a yellow colour, the posterior part, i.e., the ventral plate, is brown, darkest round the genital field as far as a faint transverse line behind the latter. The genital field is grey. There are five pairs of genital setae, fig. 102e, i.e., three near the anterior border and two in the posterior part of the plates. These setae are finely barbed. The aggenital setae are short. The anal setae, one in the middle of the plate, the other near the posterior border, are finely barbed and much stronger than the aggenital setae. Ad3 are preanal and a little shorter than the anal setae. Ad1 and ad2 are long, stiff setae that project far beyond the posterior end of the ventral plate. Their appearance is like that of the setae on the dorsum. The distance ad1-ad1 is equal to ad1-ad2. Iad is short and is located off the anterior half of the field. The integument of the ventral plate is faintly pitted and densely punctate. Also the anal plates are faintly pitted. Figures 102 f-g show Legs I-II. Figure 102 h shows the infracapitulum with the palp.

158 (1), 183 (1), 213 (1), 215 (2).

*Plenoxylobates curtiseta* n.sp.; fig. 103.

Length about 0.55 mm. Colour light brown.

*P. curtiseta* differs from *P. ramosus* by its much shorter notogastral setae and a different position of these setae. A comparison between figs. 102 and 103 shows, for instance, that the distance da-1m is much shorter in *P. ramosus* than in *P. curtiseta*. The same is the case for h3-dp and h3-h2. The notogastral setae have shorter secondary bristles than in *P. ramosus*. The sensillus, fig. 103a, has numerous bristles in contrast to the 15-16 bristles in *P. ramosus*. Otherwise the two species are much alike.

The appearance of the ventral side is also in good agreement, apart from ad3 which is a little shorter in *P. curtiseta* than in *P. ramosus*.

24 (1), 26 (1).

*Peloribates guttatus* n.sp.; fig. 104.

Length about 0.33 mm. Colour light brown to brown.

The rostrum is broad, conical. The rostral setae, which are slightly unilaterally barbed, are bent medially in a broad curve. The lamellar setae are smooth, very thin at the tip and reach beyond the tip of the rostrum. The interlamellar setae, which are as long as the lamellar setae, are smooth, equally thick throughout apart from the tip that is slightly guttiform (hence the specific name). The integument is faintly pitted, the pits being irregularly arranged. The sensillus has a short clavate head set with a few bristles.

Notogaster. The anterior border is only slightly arched. The 14 pairs of notogastral setae are similar to the interlamellar setae. They are almost equally long corresponding to the distance c1-c1. The distance h1-h1 is one and a half times longer than h2-h2. The integument is pitted, the pits being much larger than on the prodorsum. Also the pteromorphae are pitted.

Ventral side. The integument is pitted both on the epimeres and on the ventral plate, the pits are as large as on the dorsum. The epimeral setae are short and thin. There are five pairs of genital setae. The genital plates are furnished with small oblong narrow dots on a ground that is slightly lighter than it is outside the plates. One pair of short aggenital setae. The anal plates are pitted like the ventral plate. The anal setae are short, thin and smooth, as also the adanal setae. Ad1 is located at the latero-posterior corner of the field, ad2 a little further anteriorly. Ad3 is located off the anterior anal seta. Tridactylous, heterodactylous.

1969: 166 (1), 169 (2), 175 (2); 9 (3), 13 (1).

*Peloribates guttatoides* n.sp.; fig. 105.

Length about 0.34 mm. Colour light brown.

Making a superficial comparison, this species seems very similar to the preceding one. However, the 14 pairs of notogastral setae are much shorter, i.e., dm just reaches 1p, dp reaches h2. In *P. guttatus*, about half the length of dm and

dp reaches beyond the insertion of 1p and h2, respectively. P1, p2 and p3 are a little longer than the other setae.

The rostral setae are unilaterally barbed. The lamellar setae are thicker than the rostral setae and set with short scattered bristles. The interlamellar setae are longer than the notogastral setae. The integument is faintly pitted, the pits being larger towards the tip of the rostrum. The sensillus has an oval head set with stiff bristles.

Notogaster. Behind c1 there are three small light spots each consisting of a few light dots. The integument is faintly pitted, the pits being small and with a large mutual distance. There are similar small pits on the pteromorphae. In the anterior part of the dorsum there is on either side an irregular pattern. This is probably glandular tissue. There are four pairs of sacculi. Im is located behind 1a.

Ventral side. The epimeres are reticulate. The epimeral setae are rather long, thick and barbed. The genital and the anal plates are smooth, the ventral plate with small, widely separated pits. The five pairs of genital setae are very thin and moderately long. The aggenital setae are hardly discernible. The anal and the adanal setae are short, smooth and thin. Ad1 and ad2 are located at the latero-posterior corner of the anal field, ad3 off the latero-anterior corner in front of iad. Tridactylous, heterodactylous.

113 (1).

*Peloribates ratubakensis* n.sp.; fig. 106.

Length about 0.62 mm. Colour chestnut brown.

The rostrum is slightly pointed. The rostral setae are barbed. The lamellar setae, which reach beyond the tip of the rostrum, are also distinctly barbed. The interlamellar setae resemble the lamellar setae and are as long as their mutual distance. The sensillus has a rather short stem and a clavate head set with coarse black bristles. The integument is foveolate, the pits close together, reaching almost to the tip of the rostrum.

The notogaster has 14 pairs of stiff, coarsely barbed setae of which the dorsal ones are a little longer than the more marginal ones, approximately as long as the distance c1-c1. The distance h1-h1 is equal to h2-h2. The pteromorphae are distinctly foveolate, the dorsum more faintly foveolate.

Ventral side. Both the epimeres and the ventral plate are distinctly foveolate. The genital plates are apparently smooth, but there are very small faint dots. The plates are no lighter than the surroundings. The anal plates are foveolate like the ventral plate. The epimeral setae are short spines. The sejugal apodemata reach the anterior border of the genital field. The genital setae are rather long and thicker than the epimeral setae. The two aggenital setae are as long as the width of a genital plate. The anal and the adanal setae are long and barbed. In a paratype there were two aggenital setae on the right side and three anal setae on the right anal plate. Ad1 and ad2 are postanal. Ad1 are located off the latero-posterior corner of the anal field, separated by a distance twice as long as ad1-ad2. Ad1 is almost as long as the distance ad1-ad2. Ad3 is situated immediately in front of iad and off the anterior anal seta. Tridactylous, heterodactylous.

128 (1), 129 (3).

*Acutozetes javensis* n.sp.; fig. 107.

Length about 0.67 mm. Colour chestnut brown.

The rostrum is pointed. The rostral setae are thin and faintly barbed. The lamellar setae are very long; proximally they converge, off the tip of the rostrum they diverge, projecting for about half their length beyond the tip of the rostrum. They are barbed, thick proximally, much thinner at the tip. The interlamellar setae are curved in the same way as the lamellar setae. The integument of the prodorsum is smooth. The sensillus has a very small head, only a little thicker than the stem.

Apart from the pteromorphae, the notogaster

is circular. The pteromorphae are small and very short. There is a deep incurvation in their anterior border. There are 14 pairs of long, thick, coarsely barbed notogastral setae. They are curved and of different lengths; da, (dm missing), dp and h2 are the longest. C1 and c2 are a little longer than, for instance, 1a and 1m. The distance dm–dm is shorter than dp–dp, which is about the same as da–da. I am unable to discern more than two pairs of sacculi, i.e., Sa and S2. There are very small pits on the pteromorphae, larger pits on the dorsum, situated rather close together.

Ventral side. The epimeres are reticulate. The sejugal apodemata reach the anterior border of the genital field. The number of epimeral setae is (?) 2:1:3:3. They are barbed and rather long; 1b, 3b and 4b being longer than the others. The genital and anal plates are smooth. The ventral plate is faintly foveolate in a belt between the genital and the anal fields. There are five pairs of rather long genital setae. The aggenital setae and the anal setae are similar to the genital setae. The adanal setae are much longer and thicker. Ad1 and ad2 are postanal, located on a line. They are about as long as the anal field. Ad3 is located at some distance from the side of the anal field. It is about half as long as ad1–ad2, but as thick as the latter. Iad is located off the anterior half of the anal field. Monodactylous.

Remarks. *A. javensis* can be distinguished from *A. rostratus* Bal., 1970a, by its much broader rostrum that is not attenuated, and from *A. nadchatrami* Bal. & Mah., 1974, by its much longer notogastral setae.

171 (1), 205 (1).

#### *Sundazetes* n.gen.

Lamellae present, translamella absent. Sensillus flagellate. Pteromorphae mobile. Dorso-sejugal suture complete. 10 pairs of notogastral setae. 4 pairs of sacculi. 5 pairs of genital setae, one pair of aggenital, two pairs of anal and three pairs of

adanal setae. Mandibles normal, chewing. Monodactylous.

Type: *Sundazetes crispus* n.sp.; fig. 108.

Length about 0.83 mm. Colour brown.

Along the tip of the rostrum there is a yellow membrane. The rostrum is broad and the rostral setae, which are located laterally behind the membrane, are almost as long as their mutual distance and faintly barbed. The lamellae are rather broad. They have a light furrow for their whole length. The lamellar setae are thick, stiff and faintly barbed. They are a little shorter than the lamellae. The interlamellar setae are longer and a little thicker than the lamellar setae. The sensillus is flagellate, smooth. It is bent outwards and backwards in an even curve.

The notogaster is only a little longer than broad. The pteromorphae are short and have a deep incurvation in their anterior border. The latero-anterior tip is bent strongly ventrally. There are 10 pairs of thin, curly, notogastral setae. (A few are missing indicated by broken lines). Ti and Sa are located inside a circular area with a slightly lighter integument. There are four pairs of very conspicuous sacculi that consist of a short tube and two lateral projections. S3 is simple. The gland behind im is funnel-shaped. The integument is pitted and densely punctate between the small, scattered pits. There are also pits on the pteromorphae.

Ventral side, fig. 108a. The distance between the infracapitulum and the genital field is short. Apodemata II and the sejugal apodemata almost reach the genital field. Apodemata III are shorter. The epimeres are dark with light holes in the integument. The number of epimeral setae that I can discern is 3:1:3:2. They are moderately long and barbed. There are five pairs of barbed genital setae, the anterior ones projecting beyond 3a, the posterior ones a little shorter. There are hardly discernible narrow slits in the integument on the genital plates. The aggenital setae are barbed and as long as the

epimeral setae. The anal field is much larger than the genital field. The anal setae are strongly barbed and longer than the aggenital setae. The anal plates are pitted. Ad3, which is preanal, is longer than the anal setae and barbed. Ad1 and ad2, which are postanal, are located in a line on the posterior border of the ventral plate. They are very long, thick, stiff and barbed. The distance ad1-ad1 is a little longer than ad1-ad2. The ventral plate is foveolate, the pits being a little larger than those of the anal plates. Pedotectum I is well developed, discidium a pointed tooth.

The legs are slender. Ventrally, Tarsus II, fig. 108b, has three very strong barbed spines. Femur II has a very strong ventral keel, the distal part of which projects and almost covers the genu. On the keel there is a strong barbed spine, fig. 108a. Monodactylous.  
224 (1).

*Rostrozetes foveolatus* Selln., 1925c.

Very common. It was found in 40 samples and in all localities, often in small numbers only. Most numerous in the following samples: 155 (27), 156 (35), 157 (13), 158 (13), 163 (11), 188 (13).

Ceratozetidae

*Allozetes translamellatus* Ham., 1973.

143 (2), 144 (1).

*Ceratozetes gracilis* Mich.

6 (1), 221 (1).

(?) *Sphaerozetes javensis* n.sp.; fig. 109.

Length about 0.38 mm. Colour clear brown.

The rostral setae are located laterally, their base being hidden below the tutorium. They reach the tip of the rostrum and are very thin and barbed. The rather broad lamellae have a small pointed lateral tooth at the base of the lamellar seta. The medial, strongly chitinized

border ends in a small tooth immediately behind the lamellar seta. The latter is thick proximally, very thin at the tip. It is barbed and as long as the distance between the tip of the lamellae. The interlamellar setae are as long as their mutual distance and a little thinner than the lamellar setae. The sensillus is a longish club set with minute bristles. The tutorium ends in a long free tip that projects beyond the lamellar tip. It is striate.

The notogaster is as broad as it is long. The pteromorphae, which have an undulating anterior border, are densely striate. A large part of them is bent ventrally. Their latero-anterior tip is pointed. Posteriorly they reach A1. There are probably 10 pairs of notogastral setae, the insertion pores being bright, the setae absent or hardly discernible. Ta is located on the pteromorphae. P1-p3 were not observed. Near A2 is a light spot. Im, located some distance in front of A1, is very indistinct. The whole dorsum is covered with minute tubercles arranged in a vermiculate pattern.

Ventral side, fig. 109a. The sternum is short and broad with spurs to Apodemata II. The sejugal apodemata reach a faintly chitinized ridge surrounding the anterior border of the genital field and reaching Acetabulum IV. Apodemata III are short. The number of epimeral setae is 3:1:3:3. 1c which are located on the outer side of pedotecta I are thick barbed spines. Also 1a are very thick, 1b and 2a a little thinner. 3a are shorter. The genital plates are light brown and smooth. There are six pairs of thin genital setae, i.e., three near the anterior border, two along the sides and one at the posterior border. The aggenital setae, which are located far laterally, are as thick as 1a. The anal and the adanal setae are not discernible. Ad1 and ad2 are postanal, the distance ad1-ad1 twice as long as ad1-ad2. Ad3 are asymmetric on the two sides. The epimeres are finely punctate, the ventral plate and the anal plates covered with

minute tubercles. Strong spines are present on the Tibiae and Genus I-II. All tarsi have three claws, the lateral ones very thin. 113 (1).

#### Pelopidae

*Nesopelops intermedius* n.sp.; fig. 110.

Length about 0.57 mm. Colour brown.

Although this species is not truncate at the posterior end of the notogaster, and the notogastral setae are not displaced laterally, both characteristic features of *Nesopelops*, I establish it nevertheless as belonging to this genus because it is monodactylous, which is characteristic of *Nesopelops*. Among other details, fig. 110a shows the lamellae and the lamellar setae, when laid bare. The latter, which are transparent, are narrow at the base, broad at the middle and barbed on their inner border. They reach beyond the tip of the rostrum. The rostral setae, which can best be seen in a ventral view, are long and barbed, fig. 110b. The sensillus is lanceolate and set with bristles. The interlamellar setae, which have very strong borders, end in a few faint tips.

Notogaster. The projection on its anterior border has a deep incurvation. The notogastral setae are arranged as in *Eupelops*. Lp and h3 are close together. Most setae are staff-shaped, fig. 110c, showing 1a. H1 is thicker and serrate, fig. 110d, and p1 thin and serrate, fig. 110e. The dorsum is decorated with wax forming a regular pattern in the middle of the dorsum, more irregularly laterally.

The ventral side shows no characteristic features. There are six pairs of long, thin, curved genital setae. Close behind their insertion there is a small pore, fig. 110f. Tarsi II-III have a strong spine. Tibiae I, II and IV and Genus I-III have a thin spine. Monodactylous.

101 (8), 102 (6), 104 (1), 105 (2), 110 (1), 112 (1), 147 (1), 155-156 (1), 158 (1), 213-214 (1), 219 (1), 228 (1), 233 (1).

#### Oribatellidae

*Lamellobates palustris* Ham., 1958.

105 (2), 106 (1), 125 (5), 126 (2), 127 (1), 129 (1), 133 (5), 136 (5), 158 (1), 200 (1).

*Paralamellobates schoutedeni* (Bal.), 1958.

1969: 172 (1), 178 (2); 22 (1), 23 (1).

*Plakoribates scutatus* n.sp.; fig. 111

Length about 0.33 mm. Colour brown with a large light spot behind the anterior border of the notogaster.

This new species is very similar to *P. africanus* (Bal.), 1959 and to *P. confluens* Bal., 1970b. It can be distinguished from both by the lamellae forming one very broad scutate plate covering most of the prodorsum. The lamellar setae are situated far anteriorly and rather close together at the anterior end of a furrow, along the fused medial border of the lamellae. They are thick, barbed, two to three times longer than their mutual distance, their tip bent ventrally. The thick, uneven interlamellar setae reach the anterior border of the lamellar plate. In *P. confluens* the lamellae also form a scutate plate, but it is much narrower, pointed at the tip, and the interlamellar setae are shorter and thinner. Otherwise, *P. scutatus* is so similar to *Balogh's* two species mentioned above that a further description is unnecessary.

Ventral side, fig. 111a. The number of epimeral setae is 3:1:3:2. These are barbed. The six pairs of genital setae are setaceous, smooth and rather long. The aggenital setae are thin and barbed, the anal setae setaceous and smooth and the adanal setae (only two pairs: ad1-ad2) are barbed. The adanal setae are located round the posterior end of the anal field. Iad, which is long, is located in front of ad2. In almost the whole area between the genital and the anal fields the integument is a slightly darker colour than the surroundings. On this darker ground can be seen a faint reticulation.

Legs. All the femora have a ventral keel. Coxa III is very narrow proximally. Genu and Tibia II have a smooth lateral spine. All the tarsi have three claws, a thick middle claw and two thinner lateral claws.

129 (1), 130 (1).

Achipteridae

*Achipteria sumatrensis* (Willm.), 1931.

152 (1).



## Conclusion

### *The Composition of the Oribatid Fauna*

Java's oribatid fauna seems a "young" fauna. This is manifested by the relative scarcity of Javanese genera. Of the 99 genera represented, 13 are set up as new, three of them, viz., *Austroceratoppia*, *Discosuctobelba* and *Flagrosuctobelba*, have, however, representatives in other parts of the world. Only ten can presently be considered as truly Javanese genera. All the others are immigrants, probably having immigrated in the Tertiary period. With respect to species, the opposite is the case. Of the 165 species found, 103 are new – which could indicate a rich and late development of species.

The Javanese oribatid fauna is distinctly tropical. However, the Malay peninsula and Indonesia belong to Laurasia, which appeared in the Tertiary period as a pendent attached to the Asiatic plate. The fauna should consequently be of palearctic origin. Nevertheless, the palearctic element is only represented by 3 species, i.e. *Suctobelbella subcornigera*, *Oribella paolii* and *Ceratozetes gracilis*. In addition, there are 9 cosmopolitans (underlined in table 1). All the other species are of tropical origin, some of them (17, marked by + in front of the generic name in table 1) have a very wide distribution in the southern hemisphere. These 17 species, which probably evolved in the original Gondwanaland, must be considered to have penetrated into Indonesia via India when this sub-continent drifted north in the Tertiary period from its earlier location at the east coast of Africa and hit the south coast of Asia, thus producing the Himalayas. From India the tropical fauna must have spread to the nearest areas of land and

have moved on, e.g. via south-east Asia, to the Malacca peninsula and further to Indonesia. In this connection it is interesting to note that several members of the Javanese oribatid species have very closely related species in Malaysia, e.g., within *Suctobelbella* and *Acutozetes*. The immigrant Gondwanaland element must have probably found good living conditions because it was at this time that south-east Asia came into a tropical area when Laurasia swung towards the south-east.

As long as we do not know the South-east Asian oribatid fauna more thoroughly we may also take into consideration the possibility of an immigration from New Guinea and/or Australia. New Guinea, Australia and New Zealand are situated on the same tectonic plate and the faunas of these three areas probably evolved independently of the fauna of South-east Asia. We know that New Zealand has an immense number of endemic genera (on specific level 82%), which evolved through millions of years of isolation. Of the known oribatid genera of New Guinea 27% are endemic, i.e. a fauna different from that of Java with only 10% endemic genera.

It is most peculiar that the supposedly original palearctic faunal element in Java is very scarcely represented. It seems as if the palearctic species have had difficulties in establishing themselves in tropical areas, where the moisture and temperature were probably the worst impediment. Through the many hundreds of years that Indonesia was a colony of the Netherlands, with frequent traffic between Europe and Java, there must have been numerous opportunities for

Table 1. Javanese species and their distribution (new species not included)		Fiji Islands	Tonga Islands	West Samoa	Tahiti	South-east Polynesia	Hawaii	Japan	Thailand-Vietnam	New Zealand	Africa	South America	North America
	<i>Ctenacarus araneola</i> Grndj.												
	<i>Cryptoplophora abscondita</i> Grndj.												
	<i>Mesoplophora pantotrema</i> Berl.												
+	<i>Malacoangelia remigera</i> Berl.	x		x	x			x		x	x	x	x
	<i>Eniochthonius minutissimus</i> Berl.				x							x	x
	<i>Annectacarus unilateralis</i> Ham.		x										
	<i>Javacarus kühneli</i> Bal.	x			x								
	<i>Papillacarus hirsutus</i> Aoki		x		x			x					
+	<i>Epilohmannia pallida</i> Wallw. var. <i>pacifica</i> Aoki		x		x		x				x		
+	<i>Nothrus oceanicus</i> Selln.		x	x	x	x							
	<i>Nothrus flagellum</i> Csiszar											x	
	<i>Camisia segnis</i> (Mich.).							x		x		x	x
+	<i>Allonothrus russeolus</i> Wallw. var. <i>reticulatus</i> Ham.	x	x	x	x						x		
+	<i>Archegozetes magnus</i> (Selln.)		x		sp.				sp.			sp.	
	<i>Trhyphochthonius javanus</i> Csiszar									x			
	<i>Malaconothrus keriensis</i> Ham.												
	<i>Malaconothrus geminus</i> Ham.				x								
	<i>Malaconothrus hexasetosus</i> Ham.	x	x	x	x								
	<i>Trimalaconothrus crassisetosus</i> Willm.	x			x								
+	<i>Masthermannia mammillaris</i> Berl.	x	x	x	x								
+	<i>Cyrthermannia parallela</i> (Aoki)							x					
+	<i>Nanhermannia thaiensis</i> Aoki								x				
	<i>Liodes bataviensis</i> Selln.												
	<i>Plateremaeus rotundatus</i> Berl.												
	<i>Belba macropoda</i> Berl.												
	<i>Microtegeus reticulatus</i> Aoki								x				
	<i>Eremaozetes tuberulatus</i> Berl.				x								
+	<i>Microzetes auxiliaris</i> Grndj. var. <i>pachyseta</i> Ham.	x	x		x			x				x	
+	<i>Eremulus avenifer</i> Berl.				x			x	x				
	<i>Eremulus truncatus</i> Ham.	x	x										
	<i>Fosseremus laciniatus</i> Berl.	x			x			x	x	x	x	x	x
	<i>Eremobelba capitata</i> Berl.												
	<i>Heterobelba galerulata</i> Berl.												
	<i>Zetochestes pacificus</i> Selln.					x							
	<i>Cultroribula lata</i> Aoki							x	x	x			
	<i>Cultroribula bicultrata</i> Berl.												
	<i>Tectocephus velatus</i> Mich.	x	x	x	x			x		x	x	x	x
	<i>Tectocephus sarekensis</i> Trgdh.									x			

	Fiji Islands	Tonga Islands	West Samoa	Tahiti	South-east Polynesia	Hawaii	Japan	Thailand-Vietnam	New Zealand	Africa	South America	North America
<i>Tegeozetes tunicatus</i> Berl.	×						×					
<i>Amerioppia vicina</i> Ham.	×						?					
<i>Arcoppia arcualis</i> (Berl.)	×	×					×	×	×			
<i>Oppiella nova</i> (Oudms.)	×	×	×	×			×		×	×	×	×
<i>Oppia minutissima</i> Selln.									×		×	
<i>Oppia lanceosetoides</i> Ham.	×			×								
+ <i>Quadroppia circumita</i> Ham.			×	×					×		×	
+ <i>Ramusella chulumaniensis</i> Ham.	×	×	×	×							×	
<i>Ramusella sengbuschi</i> Ham.									×			
<i>Machuella ventrisetosa</i> Ham.	×		sp.	×					×		×	
<i>Striatoppia opuntiseta</i> Bal. & Mah.				×								
+ <i>Discosuctobelba variosetosa</i> (Ham.)	×	×	×	×							×	
+ <i>Parasuctobelba complexa</i> (Ham.)											×	
<i>Suctobelbella subcornigera</i> (Forssl.)									× <sup>2)</sup>			
<i>Fijiella mollis</i> Ham.	×											
<i>Eremella induta</i> Berl.		×										
<i>Oribella paotii</i> Oudms. <sup>2)</sup>												
<i>Scheloribates fimbriatus</i> Thor var. <i>javensis</i> Willm.	×	×	×	×	×	×	×			×		
<i>Scheloribates praeincisus</i> Berl.	×	×	×	×	×							
<i>Scheloribates prae. var. interruptus</i> Berl.	×	×	×	×	×							
<i>Fijibates rostratus</i> Ham.	×		×									
<i>Sellnickia caudata</i> Oudms. <sup>1)</sup>									×			
<i>Tuberemaeus perforata</i> (Willm.)			×	×								
<i>Tuberemaeus thienemanni</i> (Willm.)			×									
<i>Haplozetes quadripilus</i> (Berl.)	×											
<i>Xylobates capucinus</i> Berl.	×	×	×	×					×	×	×	×
<i>Perxylobates vermiseta</i> (Bal. & Mah.)		×	×	×								
<i>Perxylobates barbatus</i> Ham.				×								
+ <i>Rostrozetes foveolatus</i> Selln.	×	×	×	×			×		×	×	×	
<i>Allozetes translamellatus</i> Ham.			×									
<i>Ceratozetes gracilis</i> (Mich.)							×		×		×	×
+ <i>Lamellobates palustris</i> Ham.	×	×		×				×	×		×	
+ <i>Paralamellobates schoutedeni</i> (Bal.)	×		×							×		
<i>Achipteria sumatrensis</i> Willm.												
Total 72	28	23	22	33	5	2	15	8	19	10	18	8

1) found in Australia.

2) probably introduced into the Southern hemisphere.

European species to have been introduced. No such European element has been demonstrated. Neither did the close trading relationship between Europe and Tahiti throughout a couple of hundred years leave its mark on the oribatid fauna of Tahiti (Hammer 1972).

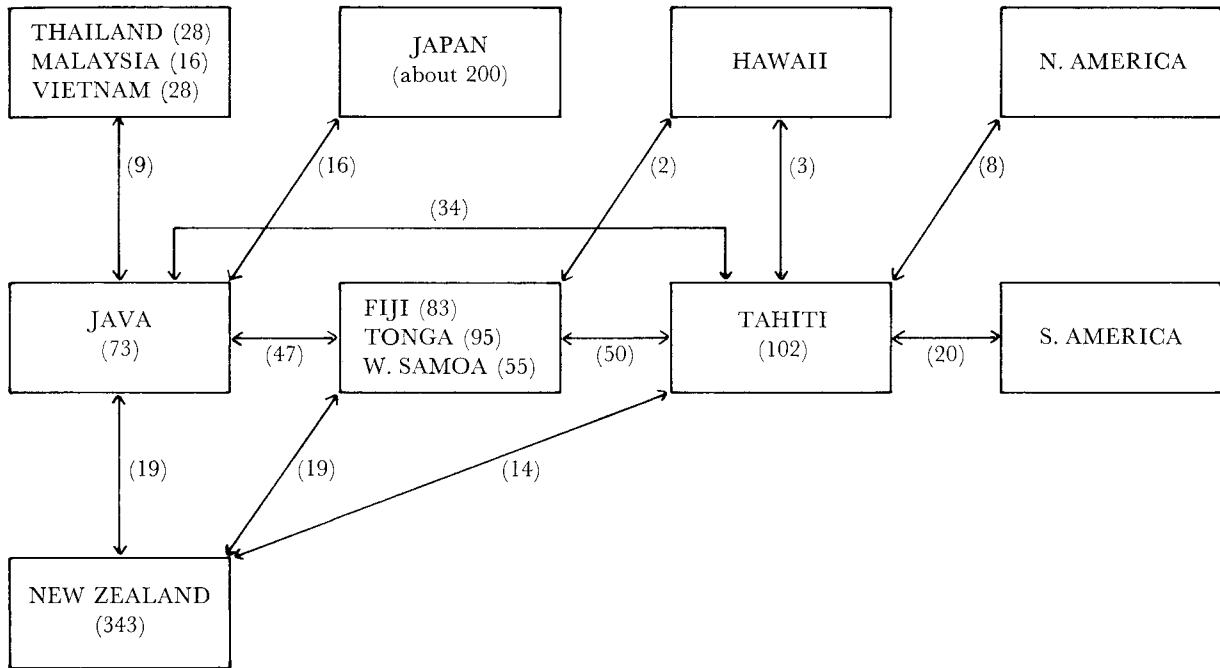
*The Spreading of the Fauna into the Southern Pacific*  
From investigations of the oribatid fauna in the Southern Pacific (Hammer 1971, 1972, 1973, Sellnick 1959), it appears that this fauna is closely related to the oribatid fauna of Indonesia. It is therefore obvious to investigate how far the oribatids found in Java have spread, not only to the Southern Pacific but also to the surrounding areas of land. On this basis, the species found in Java in the present investigation (less the new species) are listed in table 1, as well as the species ascertained present in the investigations of the oribatid fauna in the South Pacific and which were additionally ascertained to occur on Java. In contrast, the many other species from Java described by Berlese, Csiszar, Sellnick, and Willmann, etc., are not included because only species well known to me and easily recognisable can be included in this comparison between the oribatid fauna of Java and the faunas on the islands in the Southern Pacific and in the bordering areas of land. As the comparison is made only to show the distribution of the species, and not the relationship between the different faunas (see later), the 72 species listed in table 1 are sufficient to illustrate this point. In table 1 the first five columns represent the island groups in the Southern Pacific, the following seven columns the surrounding land areas. The oribatid faunas of Australia and New Guinea are too poorly investigated for them to be included in this investigation. It appears clearly from the table that the oribatid fauna in the Southern Pacific is very closely related to the oribatid fauna in Java when taking the Javanese fauna as the starting point. No less than 46 species of the 72 found on Java are distributed over the Southern Pacific

from the Fiji Islands in the west to Tahiti and South-east Polynesia in the east – numerous species occur on all island groups.

Hawaii in the northern Pacific has virtually nothing in common with Java and the South Pacific islands. Of the species from Java listed in table 1, 15 are known from Japan, 19 from New Zealand and 18 from South America, but if the cosmopolitan and introduced species are eliminated, the number is considerably less – 10 for Japan, 8 for New Zealand and 9 for South America. The cosmopolitan species do not play the same role for the islands in the Southern Pacific, where there are only 6 cosmopolitan species, as they do for the surrounding land areas with 9 cosmopolitan species. The table gives no information on the actual relationship between the oribatid faunas of the different island groups and the surrounding areas of land and Java's oribatid fauna, only about the distribution of the oribatids. To judge the relationship between the oribatid fauna of Java and those of the different island groups, all species within the Pacific area and the bordering areas of land should be included in the investigation.

*The Relationship between the Oribatid Fauna of Java and Those of the Different Groups of Islands in the Southern Pacific*

On the islands in the Southern Pacific (Fiji, Tonga, West Samoa and Tahiti) many species and genera have been found that have not yet been ascertained to occur on Java. If the species from Java and from the islands in the Southern Pacific are set up in one table – giving a total of 116 species (less the oribatid groups not treated in this investigation and the new specie) – and the island groups are then compared mutually and with the surrounding areas of land, a diagram is obtained that shows the relationship between the different oribatid faunas, p. 69. The number of known species within each island group is given in parenthesis in the diagram. To give an overall view, the Fiji Is-



lands, the Tonga Islands and West Samoa are treated as one. It appears clearly that there is a very close relationship between the oribatid fauna of Java and the oribatid faunas on the islands in the Southern Pacific. Thus Fiji, Tonga and West Samoa have 47 species common with Java (the individual island groups, respectively, 29, 24 and 23 species). Tahiti has 50 species common with these three island groups (respectively, 29, 33 and 26 species) and 34 common with Java.

It seems very difficult for the oribatid fauna to spread towards the north, which may perhaps be the result of the impeding ocean currents. Thus the fauna of Hawaii and North America have virtually nothing in common with the fauna in the Southern Pacific. Of the 8 species common to Tahiti and North America, 6 are cosmopolitan. Neither are there many species common with South America; 20 species are common to Tahiti and South America, of which 9 are cosmopolitan. New Zealand has 19 species com-

mon with Java (7 cosmopolitan), likewise 19 with Fiji, Tonga and West Samoa (5 cosmopolitan) and 14 with Tahiti (6 cosmopolitan).

Japan, which is much more thoroughly investigated than Thailand-Vietnam, has 16 species (5 cosmopolitan) common with Java; Thailand-Vietnam only 9 (1 cosmopolitan), which is probably only because so few species have been published from there. If the oribatid fauna of Java has immigrated from India and via South-east Asia and the Malacca peninsula penetrated into Indonesia, a more thorough investigation of the fauna in South-east Asia would doubtless show a much larger agreement between this fauna and that of Java. All in all it must be concluded that the oribatid fauna of Java has spread to a great extent to the islands in the Southern Pacific, but hardly much farther than this – i.e. to New Zealand, South America and similar distant areas. Then the question is how has this distribution come about? The many common species can theoretically have been

brought in by man, but as the islands in the South Pacific have hardly been inhabited for more than a few thousand years (personal communication from the ethnographer, Dr. *Torben Monberg*), this seems rather improbable. The many, at present endemic species and genera on the different island groups make it more probable that the faunas have been distributed over a much greater time interval by wind or ocean currents. It has earlier been rendered probable (*Hammer* 1965) that it has taken millions of years to segregate the present endemic species; hence man cannot be the spreading factor. It has been demonstrated on Surtsey, Iceland, that living oribatids arrived on the island on a fencing post (*Lindroth* 1970). Similar events must have taken place time and again throughout the 65 to 75 million years that the islands have existed in the Pacific.

As a result of the isolated location of New Zealand, and its very early splitting off from Gondwanaland, this country may be able to help us to understand which factors have been of significance for the distribution of oribatids in the Pacific. The oribatid fauna of New Zealand has 1) a cosmopolitan Pangaean element, 2) a Gondwanaland element, 3) a large element of endemic species and genera that must have developed after New Zealand split off from the Gondwanaland components, and 4) some few species that were introduced from Europe. From the point of view of distribution, it is important that the Lohmanniidae, whose mem-

bers are very large, are lacking in New Zealand but are found on the islands in the Southern Pacific, in Australia, Africa and South America. If man is responsible for this distribution of oribatids between the island groups in the Pacific, it is extremely peculiar that members of the Lohmanniidae were not carried into New Zealand with the successive waves of Maori settlers who entered the country throughout many hundreds of years.

Only a few of New Zealand's so-called endemic genera are known outside New Zealand (1 in New Guinea that is of continental origin), and of New Zealand's many species belonging to this group likewise only a few have been found on the nearest islands (1 on Tonga, likewise of continental origin). This probably means that the wind has been of only little importance, or perhaps even of no importance for the distribution of the oribatid fauna of New Zealand.

The ocean currents remain for our consideration. The East Australia current that turns up along the west coast of New Zealand and then south along the east coast of this country probably prevents any spreading of oribatids from New Zealand to other islands in the Southern Pacific. This idea seems confirmed by the very characteristic fauna of New Zealand. In the Pacific where the ocean currents run parallel to the equator and run between the islands, the currents do not constitute an isolating factor as in New Zealand but are probably the most important means of oribatid distribution.

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## Explanations of the Figures on Plates I–XLVII

fig.

1. *Mesoplophora pantotrema* Berl.
- 1a. *Mesoplophora pantotrema* genital plates.
- 1b. *Mesoplophora pantotrema* ventral view.
- 1c. *Mesoplophora pantotrema* dorsal view of aspis.
- 1d. *Mesoplophora pantotrema* notogastral seta.
2. *Mesoplophora leviseta* n. sp.
- 2a. *Mesoplophora leviseta* dorsal view of aspis.
- 2b. *Mesoplophora leviseta* sensillus.
- 2c. *Mesoplophora leviseta* ventral plate with genital and anal fields.
3. *Mesoplophora rostrorugosa* n.sp.
- 3a. *Mesoplophora rostrorugosa* microsculpture of dorsum.
- 3b. *Mesoplophora rostrorugosa* dorsal view of aspis.
- 3c. *Mesoplophora rostrorugosa* seta of aspis.
- 3d. *Mesoplophora rostrorugosa* part of ventral plate with one genital plate and anal field.
4. *Eohypochthonius vermicularis* n.sp.
- 4a. *Eohypochthonius vermicularis* sensillus.
- 4b. *Eohypochthonius vermicularis* ventral side.
5. *Eohypochthonius salicifolius* n. sp.
6. *Hypochthonius elegans* n. sp.
7. *Haplacarus javensis* n. sp.
- 7a. *Haplacarus javensis* ventral side.
8. *Javacarus porosus* n. sp.
- 8a. *Javacarus porosus* ventral side.
9. *Javalohmannia striata* n.gen.,n.sp.
- 9a. *Javalohmannia striata* sensillus.
- 9b. *Javalohmannia striata* ventral side.
- 9c. *Javalohmannia striata* adanal seta.
- 9d. *Javalohmannia striata* notogastral seta.
10. *Meristacarus sundensis* n. sp.
- 10a. *Meristacarus sundensis* h2 in profile.
- 10b. *Meristacarus sundensis* microsculpture between the setae el.
- 10c. *Meristacarus sundensis* ventral side.
- 10d. *Meristacarus sundensis* ad2.
11. *Meristacarus bogorensis* n.sp.
- 11a. *Meristacarus bogorensis* e2.
- 11b. *Meristacarus bogorensis* exp.
- 11c. *Meristacarus bogorensis* part of ventral side.
- 11d. *Meristacarus bogorensis* ad4.
12. *Heminothrus exaggeratus* n. sp.
- 12a. *Heminothrus exaggeratus* posterior part of ventral side.
13. *Heminothrus apophysiger* n. sp.
- 13a. *Heminothrus apophysiger* ventral side.
14. *Malaconothrus dorsofoveolatus* n. sp.

- 14a. *Malaconothrus dorsofoveolatus* ventral side.
15. *Malaconothrus aureopunctatus* n. sp.
- 15a. *Malaconothrus aureopunctatus* ventral side.
16. *Trimalaconothrus prahuensis* n. sp.
- 16a. *Trimalaconothrus prahuensis* ventral side.
17. *Bicyrthermannia duodentata* n. gen., n. sp.
- 17a. *Bicyrthermannia duodentata* notogastral seta.
- 17b. *Bicyrthermannia duodentata* ventral side.
18. *Phyllhermannia javensis* n. sp.
- 18a. *Phyllhermannia javensis* interlamellar seta.
- 18b. *Phyllhermannia javensis* notogastral seta.
- 18c. *Phyllhermannia javensis* ventral side.
19. *Phyllhermannia bimaculata* n.sp.
- 19a. *Phyllhermannia bimaculata* profile of notogastral seta.
- 19b. *Phyllhermannia bimaculata* dorsal view of notogastral seta.
- 19c. *Phyllhermannia bimaculata* part of ventral side.
20. *Pyllhermannia quadrirotunda* n. sp.
- 20a. *Phyllhermannia quadrirotunda* notogastral seta.
- 20b. *Phyllhermannia quadrirotunda* ventral side.
21. *Hermanniella orbiculata* n. sp.
- 21a. *Hermanniella orbiculata* microsculpture near el.
- 21b. *Hermanniella orbiculata* posterior part of ventral side.
22. *Plasmobates javensis* n. sp.
- 22a. *Plasmobates javensis* posterior part of ventral side.
23. *Liodes alatus* n. sp. part of prodorsum.
- 23a. *Liodes alatus* sensillus.
- 23b. *Liodes alatus* tritonymphal scalp.
- 23c. *Liodes alatus* ventral side.
- 23d. *Liodes alatus* right Femur I from above.
- 23e. *Liodes alatus* medial seta of Femur I
24. *Plateremaeus excavatus* n. sp.
- 24a. *Plateremaeus excavatus* sensillus.
25. *Plateremaeus callosus* n. sp.
- 25a. *Plateremaeus callosus* sensillus.
- 25b. *Plateremaeus callosus* microsculpture from anterior part of dorsum.
- 25c. *Plateremaeus callosus* lateral notogastral seta in profile.
- 25d. *Plateremaeus callosus* posterior notogastral seta in profile.
26. *Sadocephus dubius* n. sp.
- 26a. *Sadocephus dubius* sensillus.
- 26b. *Sadocephus dubius* shoulder with microsculpture.
- 26c. *Sadocephus dubius* shoulder with three not. setae.
- 26d. *Sadocephus dubius* posterior part of notogaster.
- 26e. *Sadocephus dubius* posterior part of ventral side.
- 26f. *Sadocephus dubius* genital plate.
- 26g-i. *Sadocephus dubius* Legs I-II, IV.
27. *Idiozetes javensis* n. sp.
- 27a. *Idiozetes javensis* lateral view.
- 27b. *Idiozetes javensis* ventral side.
28. *Szentivanyella szentivanyi* n. sp.
- 28a. *Szentivanyella szentivanyi* sensillus.
- 28b. *Szentivanyella szentivanyi* ventral side.
29. *Eremulus densus* n.sp.
- 29a. *Eremulus densus* ventral side (larger magnification than fig. 29)

- 30. *Eremulus tenuis* n. sp.
- 31. *Eremobelba* (?) *capitata* Berl.
- 31a. *Eremobelba capitata* ventral side.
- 32. *Eremobelba flexuosa* n.sp. ventral side.
- 33. *Heterobelba galerulata* Berl.
- 33a. *Heterobelba galerulata* rostral setae, male.
- 33b. *Heterobelba galerulata* detail of reticulate veil.
- 33c. *Heterobelba galerulata* ventral side.
- 33d. *Heterobelba galerulata* Leg I.
- 34. *Xiphobelba margosetosa* n.sp.
- 34a. *Xiphobelba margosetosa* notogastral seta.
- 34b. *Xiphobelba margosetosa* exuvium.
- 34c. *Xiphobelba margosetosa* ventral side.
- 35. *Austroceratoppia dentata* n. gen., n. sp.
- 35a. *Austroceratoppia dentata* ventral side.
- 36. *Aokiella rotunda* n. sp.
- 36a. *Aokiella rotunda* ventral side.
- 37. *Gibbicepheus ventrostriatus* n.sp.
- 37a. *Gibbicepheus ventrostriatus* interlamellar seta.
- 37b. *Gibbicepheus ventrostriatus* sensillus.
- 37c. *Gibbicepheus ventrostriatus* not. seta in dorsal view.
- 37d. *Gibbicepheus ventrostriatus* not. seta in profile.
- 37e. *Gibbicepheus ventrostriatus* ventral side.
- 38. *Gibbicepheus fenestralis* n. sp.
- 38a. *Gibbicepheus fenestralis* sensillus.
- 38b. *Gibbicepheus fenestralis* not. seta.
- 38c. *Gibbicepheus fenestralis* ventral side.
- 39. *Dampfiella angusta* n. sp.
- 40. *Amerioppia ventrosquamosa* n. sp.
- 40a. *Amerioppia ventrosquamosa* ventral side.
- 41. *Amerioppia javensis* n. sp.
- 42. *Arcoppia* (?) *arcualis* (Berl.).
- 43. *Arcoppia bidentata* n. sp.
- 43a. *Arcoppia bidentata* sensillus.
- 43b. *Arcoppia bidentata* sensillus from another specimen.
- 43c. *Arcoppia bidentata* ventral side.
- 44. *Arcoppia varia* n. sp.
- 44a. *Arcoppia varia* sensillus.
- 44b. *Arcoppia varia* ventral side.
- 45. *Arcoppia vittata* n. sp.
- 45a. *Arcoppia vittata* lateral view of prodorsum.
- 45b. *Arcoppia vittata* ventral side.
- 46. *Arcoppia rotunda* n. sp.
- 47. *Oppia condylifer* n. sp.
- 47a. *Oppia condylifer* sensillus.
- 47b. *Oppia condylifer* ventral side.
- 48. *Oppia stigmata* n. sp.
- 48a. *Oppia stigmata* ventral side.
- 49. *Oppia sundensis* n. sp.
- 49a. *Oppia sundensis* sensillus.
- 49b. *Oppia sundensis* ventral side.
- 50. *Oppia* sp.
- 50a. *Oppia* sp. part of ventral side.

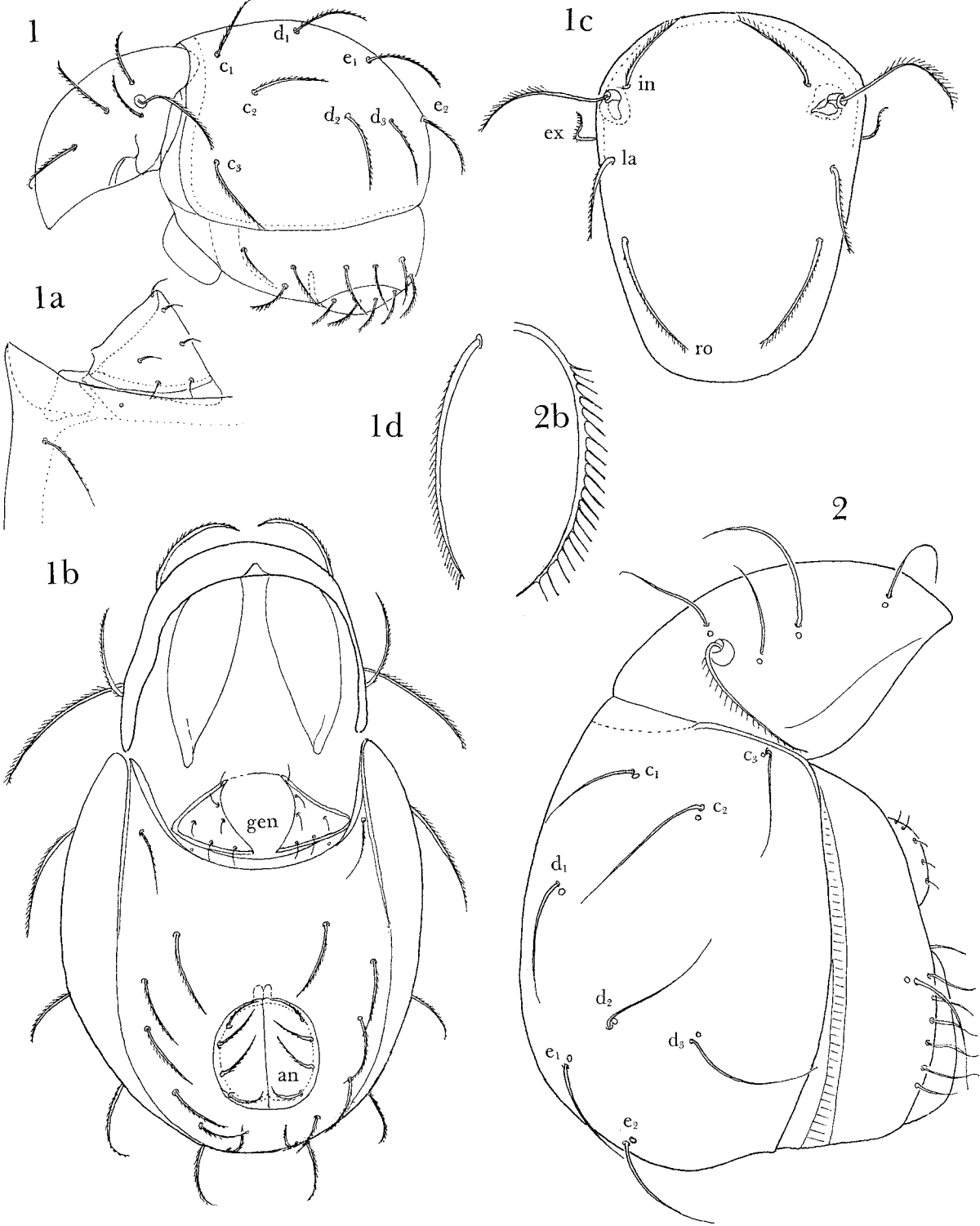
51. *Pulchroppia elegans* n. gen., n. sp.
- 51a. *Pulchroppia elegans* sensillus.
- 51b. *Pulchroppia elegans* ventral side.
52. *Pulchroppia similis* n.sp.
- 52a. *Pulchroppia similis* sensillus.
- 52b. *Pulchroppia similis* ventral side.
- 52c. *Pulchroppia similis* genital field.
53. *Quadroppia monstruosa* n. sp.
54. *Macrosoma rugosa* n. gen., n. sp.
- 54a. *Macrosoma rugosa* sensillus.
- 54b. *Macrosoma rugosa* ventral side.
55. *Machuella ventrisetosa* Ham., var. *plicata* n.var.
- 55a. *Machuella ventrisetosa* Ham., var. *plicata* ventral side.
56. *Discosuctobelba acutodentata* n. gen., n. sp.
- 56a. *Discosuctobelba acutodentata* rostral setae and rostral teeth.
- 56b. *Discosuctobelba acutodentata* ventral side.
- 56c. *Discosuctobelba acutodentata* Leg IV.
57. *Discosuctobelba sexsetosa* n. sp.
- 57a. *Discosuctobelba sexsetosa* rostral teeth.
- 57b. *Discosuctobelba sexsetosa* lanceolate not. seta.
- 57c. *Discosuctobelba sexsetosa* ventral side.
58. *Discosuctobelba latodentata* n. sp.
- 58a. *Discosuctobelba latodentata* ventral side.
59. *Discosuctobelba variosetosa* (Ham.) left side of notogaster showing the clavate r3.
60. *Discosuctobelba bivittata* n. sp.
- 60a. *Discosuctobelba bivittata* rostral teeth.
- 60b. *Discosuctobelba bivittata* part of ventral side.
61. *Flagrosuctobelba multiplumosa* n. gen., n. sp.
- 61a. *Flagrosuctobelba multiplumosa* rostral teeth.
- 61b. *Flagrosuctobelba multiplumosa* ventral side.
62. *Flagrosuctobelba diversosetosa* n. sp.
- 62a. *Flagrosuctobelba diversosetosa* rostral teeth.
- 62b. *Flagrosuctobelba diversosetosa* ventral side.
63. *Flagrosuctobelba memorabilis* n. sp.
- 63a. *Flagrosuctobelba memorabilis* ventral side.
64. *Flagrosuctobelba setosa* n. sp.
- 64a. *Flagrosuctobelba setosa* rostral teeth.
- 64b. *Flagrosuctobelba setosa* ventral side.
65. *Flagrosuctobelba plumata* n. sp.
- 65a. *Flagrosuctobelba plumata* ventral side.
66. *Parasuctobelba elegantissima* n. sp.
- 66a. *Parasuctobelba elegantissima* ventral side.
67. *Suctobelbella kaliurangensis* n.sp.
- 67a. *Suctobelbella kaliurangensis* ventral side.
68. *Suctobelbella dispersosetosa* n.sp.
- 68a. *Suctobelbella dispersosetosa* rostral teeth.
69. *Suctobelbella biangulata* n. sp.
- 69a. *Suctobelbella biangulata* sensillus.
70. *Suctobelbella biarcuata* n. sp.
71. *Suctobelbella crisposetosa* n. sp.
- 71a. *Suctobelbella crisposetosa* sensillus.
- 71b. *Suctobelbella crisposetosa* ventral side.
72. *Suctobelbella parallelodentata* n. sp.

- 72a. *Suctobelbella paralleloidentata* rostral teeth.  
 72b. *Suctobelbella paralleloidentata* genital field.  
 73. *Suctobelbella inenodabilis* n. sp.  
 73a. *Suctobelbella inenodabilis* ventral side.  
 74. *Suctobelbilla fissurata* n. sp.  
 74a. *Suctobelbilla fissurata* ventral side.  
 75. *Suctobelbilla undulata* n. sp.  
 75a. *Suctobelbilla undulata* ventral side.  
 76. *Suctobelbilla multituberculata* n. sp.  
 76a. *Suctobelbilla multituberculata* ventral side.  
 77. *Suctobelbilla minima* n. sp.  
 77a. *Suctobelbilla minima* ventral side.  
 78. *Suctobelbilla ornata* n. sp.  
 78a. *Suctobelbilla ornata* ventral side.  
 79. *Oxyamerus hyalinus* n. sp.  
 79a. *Oxyamerus hyalinus* sensillus.  
 79b. *Oxyamerus hyalinus* ventral side.  
 79c-e. *Oxyamerus hyalinus* Legs I–III.  
 79f. *Oxyamerus hyalinus* mandible.  
 80. *Oxyamerus truncatus* n. sp.  
 81. *Suctoribates carinatus* n. sp.  
 81a. *Suctoribates carinatus* lamellar setae.  
 81b. *Suctoribates carinatus* ventral side.  
 81c-d. *Suctoribates carinatus* Leg I and distal part of Leg II.  
 82. *Tecteremaeus bogorensis* n. sp.  
 82a. *Tecteremaeus bogorensis* ventral side.  
 82b-d. *Tecteremaeus bogorensis* Legs I, II and IV.  
 83. *Machadobelba serrata* n. sp.  
 83a. *Machadobelba serrata* ventral side.  
 84. *Scapheremaeus semiornatus* n. sp.  
 84a. *Scapheremaeus semiornatus* microsculpture of dorsum.  
 85. *Scapheremaeus striatomarginatus* n. sp.  
 85a. *Scapheremaeus striatomarginatus* not. seta.  
 86. *Scapheremaeus convexus* n. sp.  
 86a. *Scapheremaeus convexus* lateral view.  
 87. *Micreremus macrofissura* n. sp.  
 87a. *Micreremus macrofissura* ventral side.  
 88. *Licneremaeus lineatus* n. sp.  
 88a. *Licneremaeus lineatus* ventral side.  
 89. ? *Truncopes luminosus* n. sp.  
 89a. *Truncopes luminosus* ventral side.  
 90. *Vesiculobates silvaticus* n. gen., n. sp.  
 90a. *Vesiculobates silvaticus* ventral side.  
 90b-c. *Vesiculobates silvaticus* Tibia and Tarsus of Legs I and IV.  
 91. *Piffliella Eduardi* n. gen., n. sp.  
 91a. *Piffliella Eduardi* ventral side.  
 91b. *Piffliella Eduardi* solenidion.  
 92. *Wallworkiella nasalis* n. gen., n. sp.  
 92a. *Wallworkiella nasalis* ventral side.  
 92b. *Wallworkiella nasalis* distal part of Leg II.  
 92c. *Wallworkiella nasalis* distal part of Tarsus I from above.  
 92d. *Wallworkiella nasalis* the claws of Tarsus IV in profile.  
 93. *Zygoribatula lineata* n. sp.

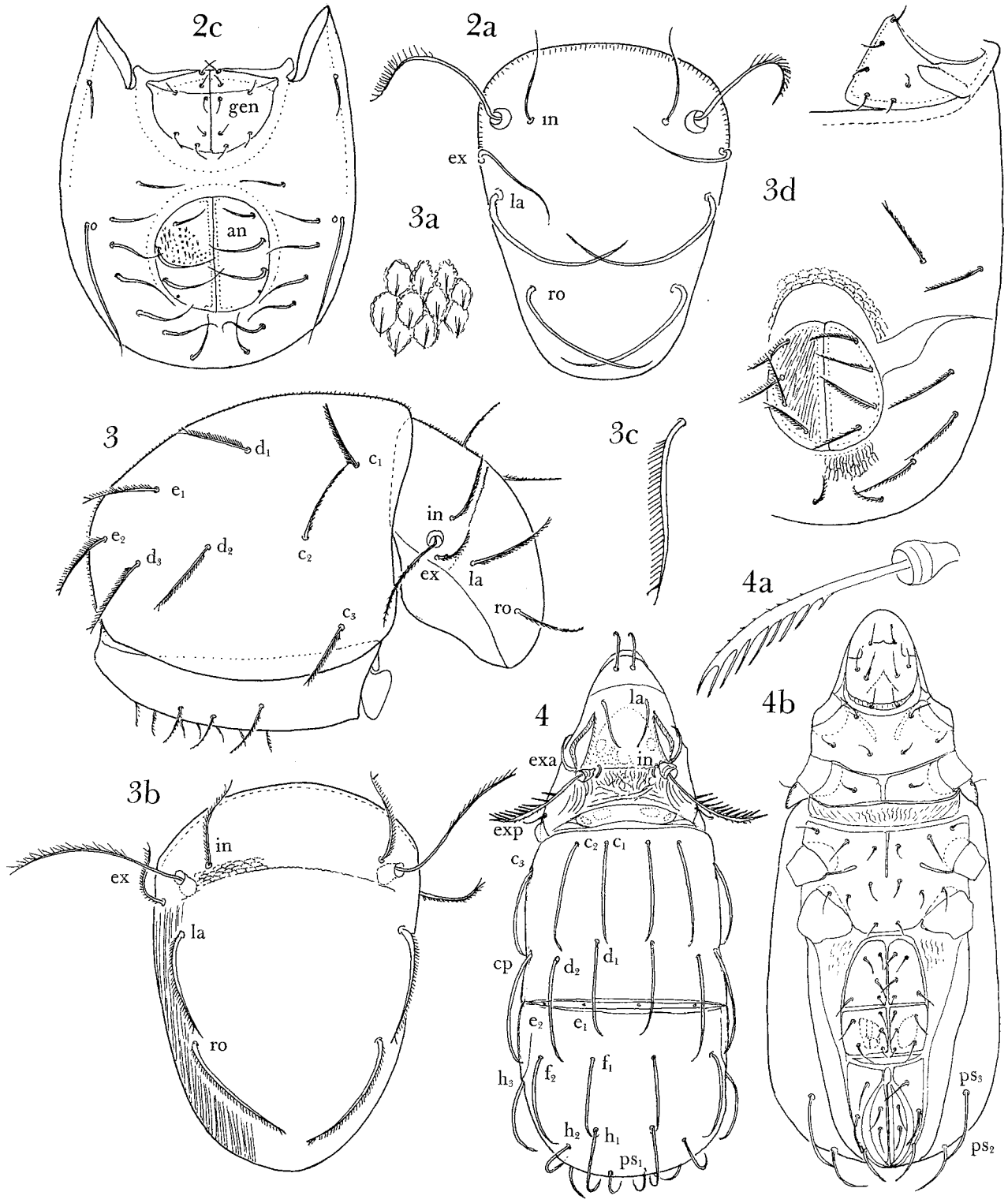
- 93a. *Zygoribatula lineata* ventral side.  
 94. *Tuberemaeus ? perforatus* (Willm.) sensillus.  
 95. *Tuberemaeus perforatoides* n. sp.  
 95a. *Tuberemaeus perforatoides* sensillus.  
 96. *Tuberemaeus deletus* n. sp.  
 96a. *Tuberemaeus deletus* sensillus.  
 97. *Berlesiella scutata* n. gen., n. sp.  
 97a. *Berlesiella scutata* prodorsum flattened.  
 97b. *Berlesiella scutata* ventral side.  
 98. *Magyaria javensis* n. sp.  
 98a. *Magyaria javensis* pentagonal areoles of dorsum.  
 98b. *Magyaria javensis* ventral side.  
 99. *Xylobates luteus* n. sp.  
 99a. *Xylobates luteus* lateral view of prodorsum.  
 99b. *Xylobates luteus* sensillus.  
 99c. *Xylobates luteus* ventral side.  
 100. *Xylobates duoseta* n. sp.  
 100a. *Xylobates duoseta* prodorsum flattened, different views of lamellae.  
 100b. *Xylobates duoseta* sensillus.  
 100c. *Xylobates duoseta* ventral side.  
 100d. *Xylobates duoseta* genital plate.  
 100e. *Xylobates duoseta* distal part of Leg I.  
 101. *Xylobates acutus* n. sp.  
 101a. *Xylobates acutus* sensillus.  
 101b. *Xylobates acutus* ventral side.  
 102. *Plenoxylobates ramosus* n. gen., n. sp.  
 102a. *Plenoxylobates ramosus* lateral view of lamellar system.  
 102b. *Plenoxylobates ramosus* sensillus.  
 102c. *Plenoxylobates ramosus* not. seta.  
 102d. *Plenoxylobates ramosus* ventral side.  
 102e. *Plenoxylobates ramosus* genital plate.  
 102f-g. *Plenoxylobates ramosus* Legs I-II.  
 102h. *Plenoxylobates ramosus* infracapitulum.  
 103. *Plenoxylobates curtiseta* n. sp.  
 103a. *Plenoxylobates curtiseta* sensillus.  
 104. *Peloribates guttatus* n. sp.  
 105. *Peloribates guttatoides* n. sp.  
 106. *Peloribates ratubakensis* n. sp.  
 107. *Acutozetes javensis* n. sp.  
 108. *Sundazetes crispus* n. sp.  
 108a. *Sundazetes crispus* ventral side.  
 108b. *Sundazetes crispus* distal part of Leg II.  
 109. *Sphaerozetes javensis* n. sp.  
 109a. *Sphaerozetes javensis* ventral side.  
 110. *Nesopelops intermedius* n. sp.  
 110a. *Nesopelops intermedius* lamellae, lamellar setae and surroundings.  
 110b. *Nesopelops intermedius* anterior part of ventral side.  
 110c. *Nesopelops intermedius* seta la.  
 110d. *Nesopelops intermedius* seta hl.  
 110e. *Nesopelops intermedius* seta pl.  
 110f. *Nesopelops intermedius* genital plate.  
 111. *Plakoribates scutatus* n. sp.  
 111a. *Plakoribates scutatus* ventral side.

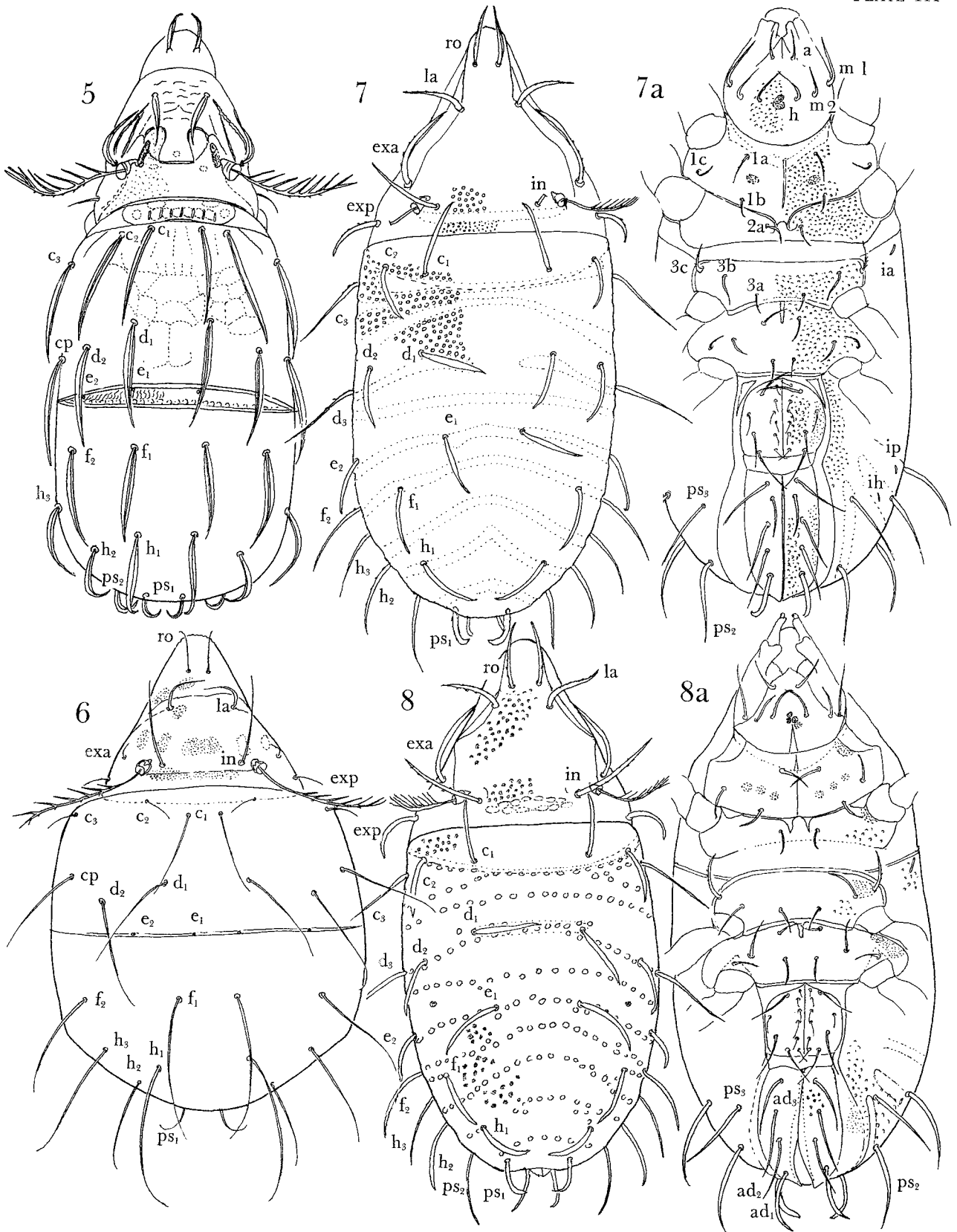
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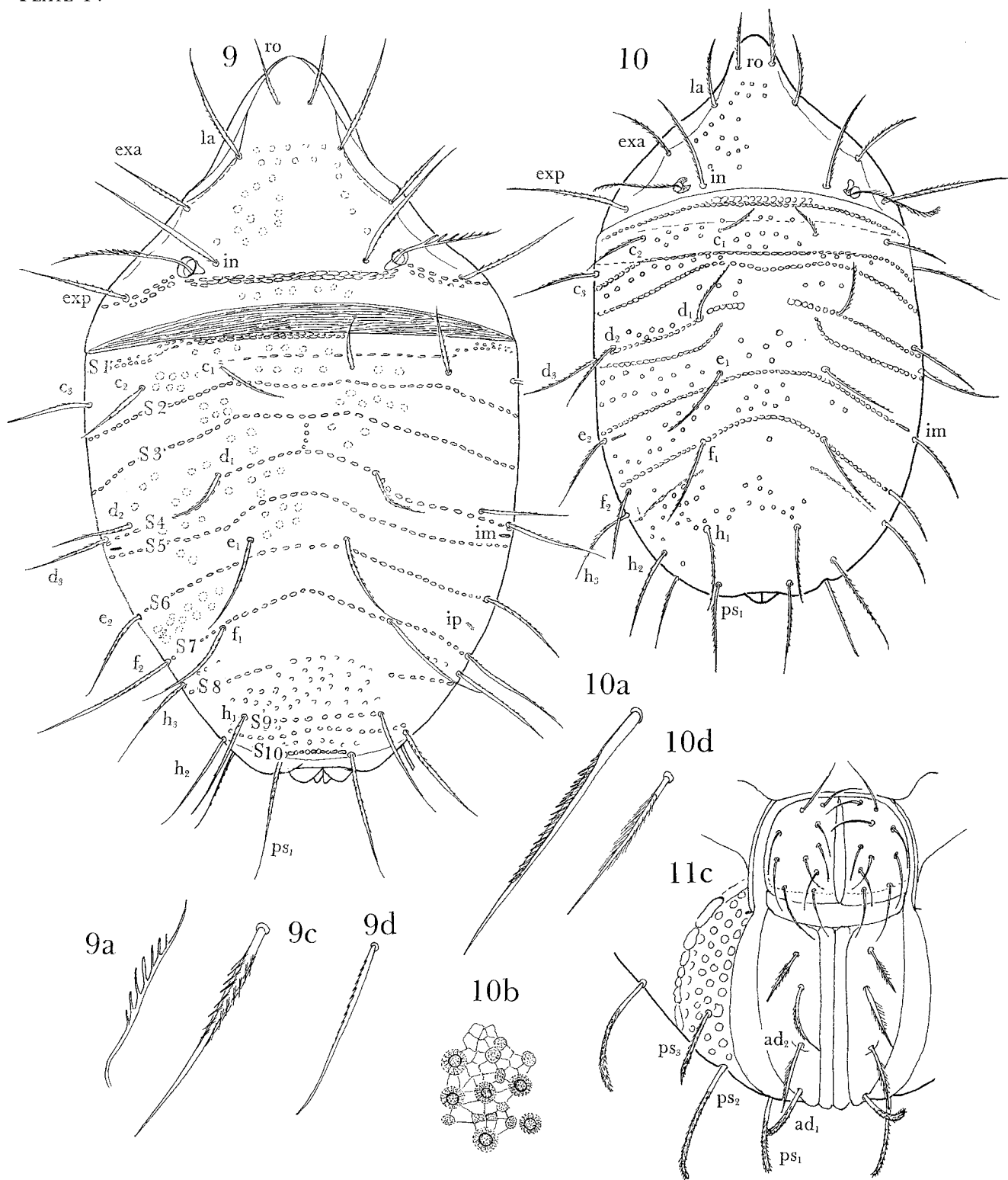
# Plates I–XLVII

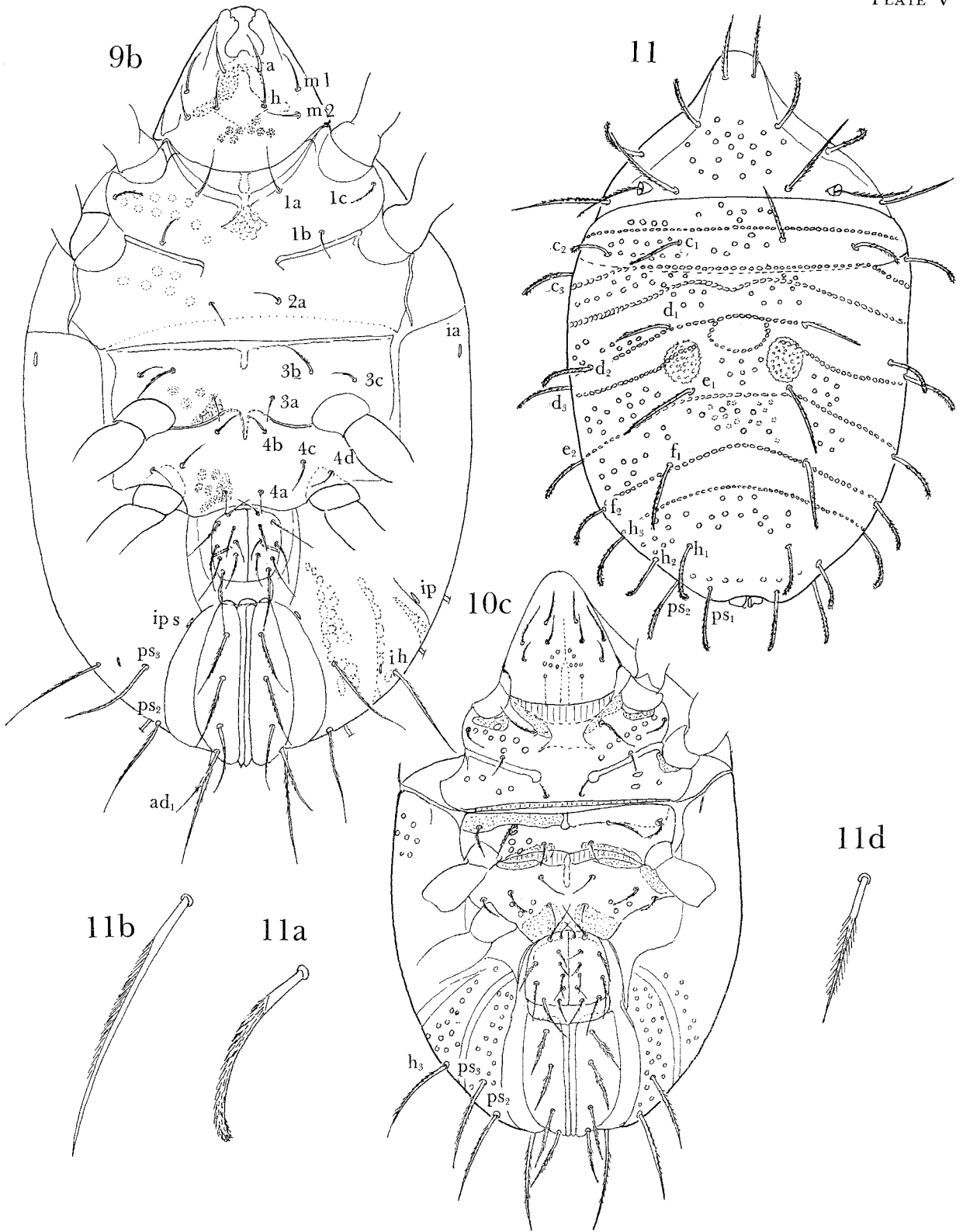


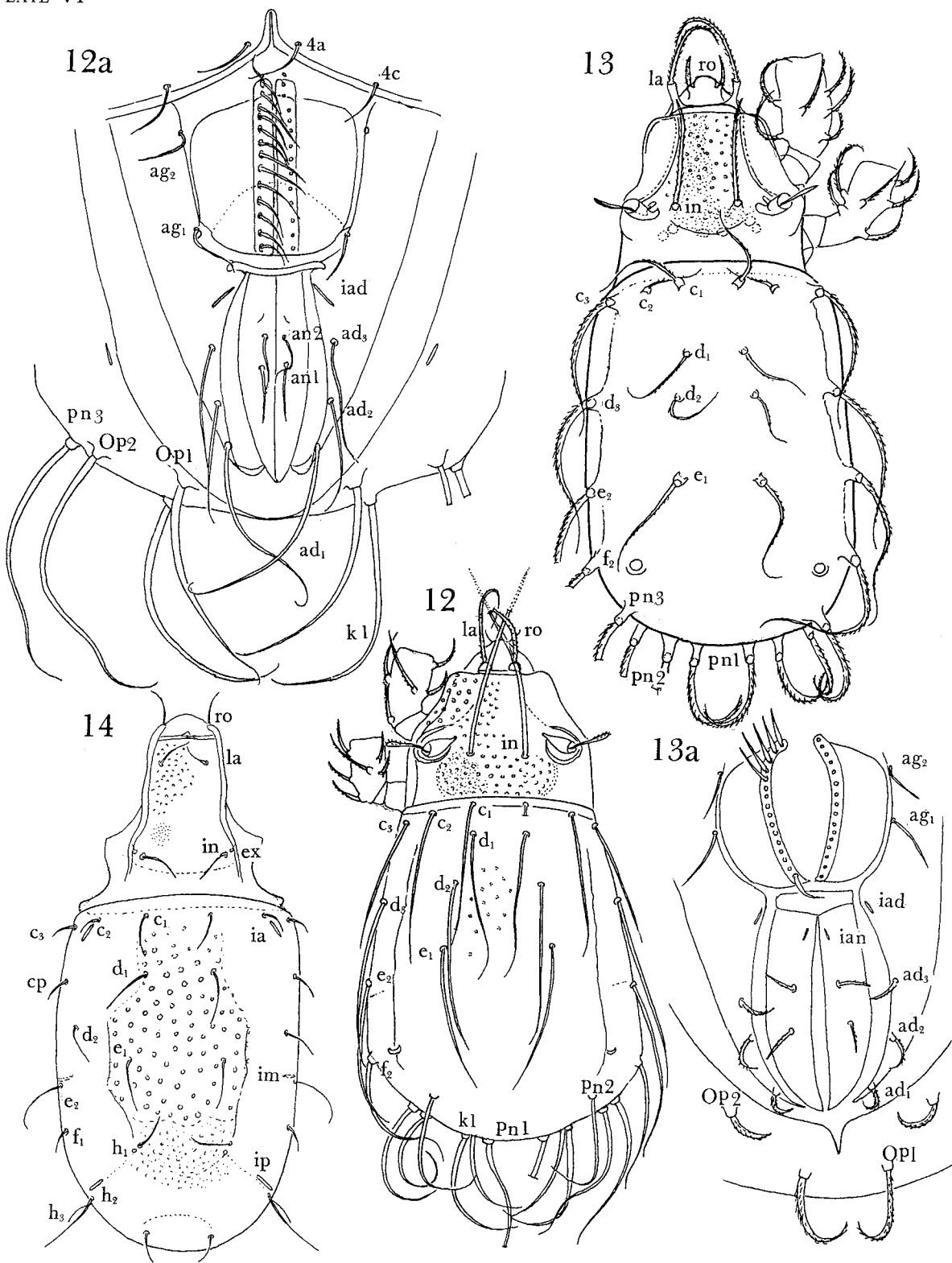


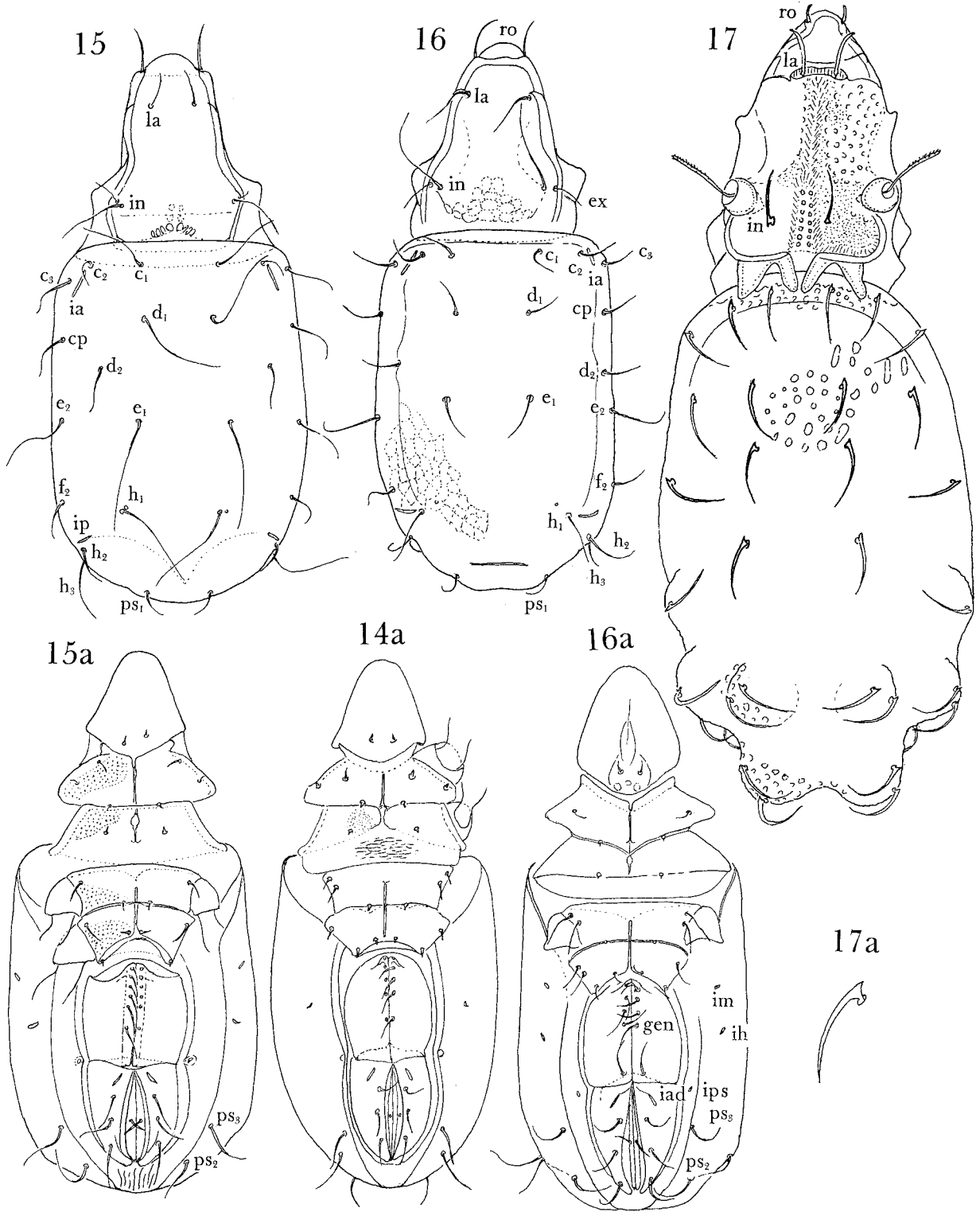




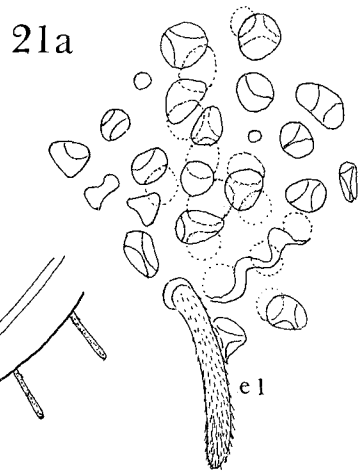
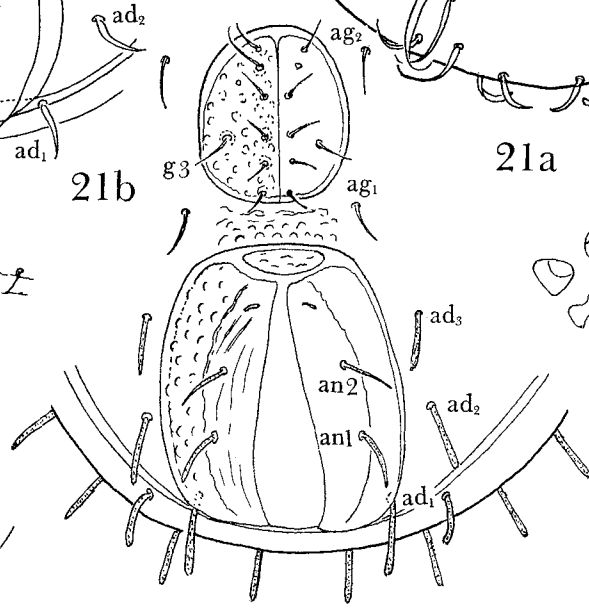
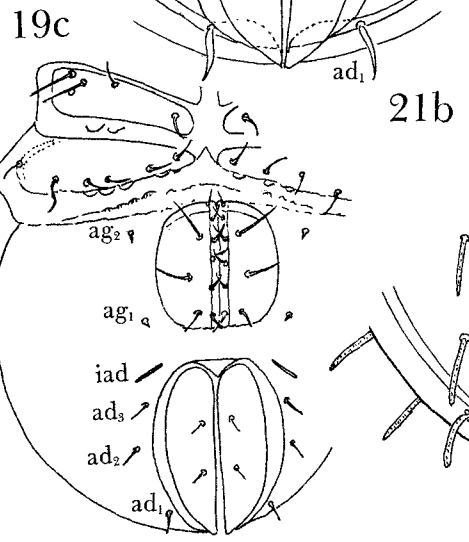
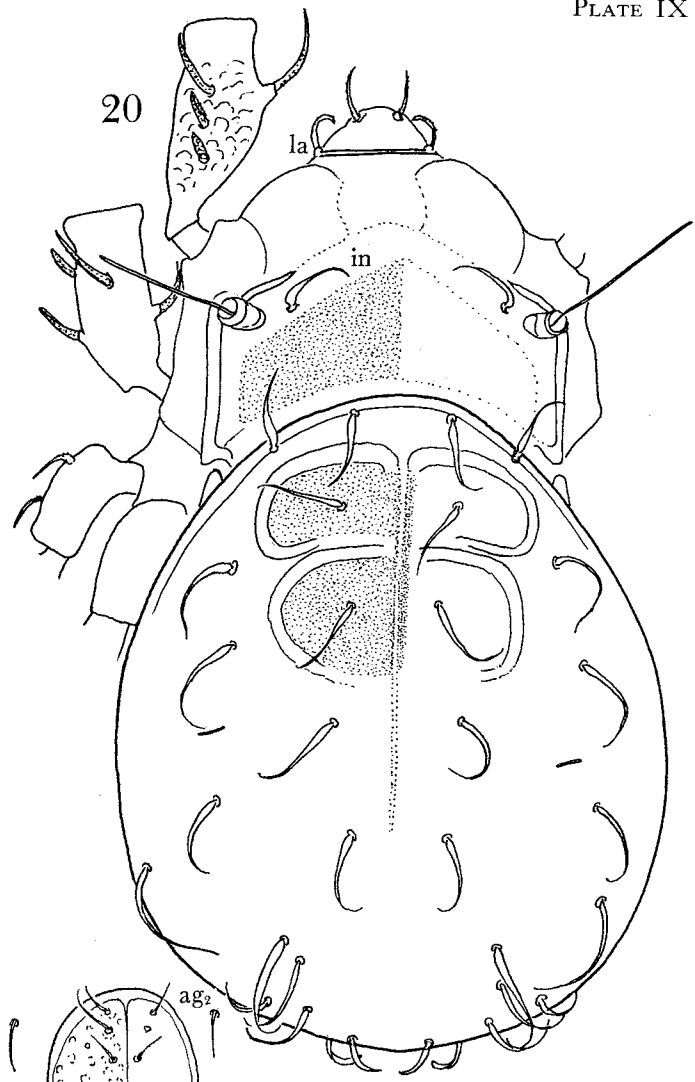
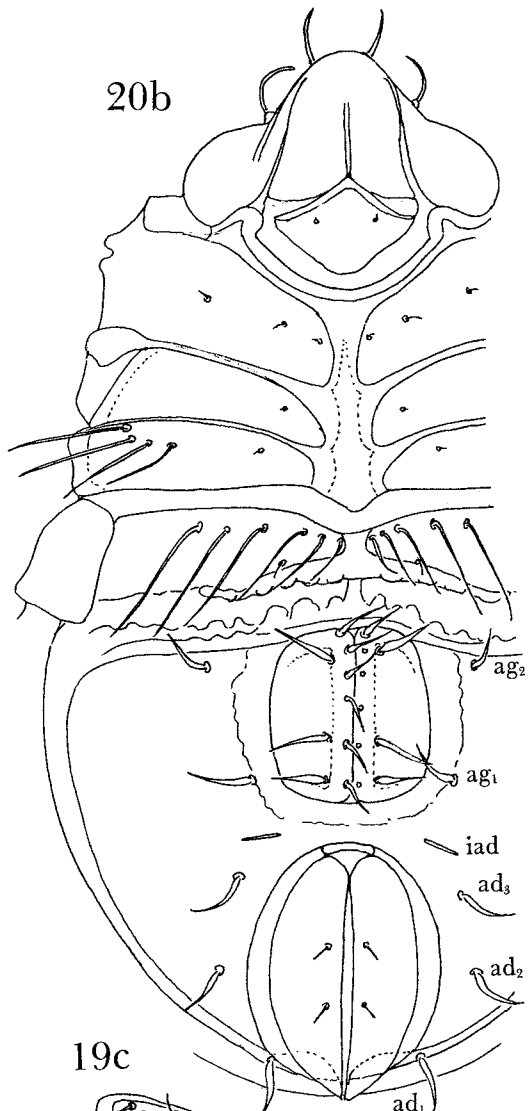




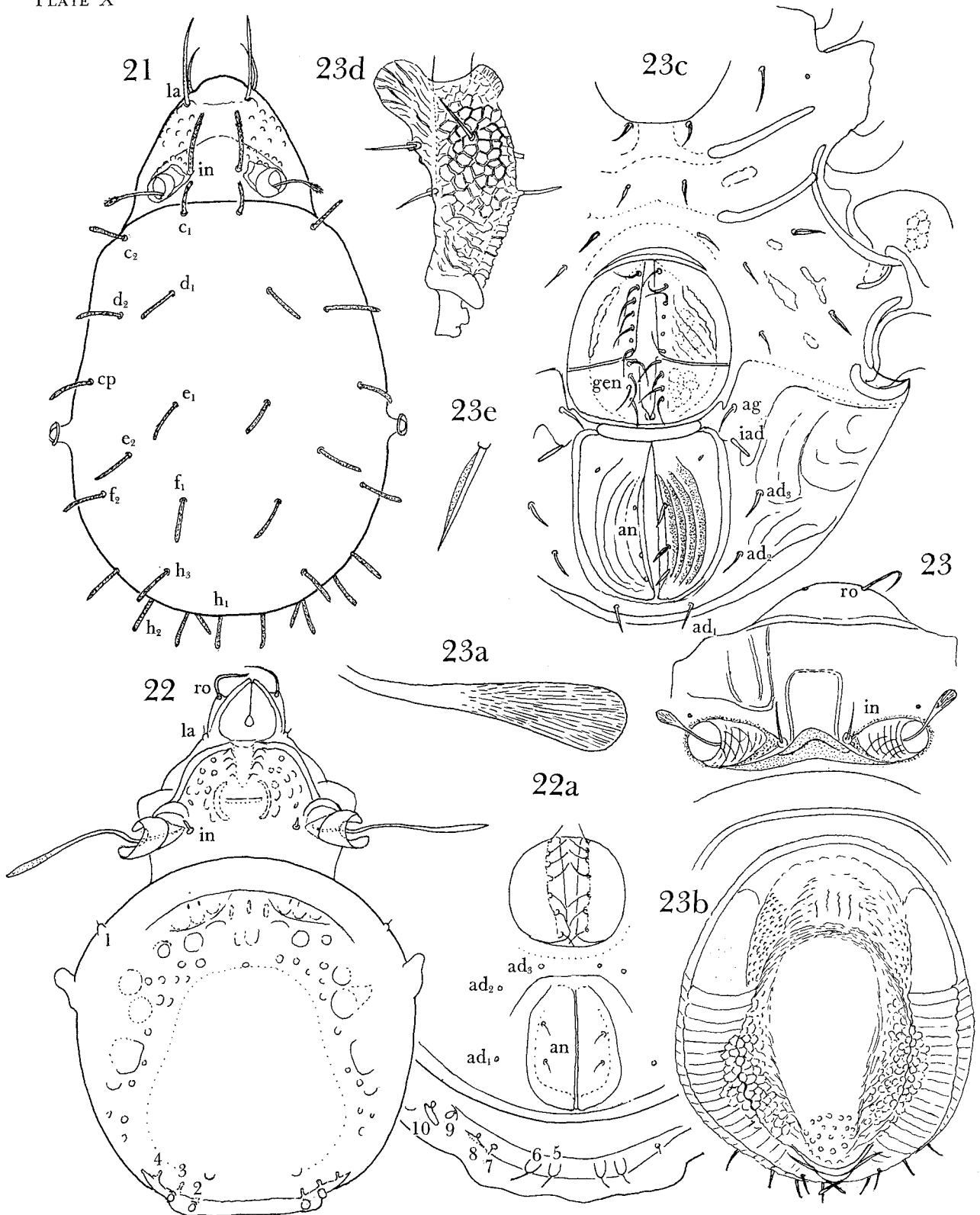


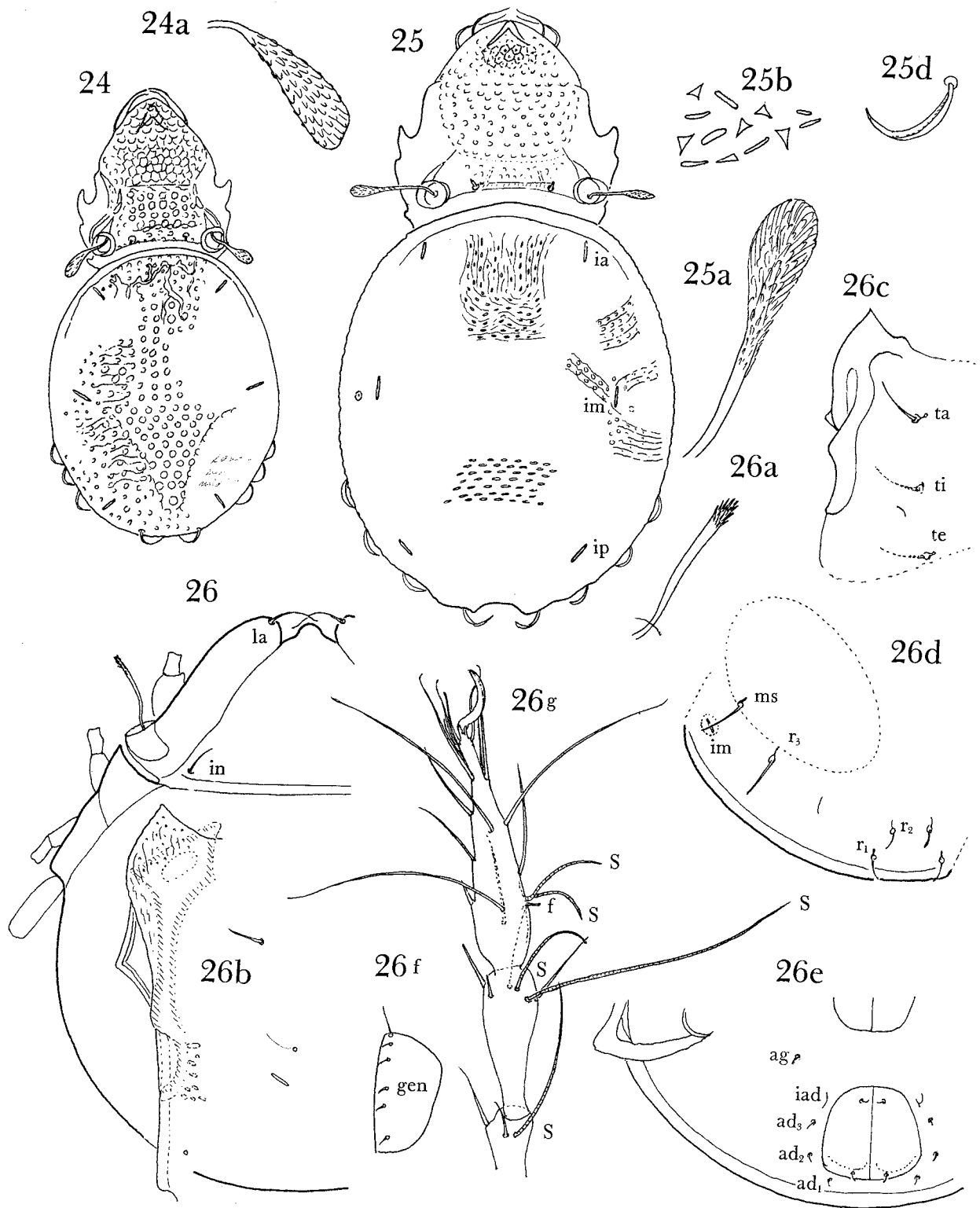


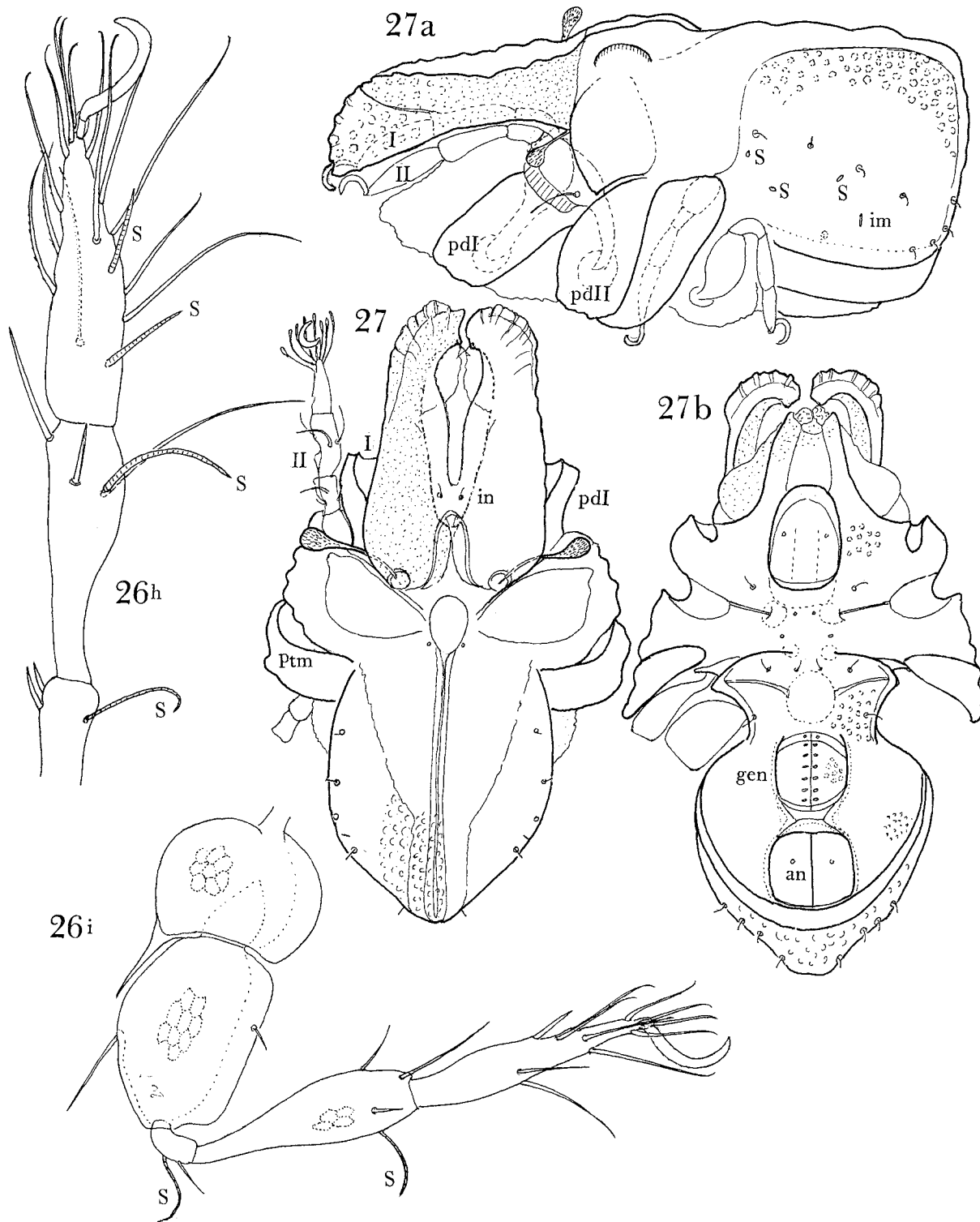


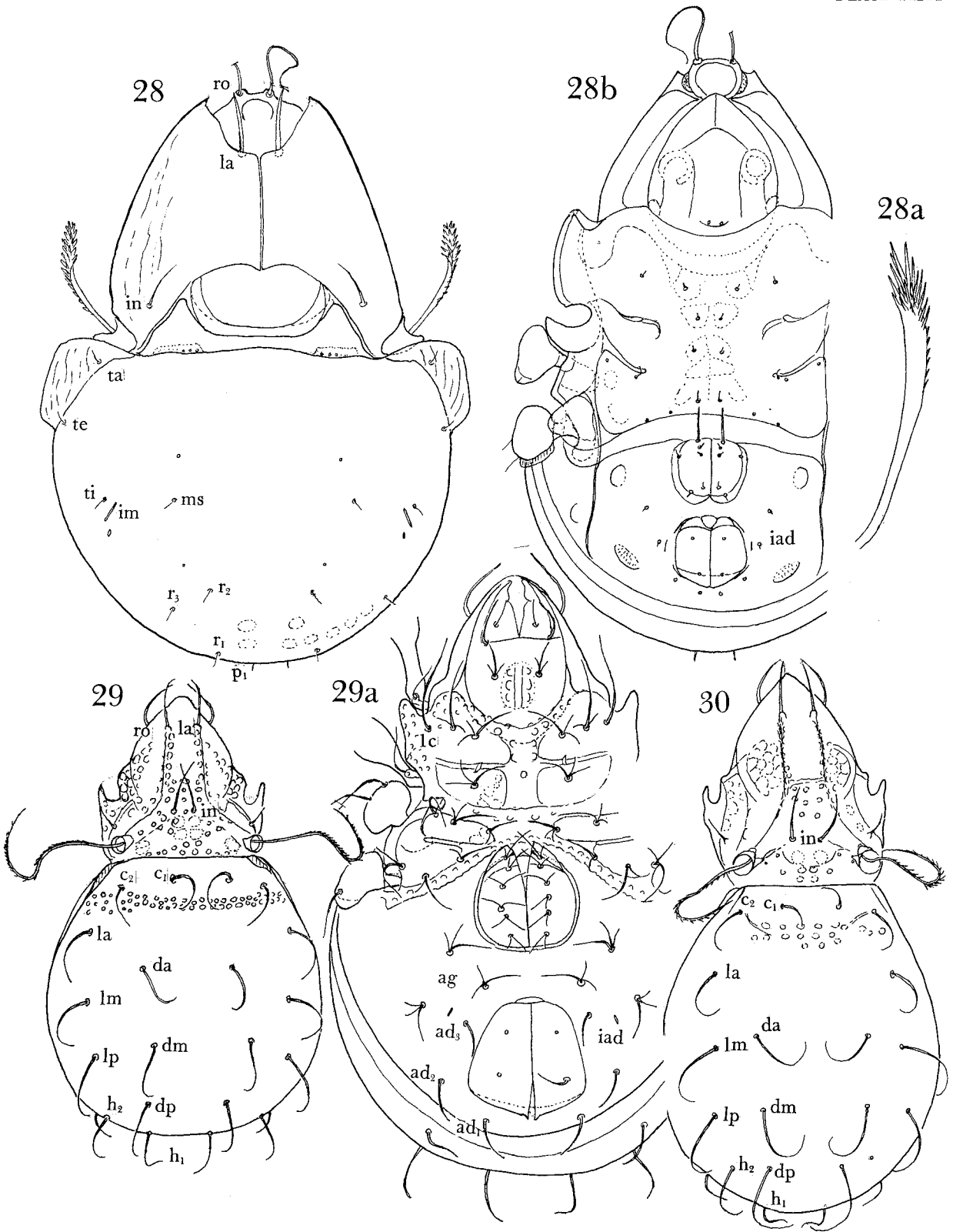


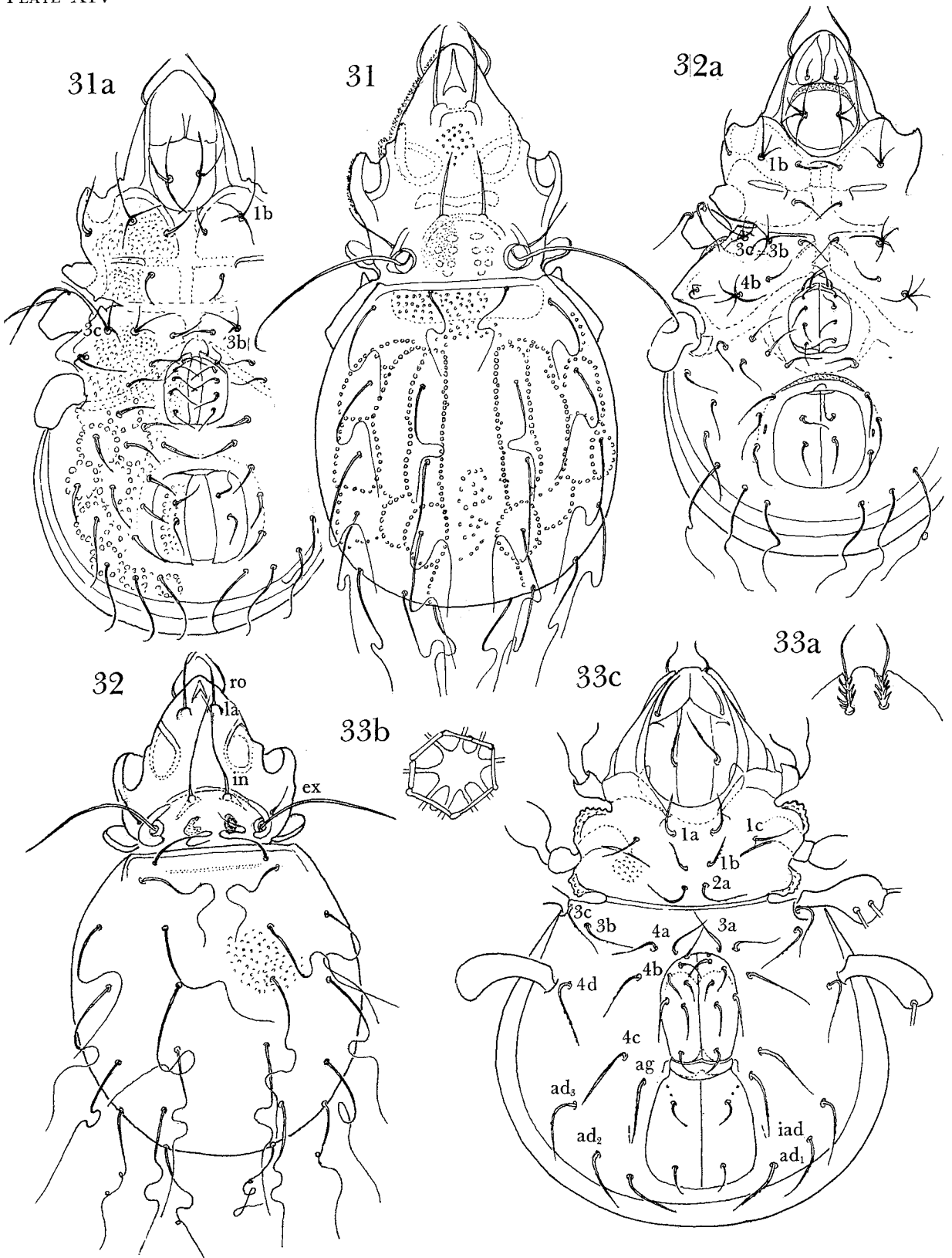


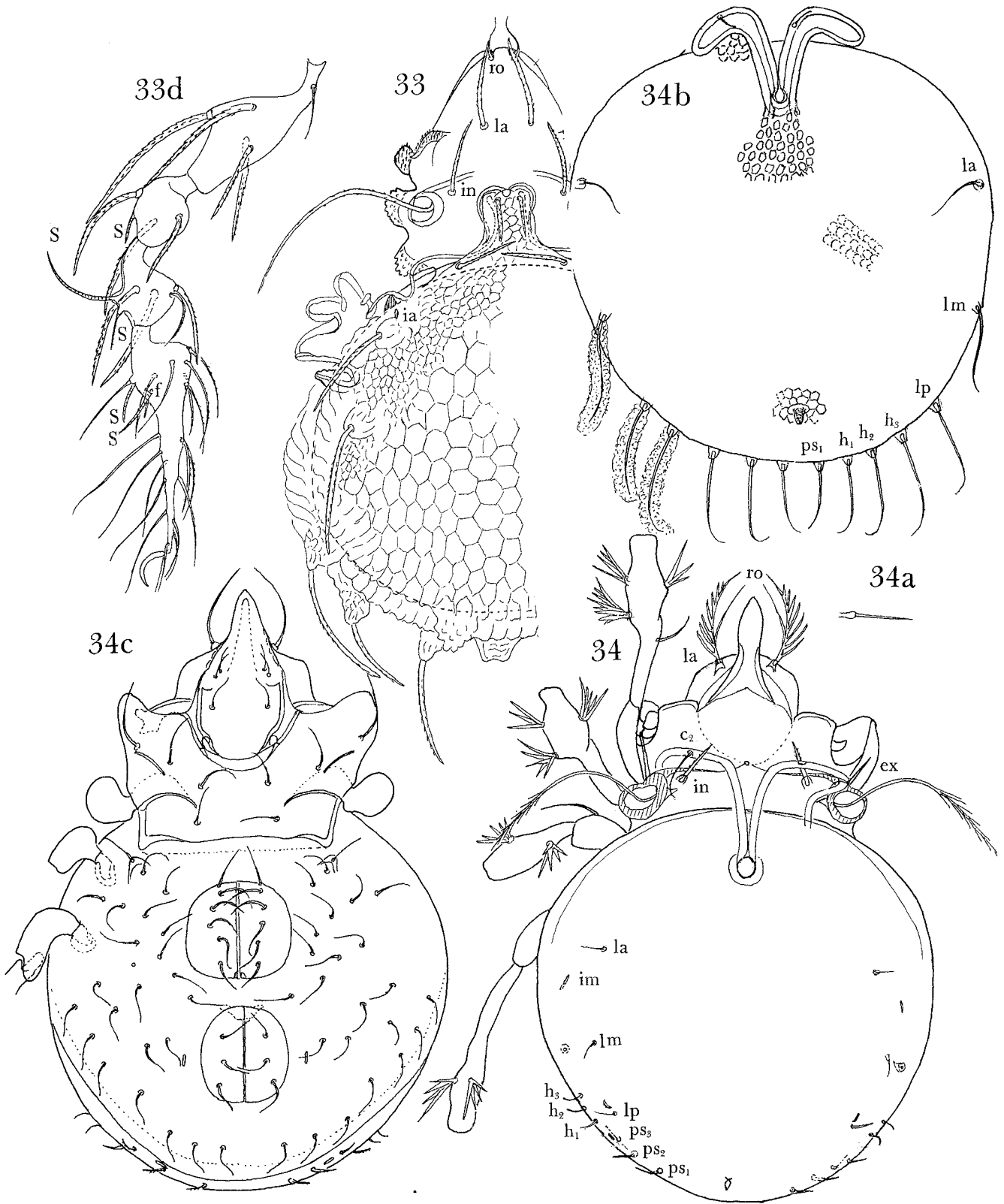


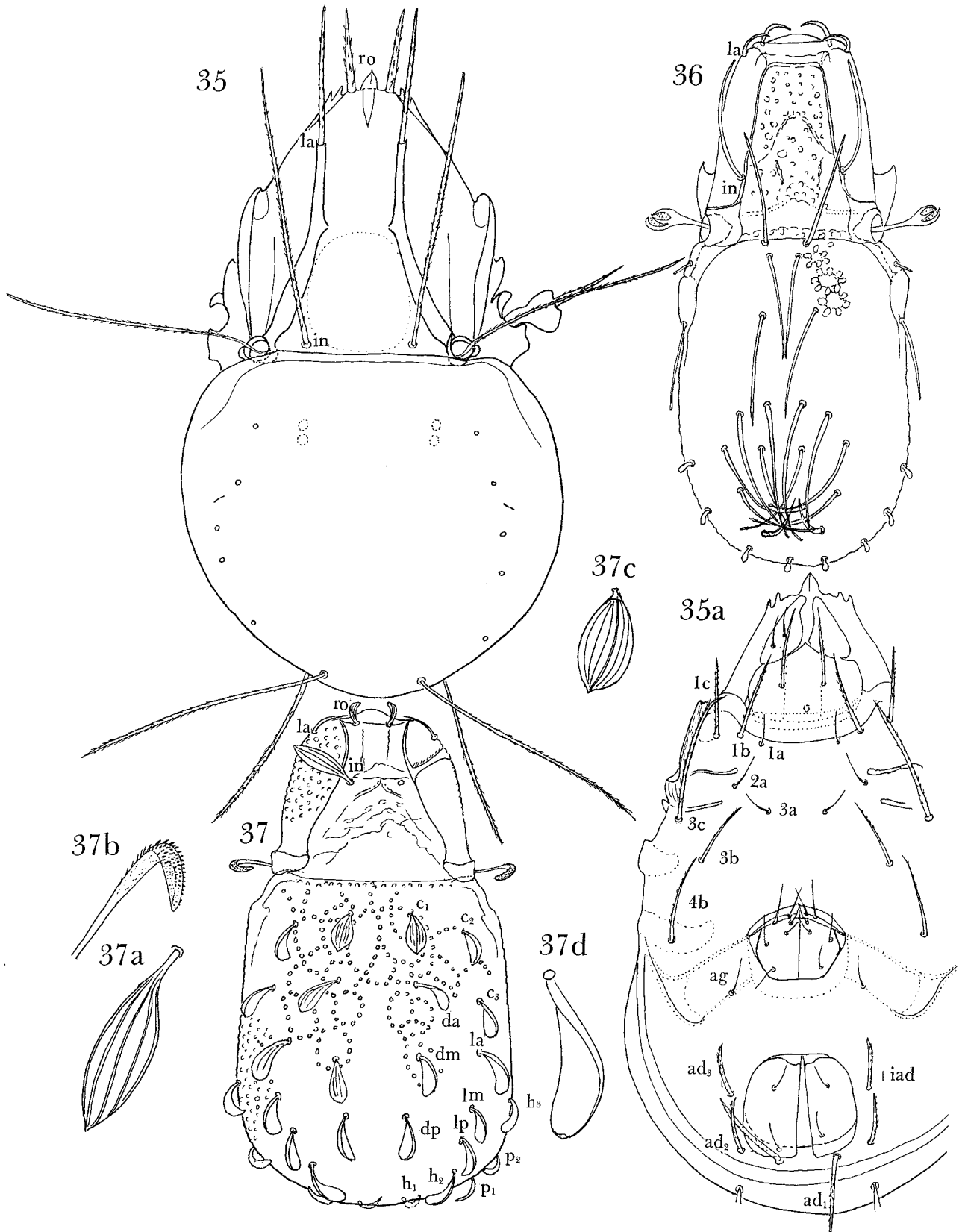


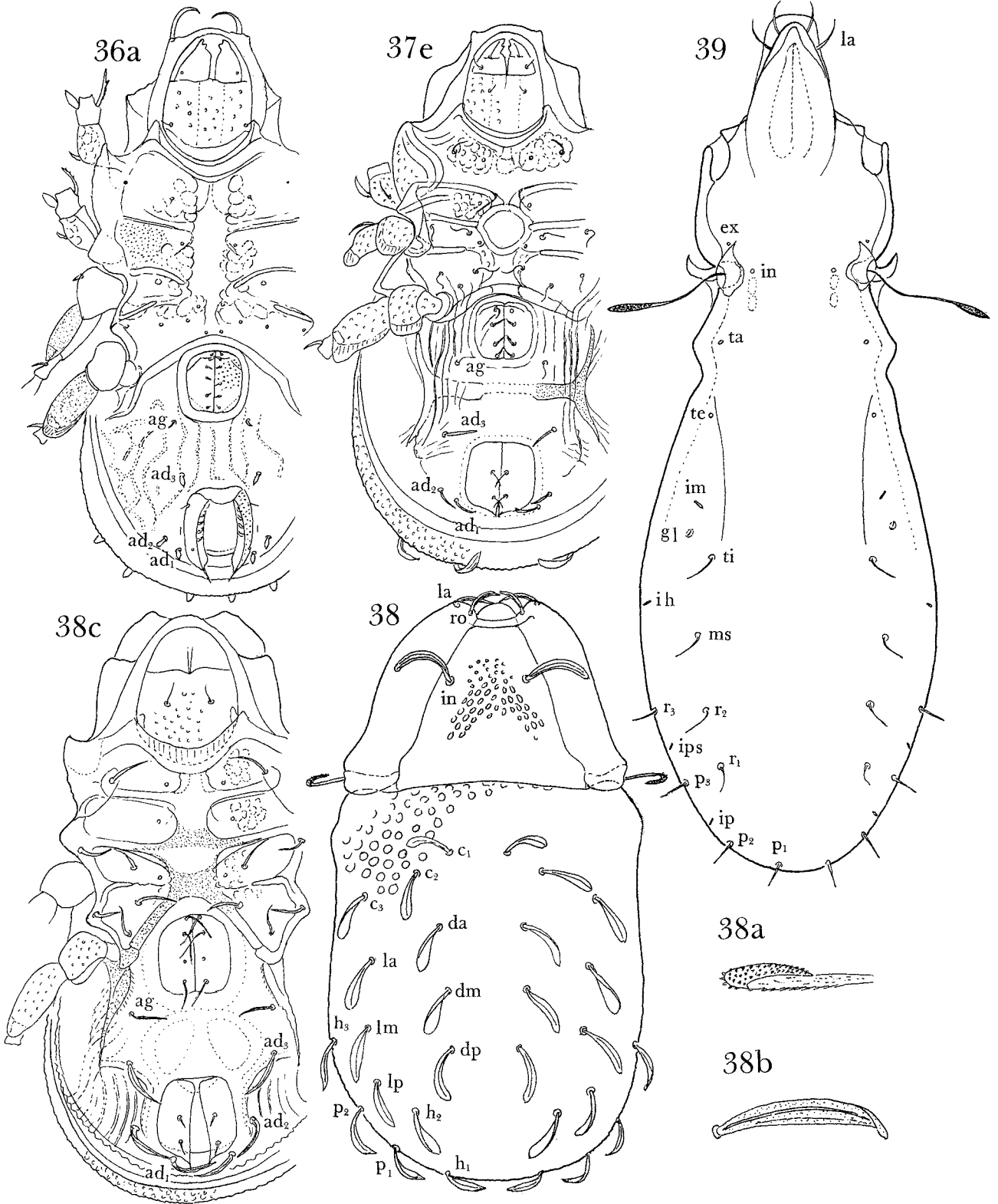




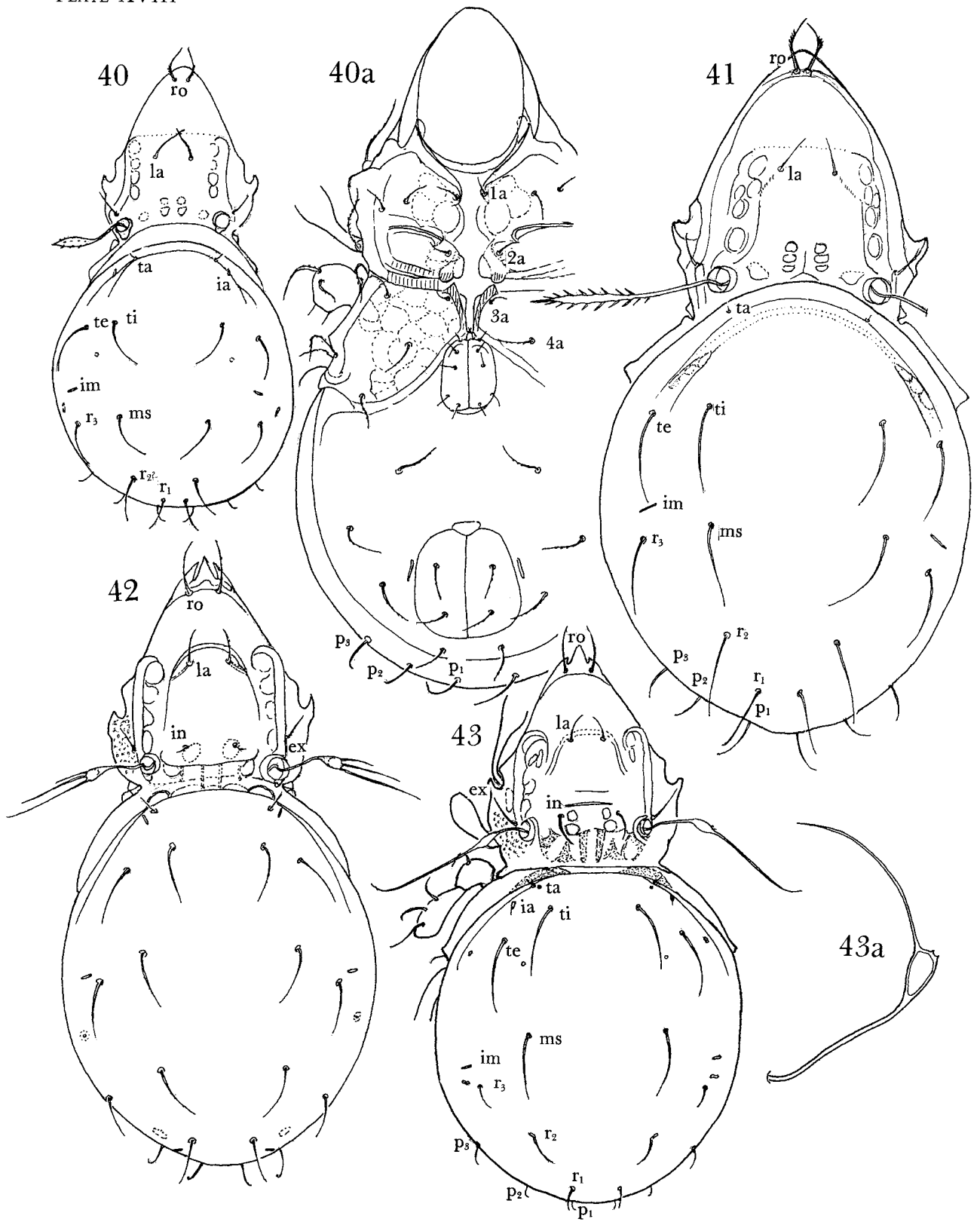


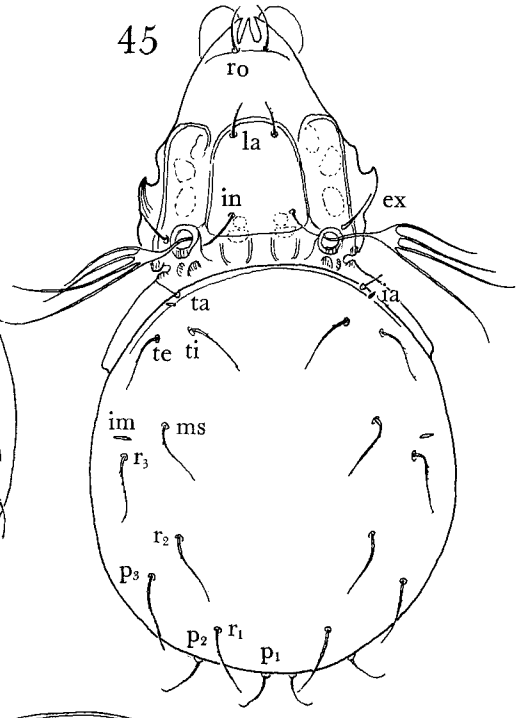
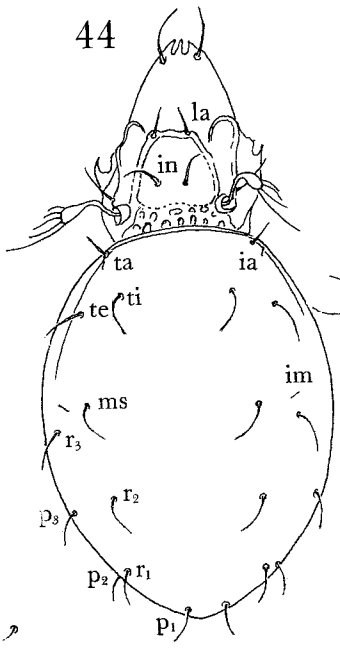
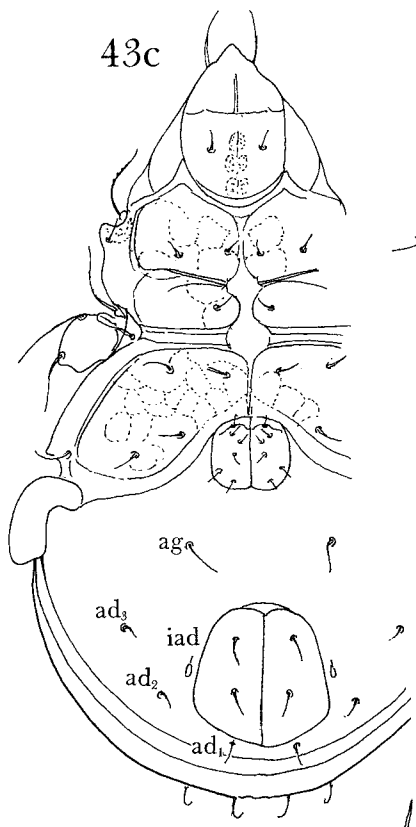




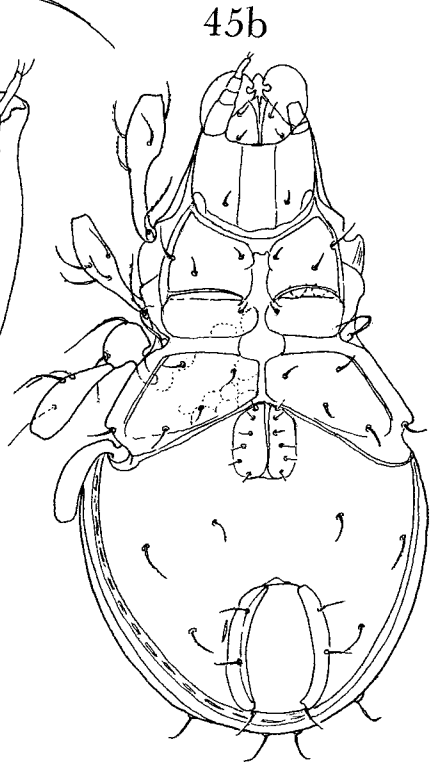
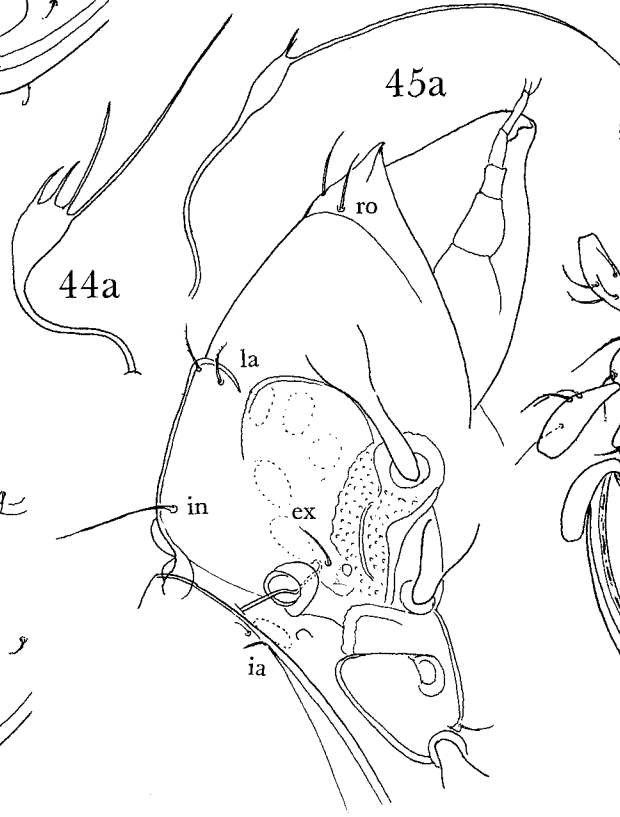
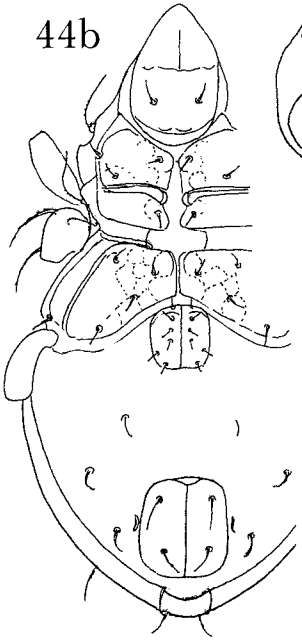


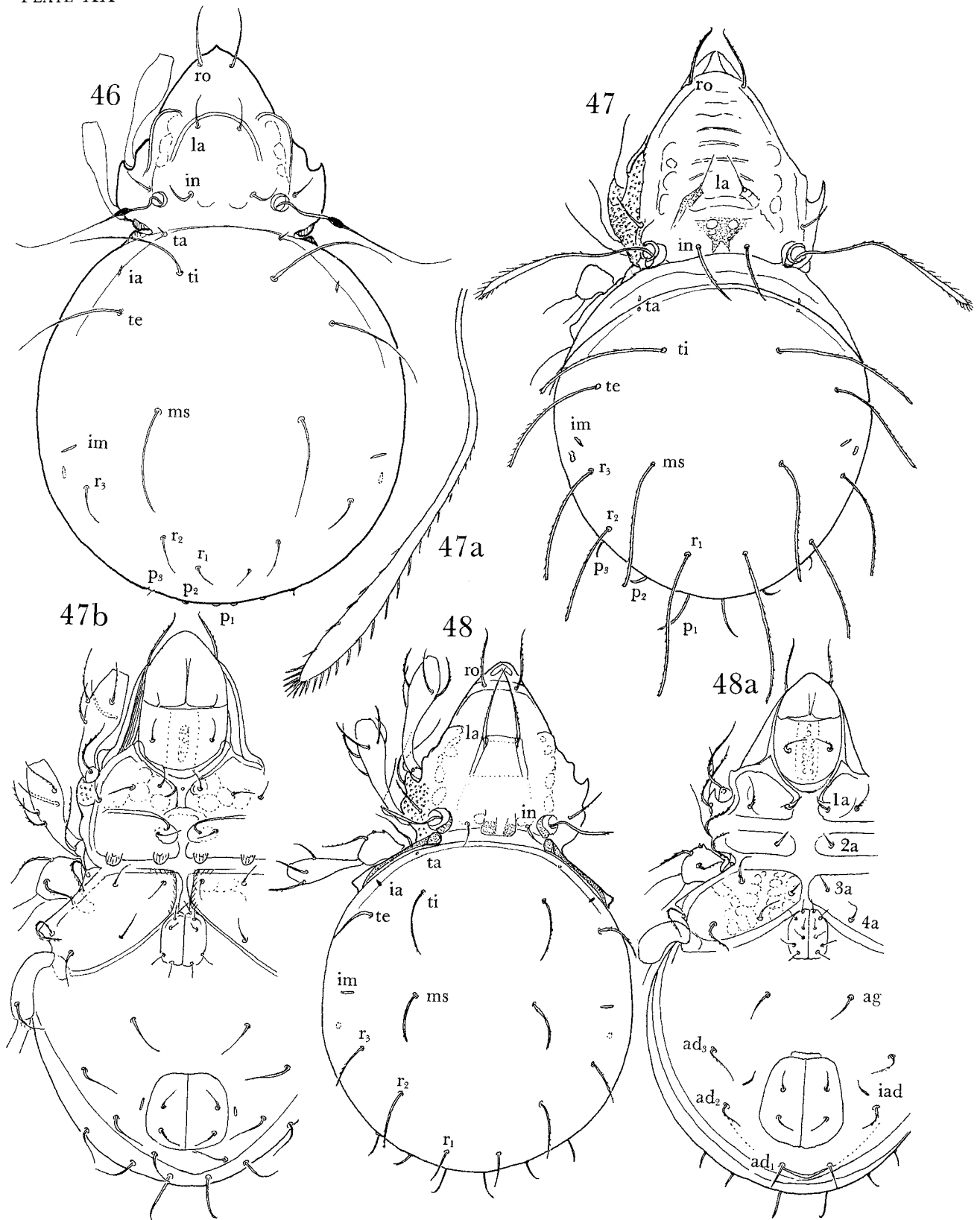




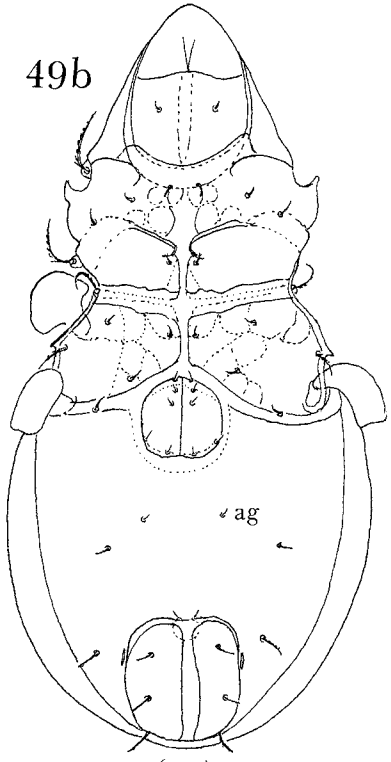


43b

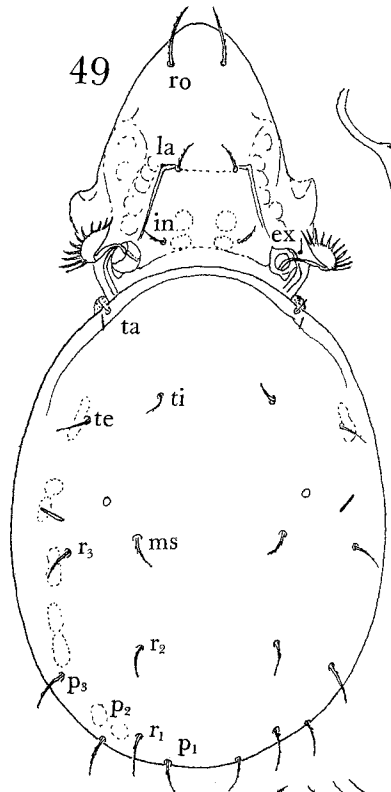




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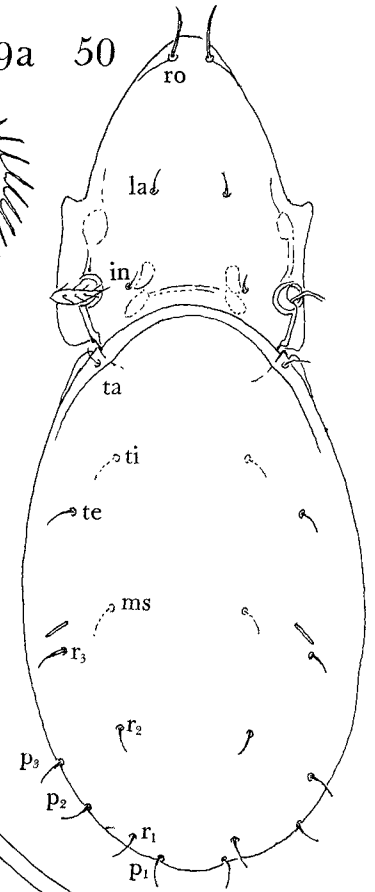
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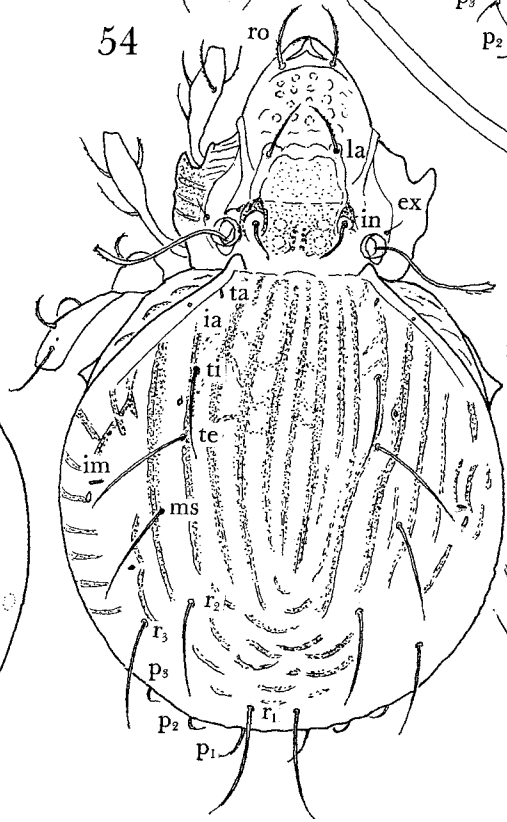


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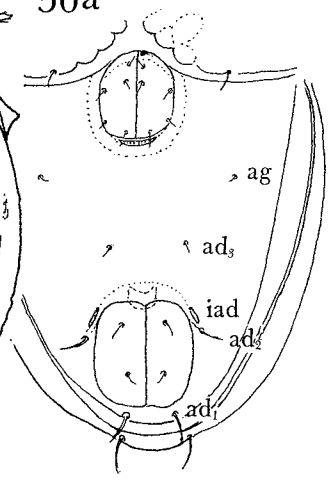


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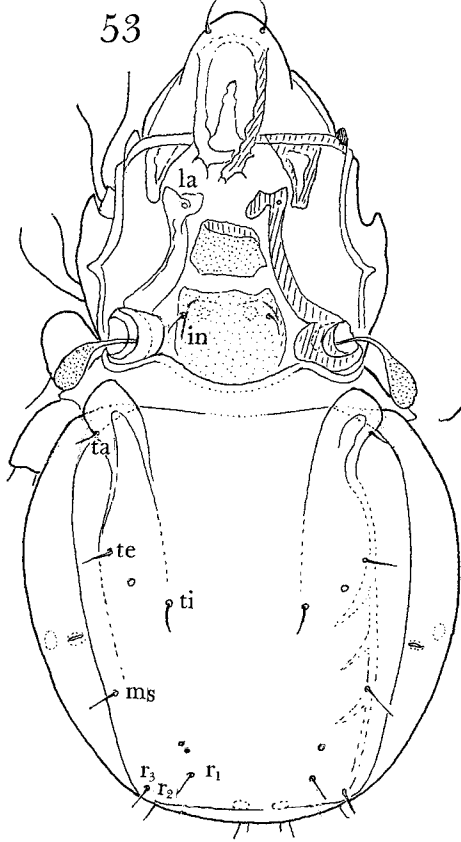
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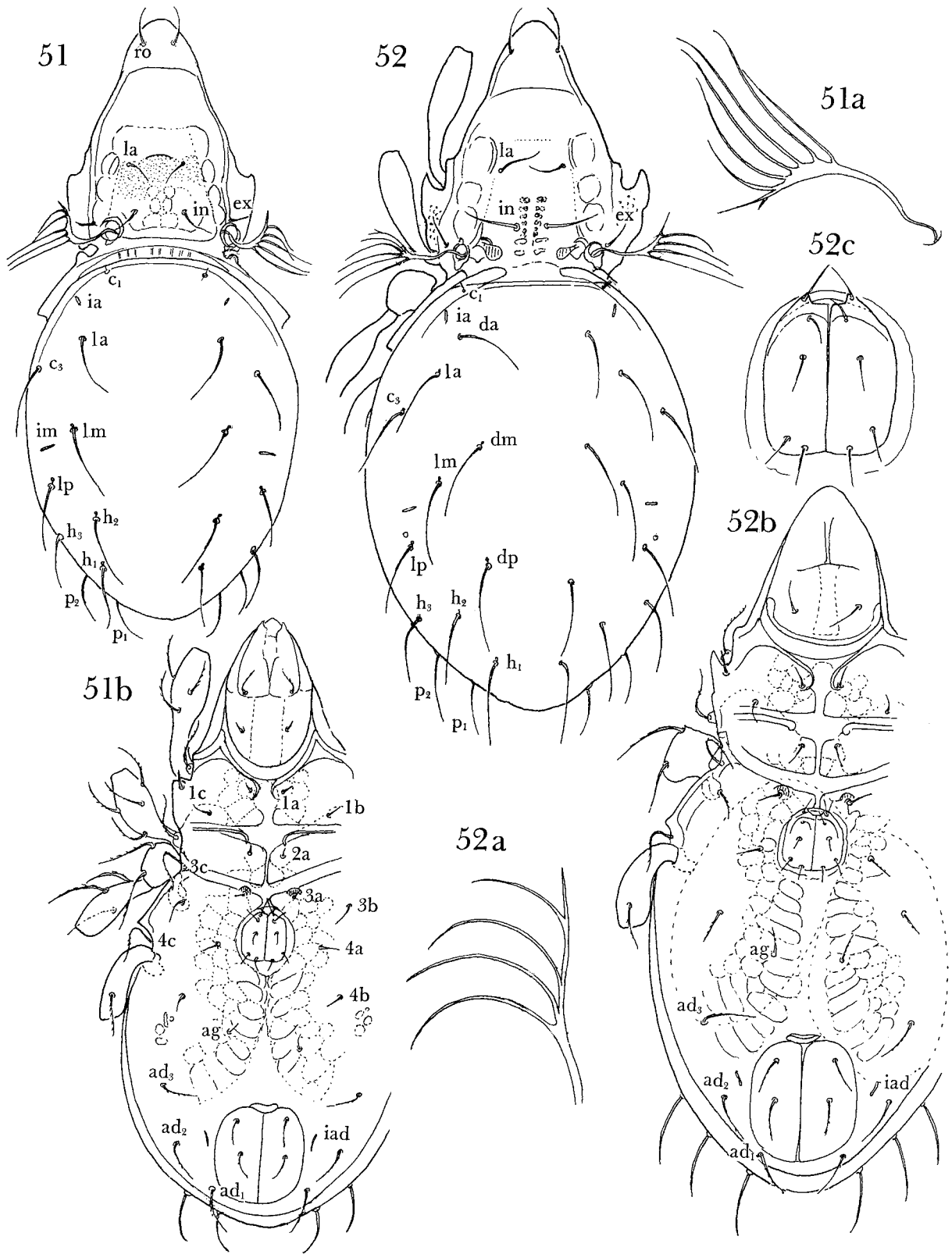


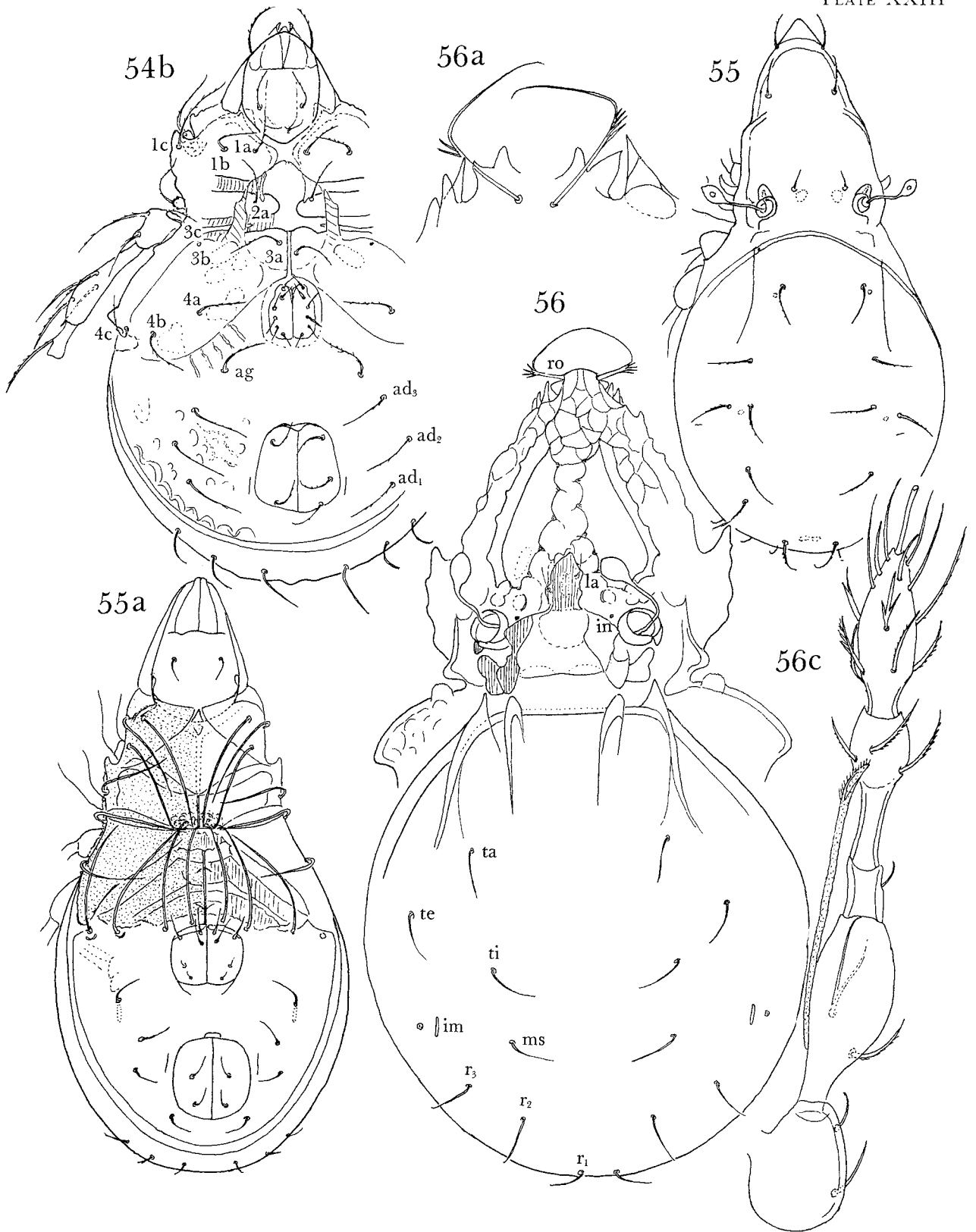
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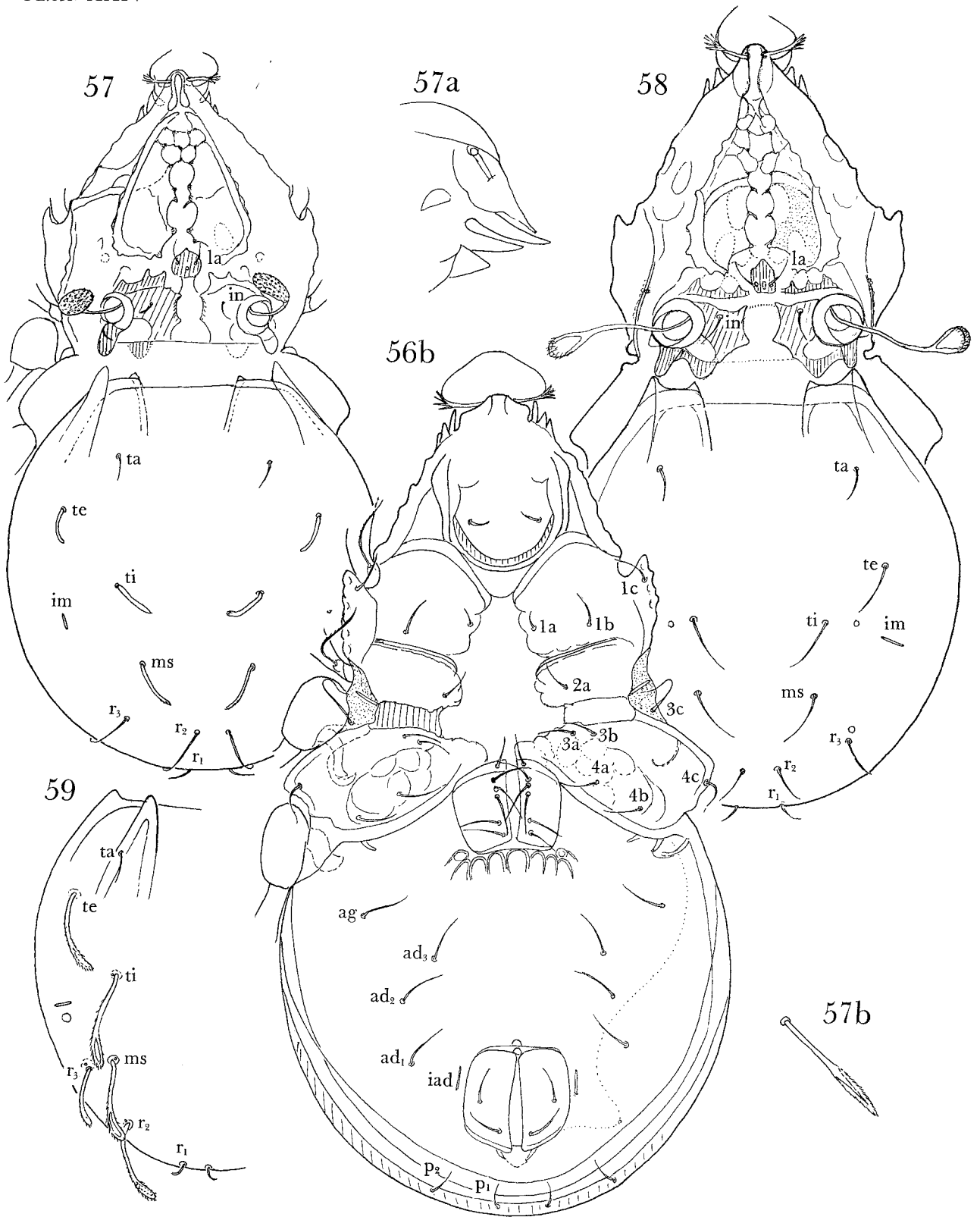


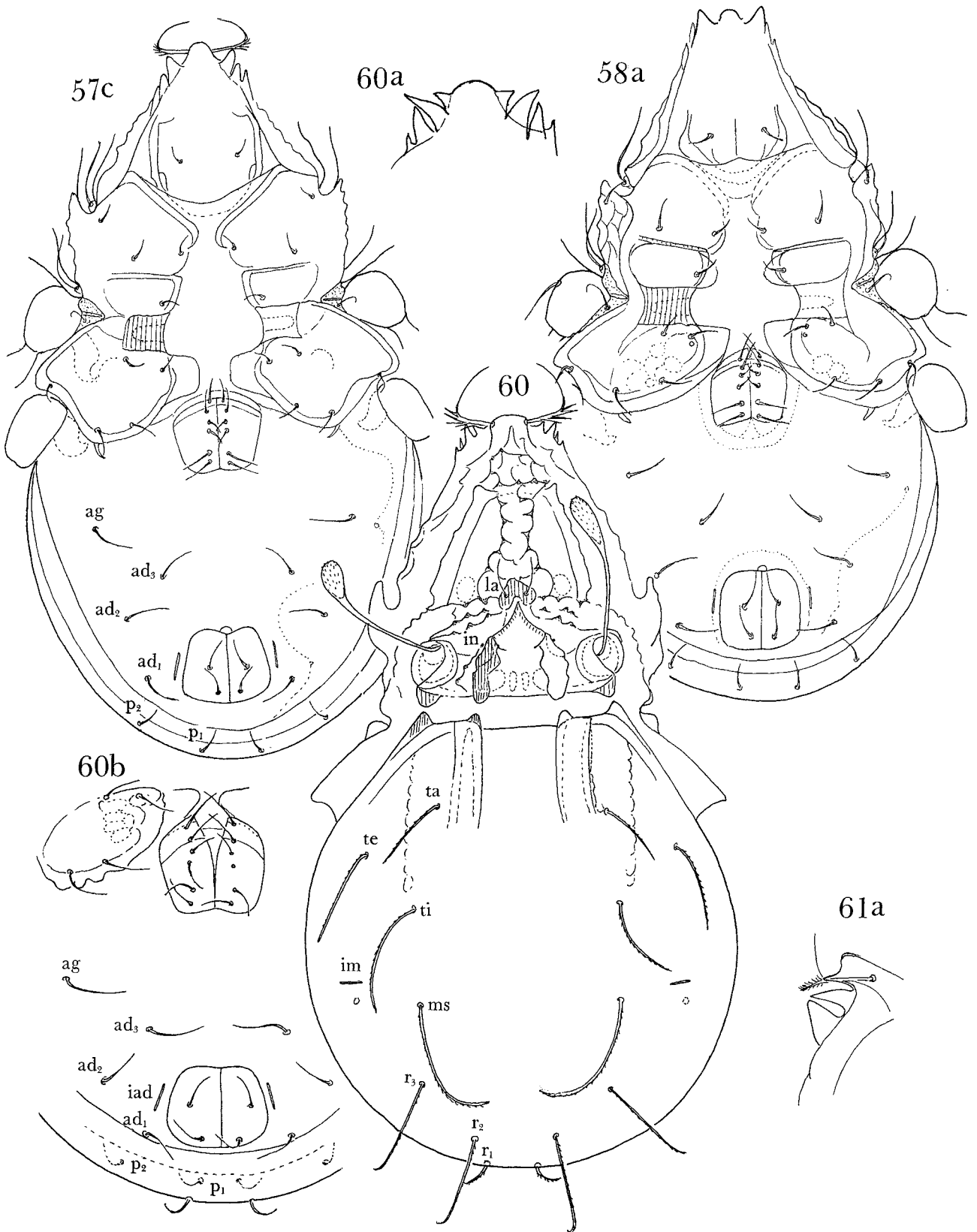
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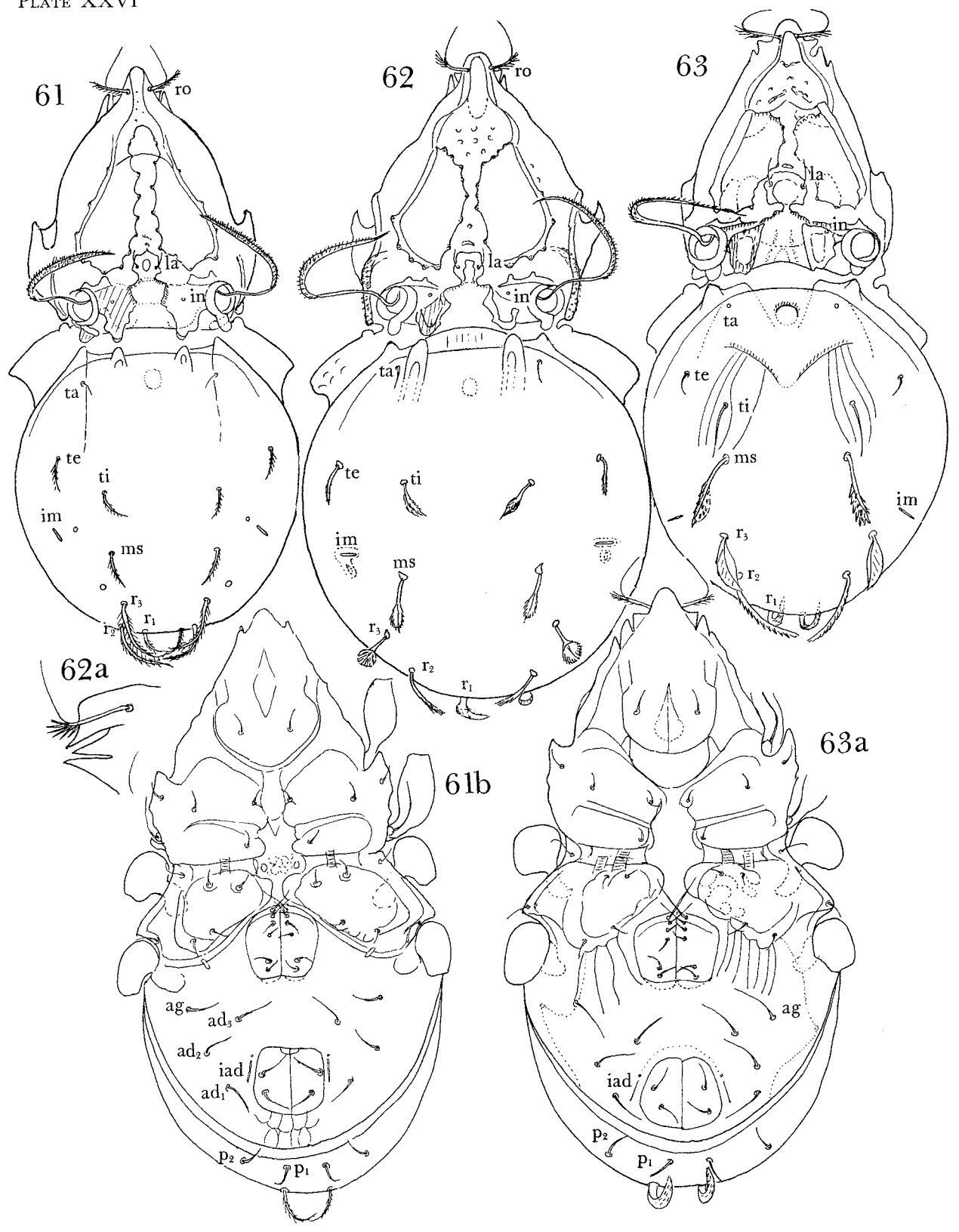


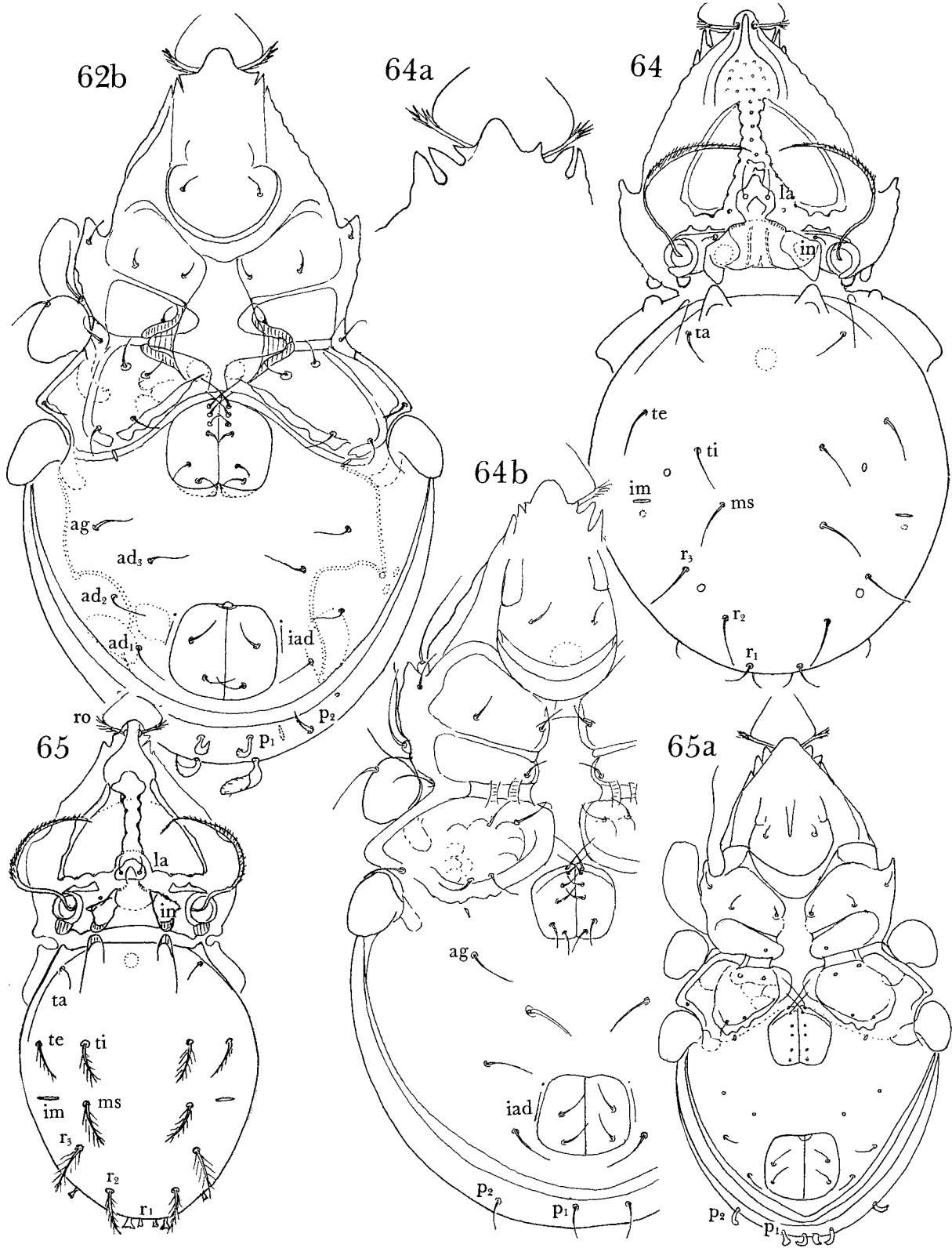


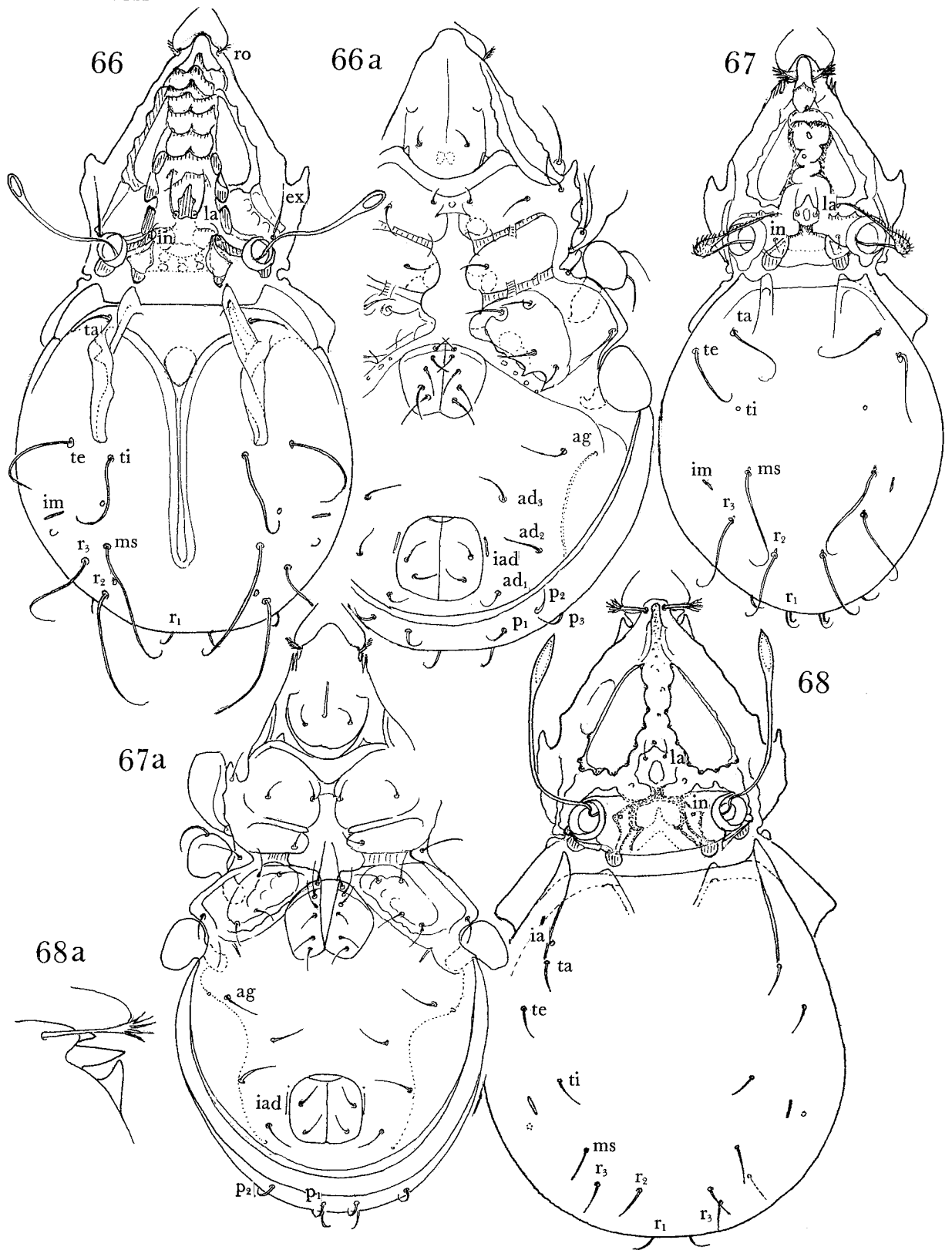


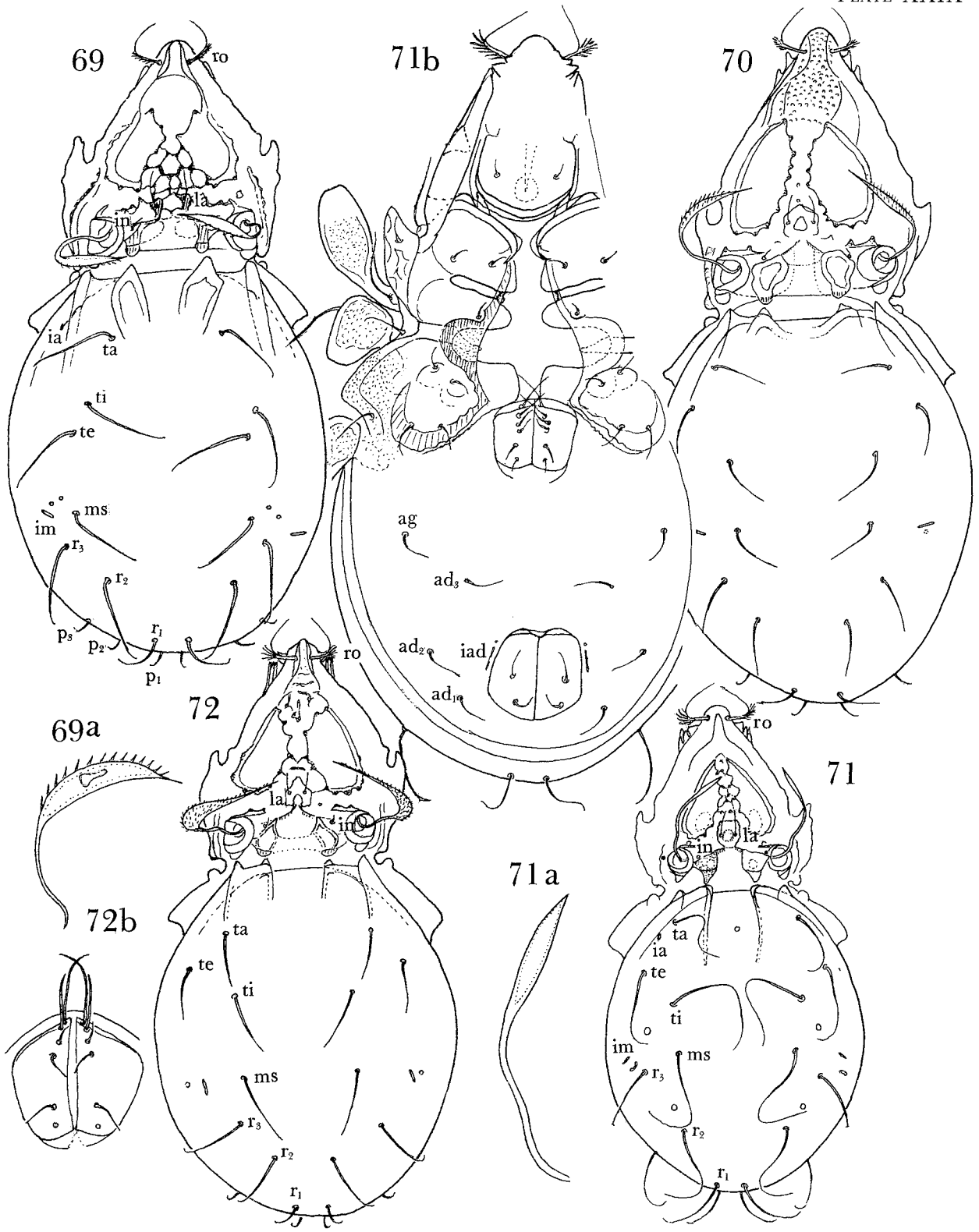


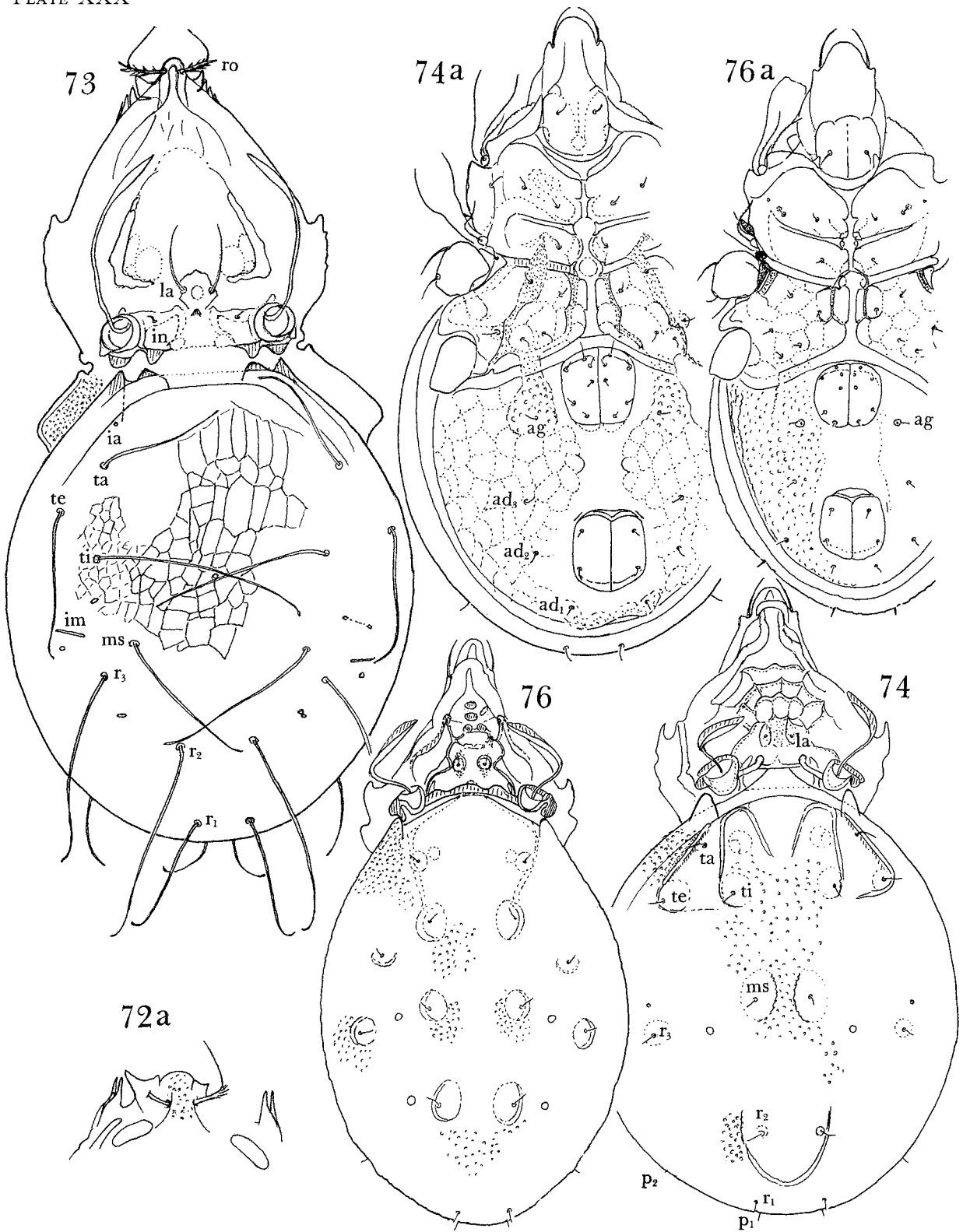


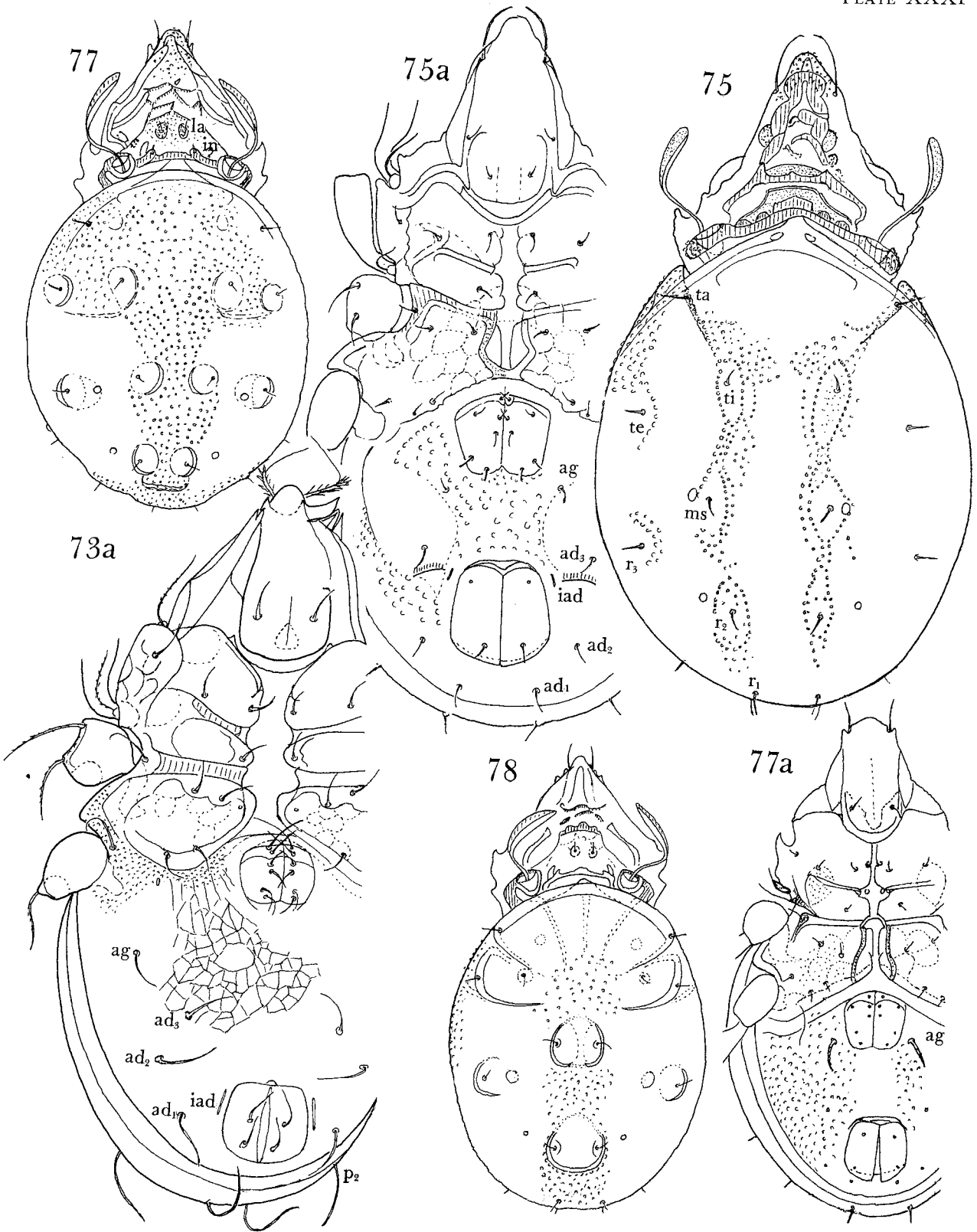




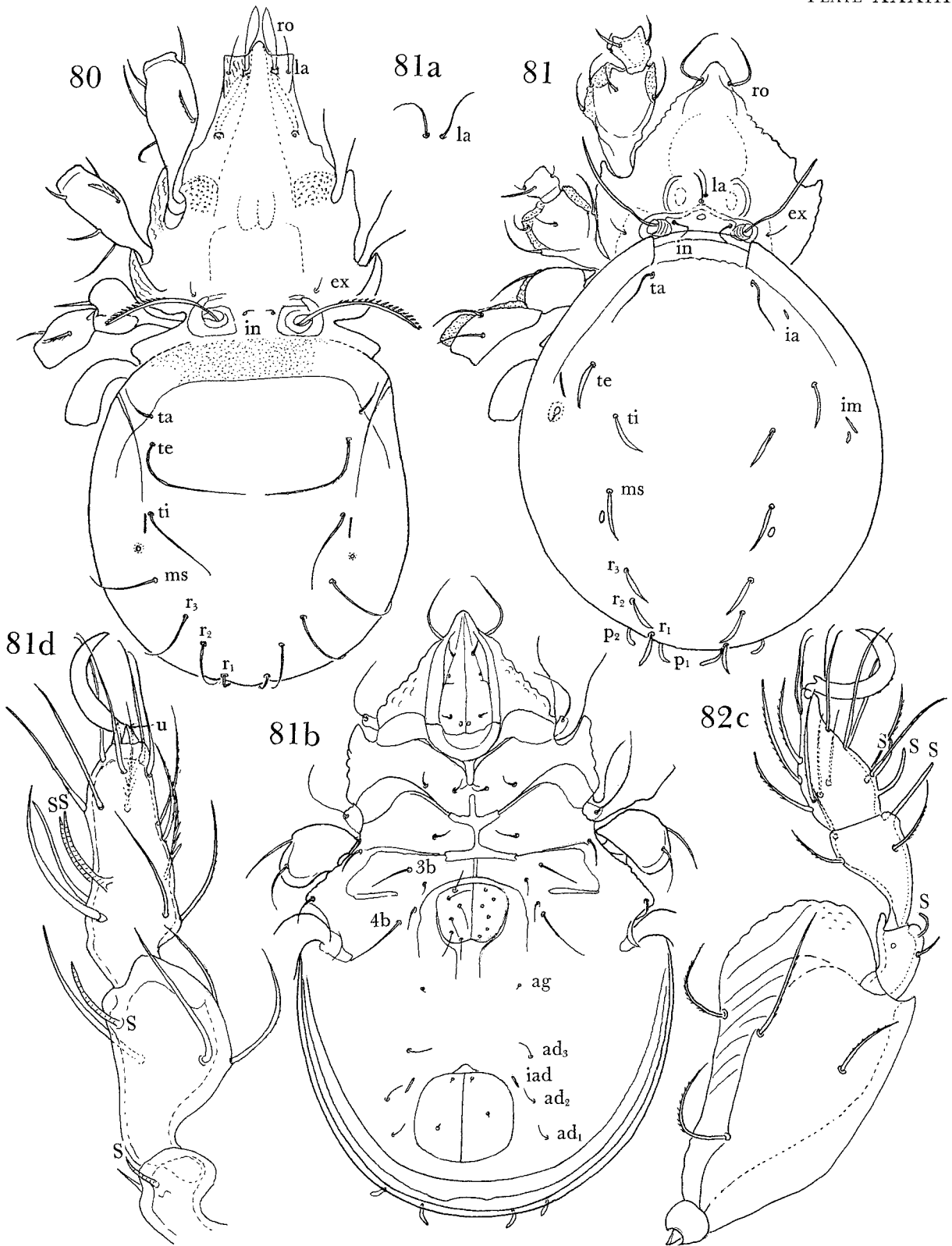




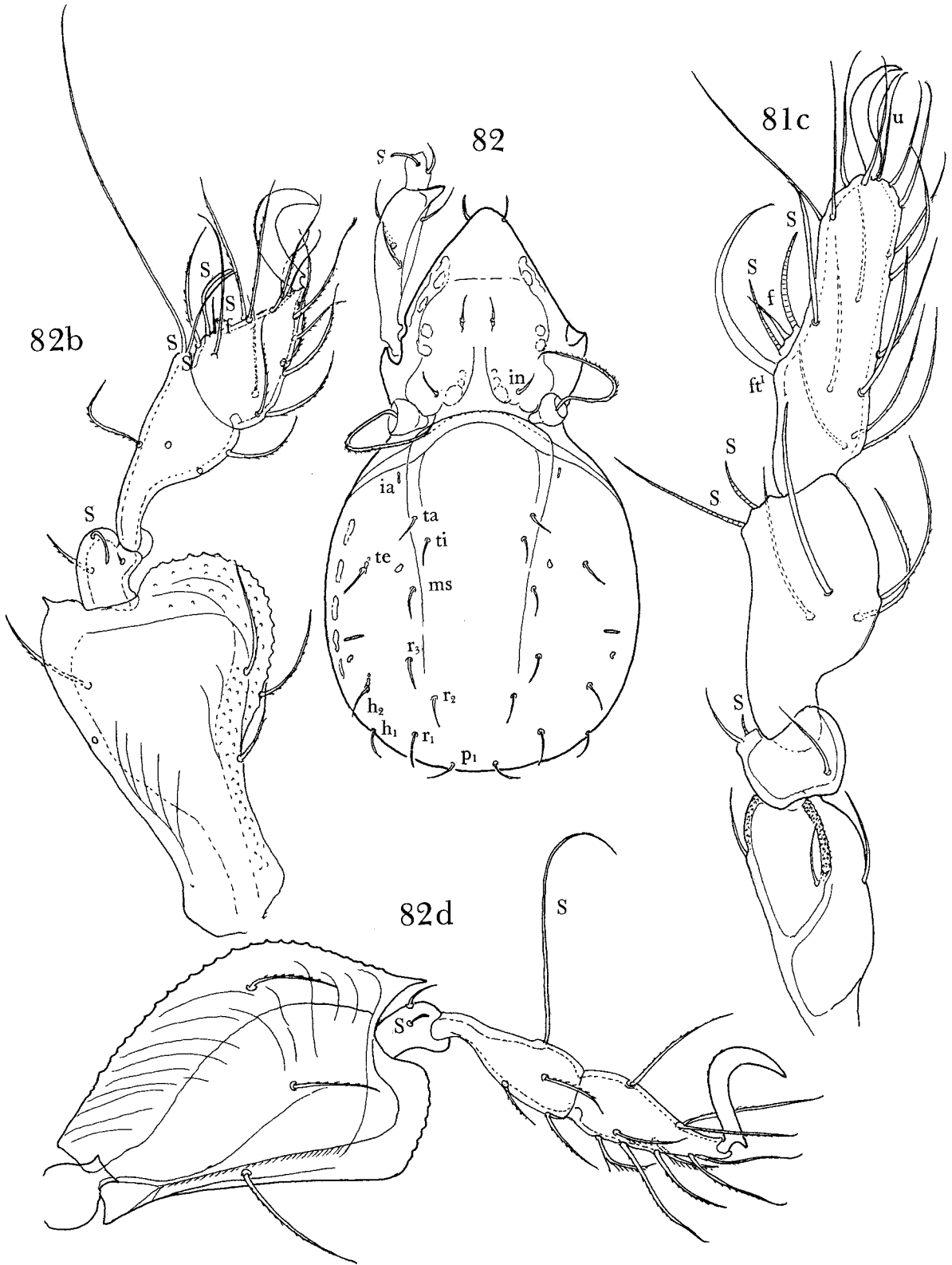


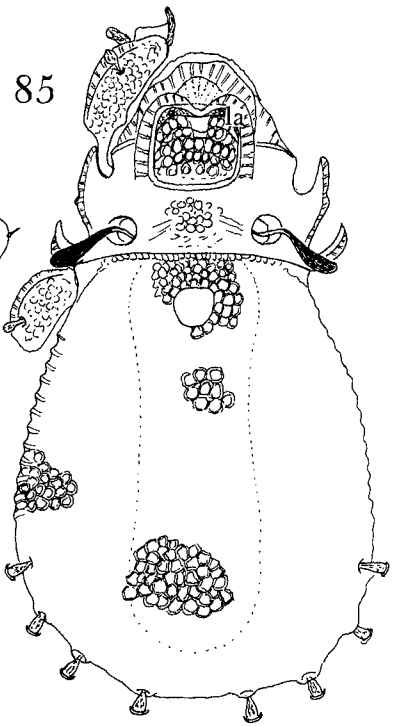
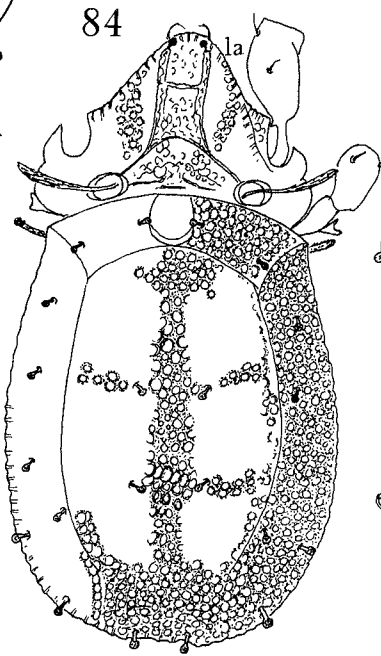
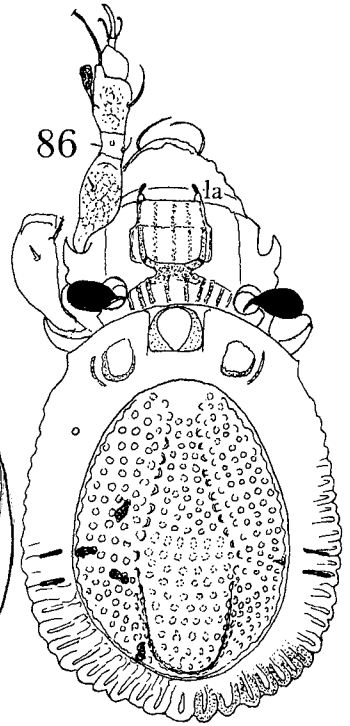
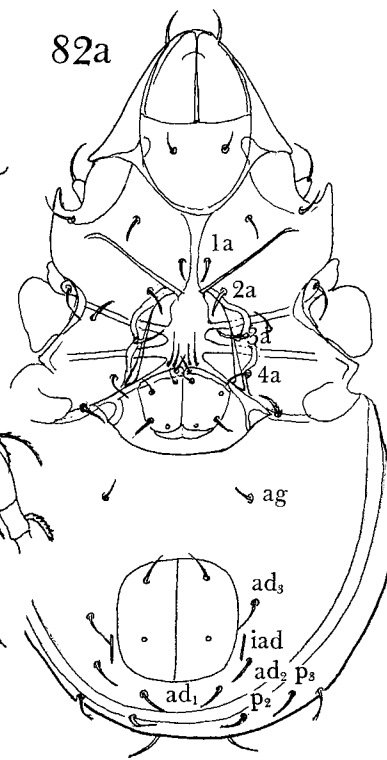
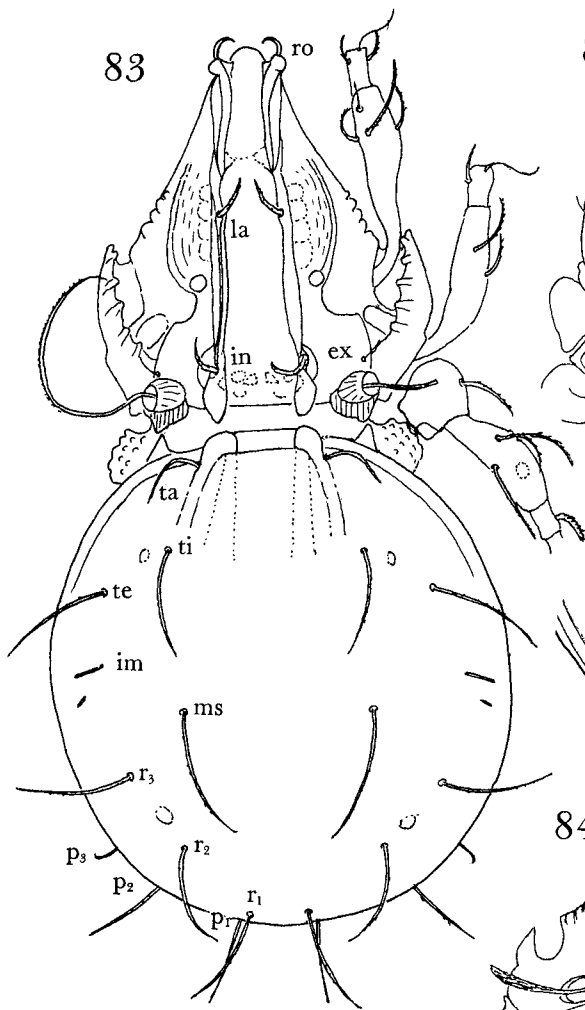


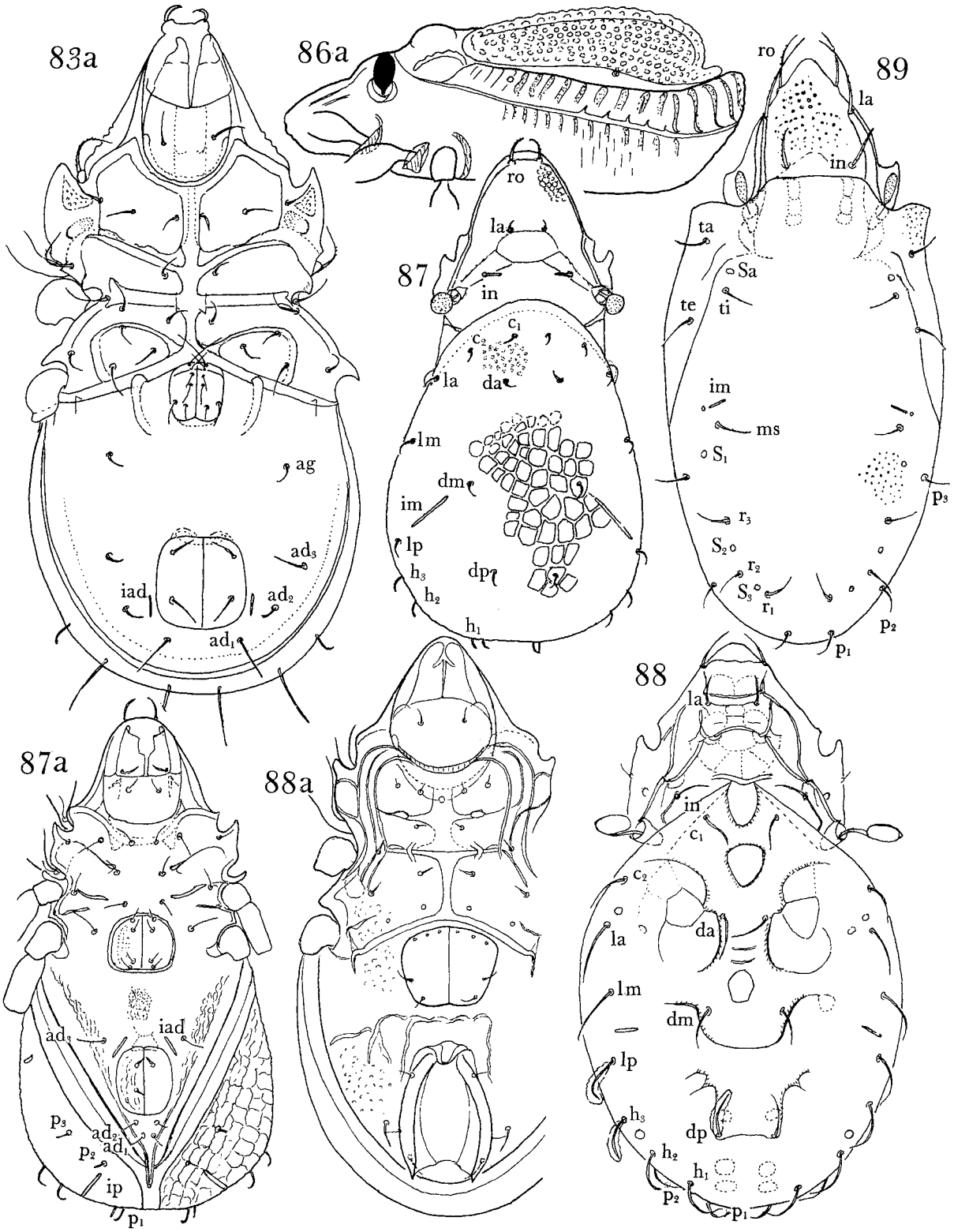


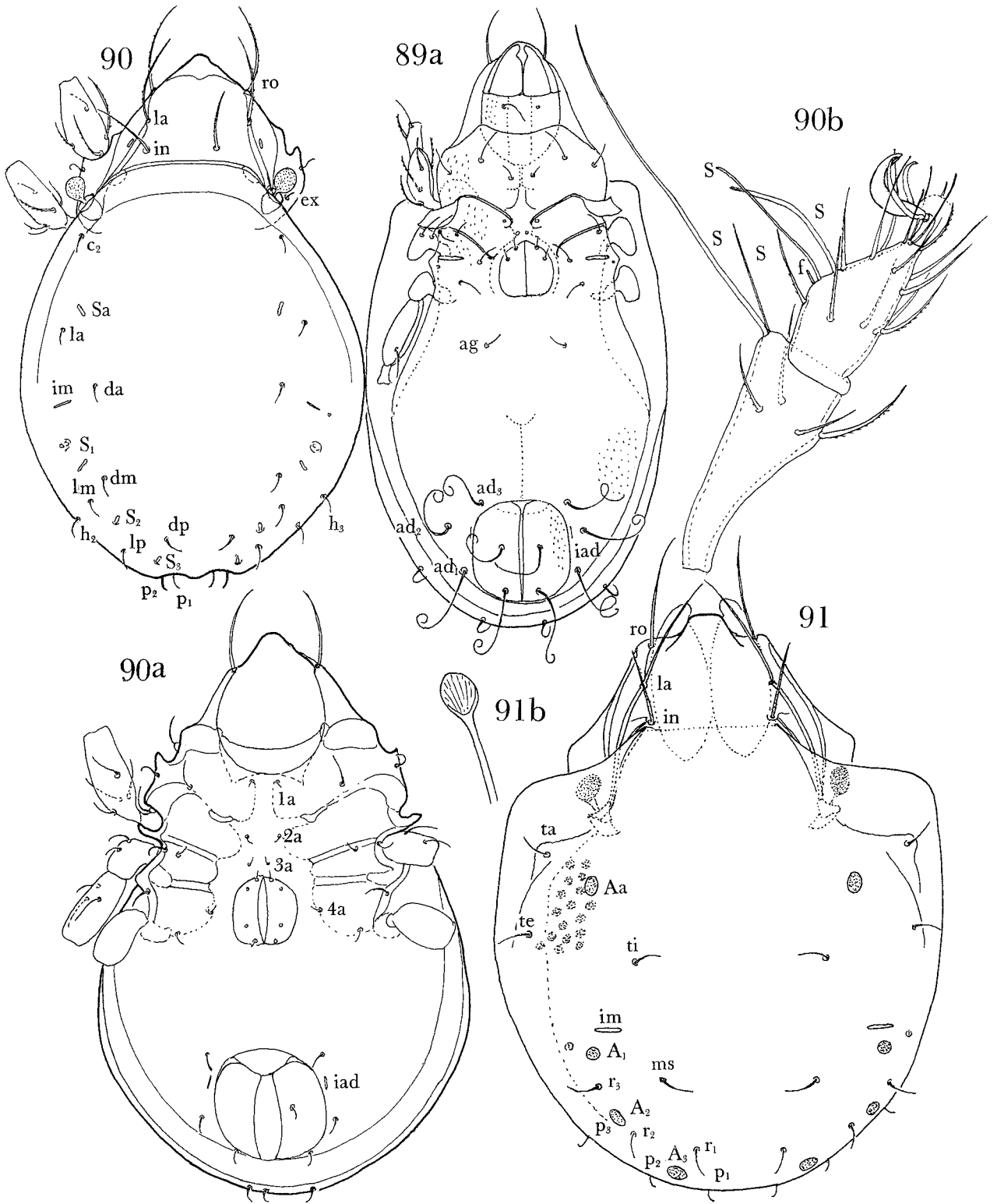


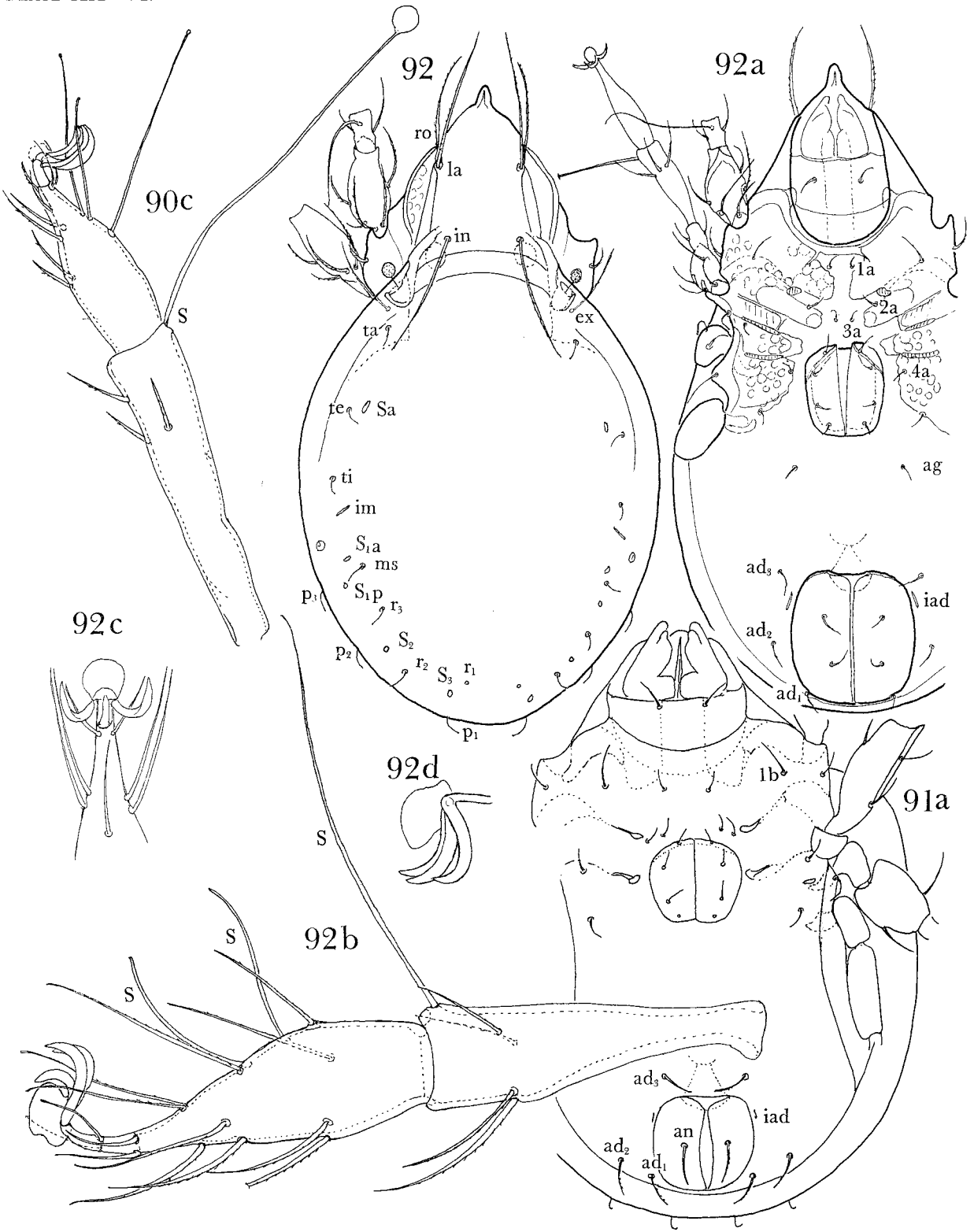


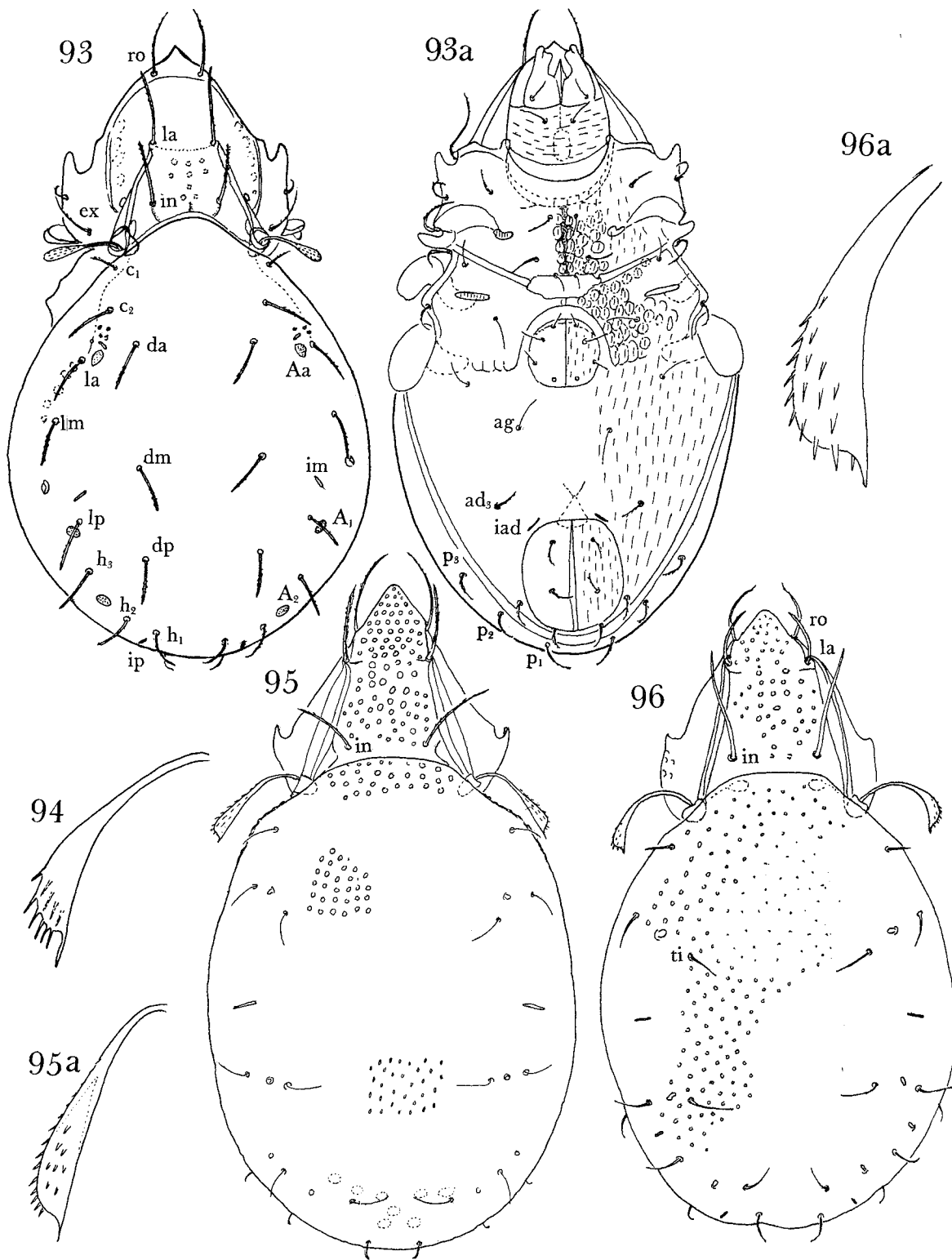


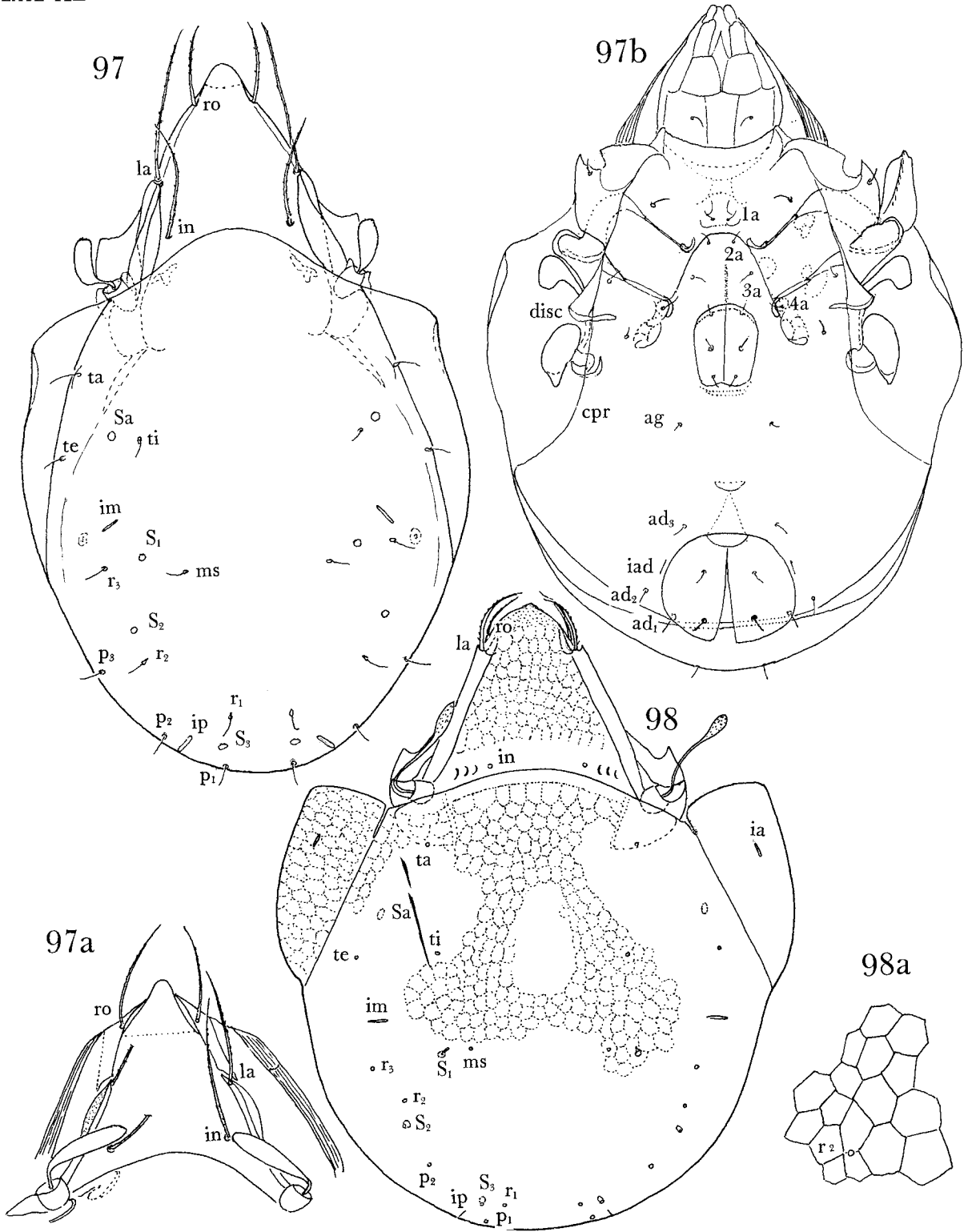


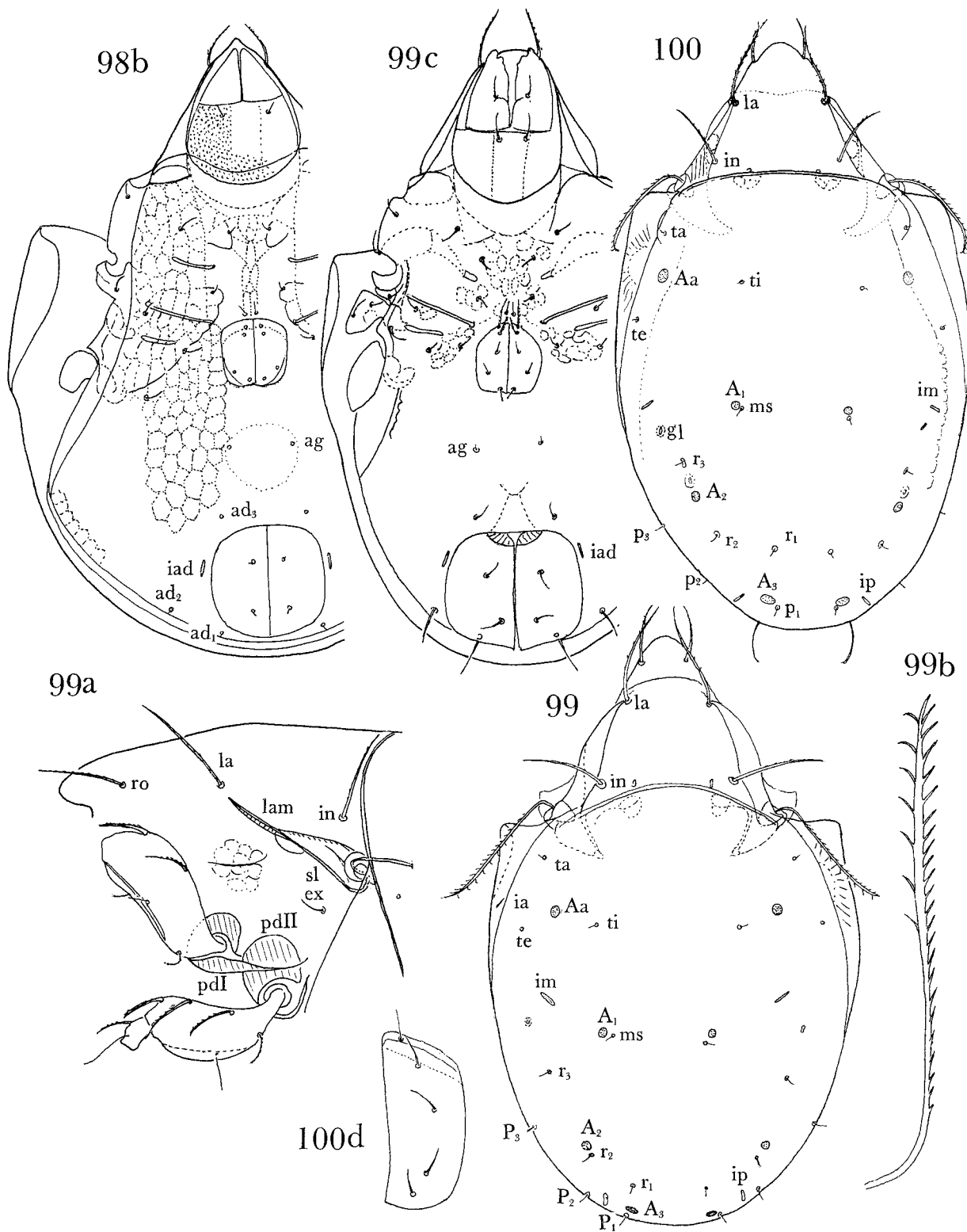




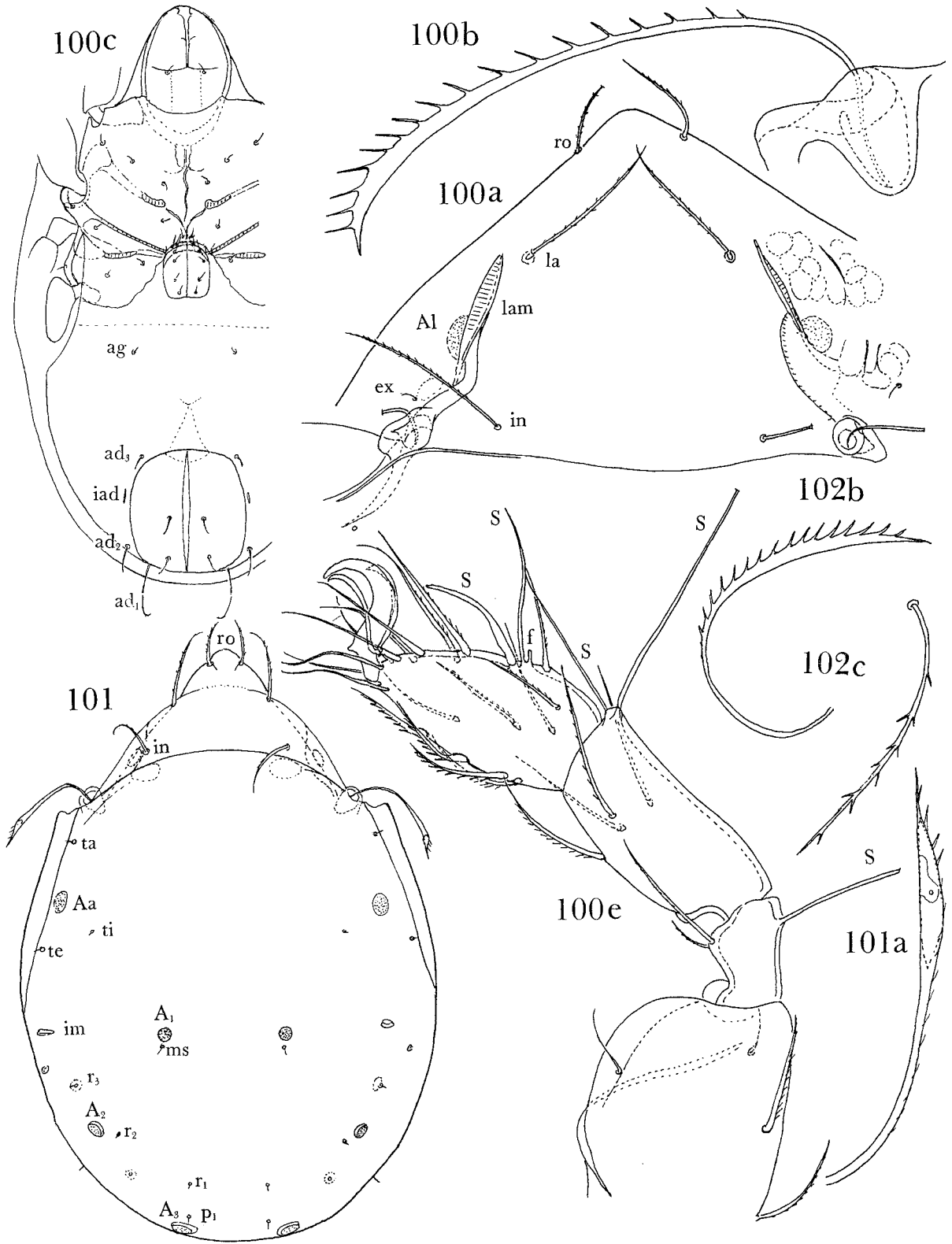


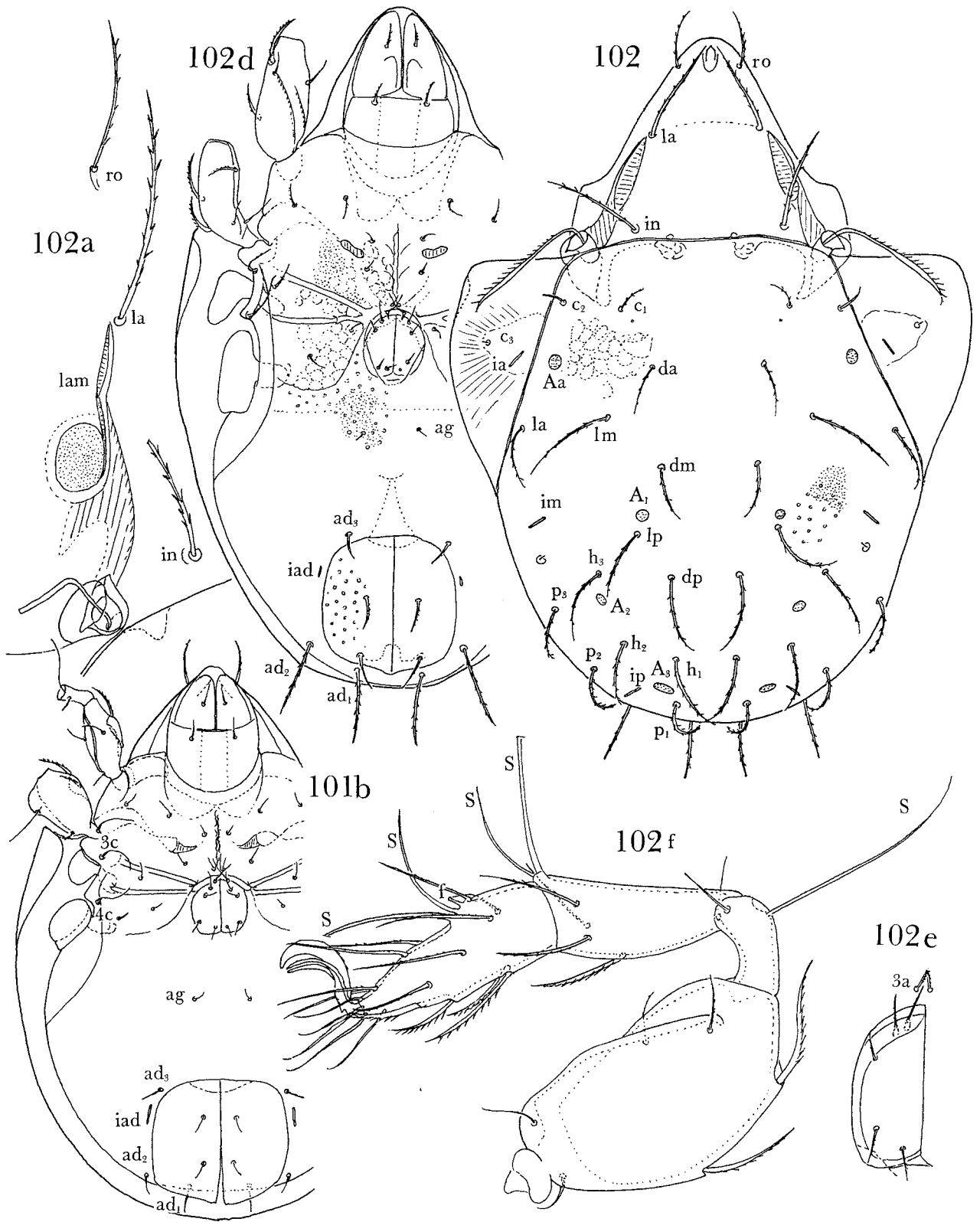


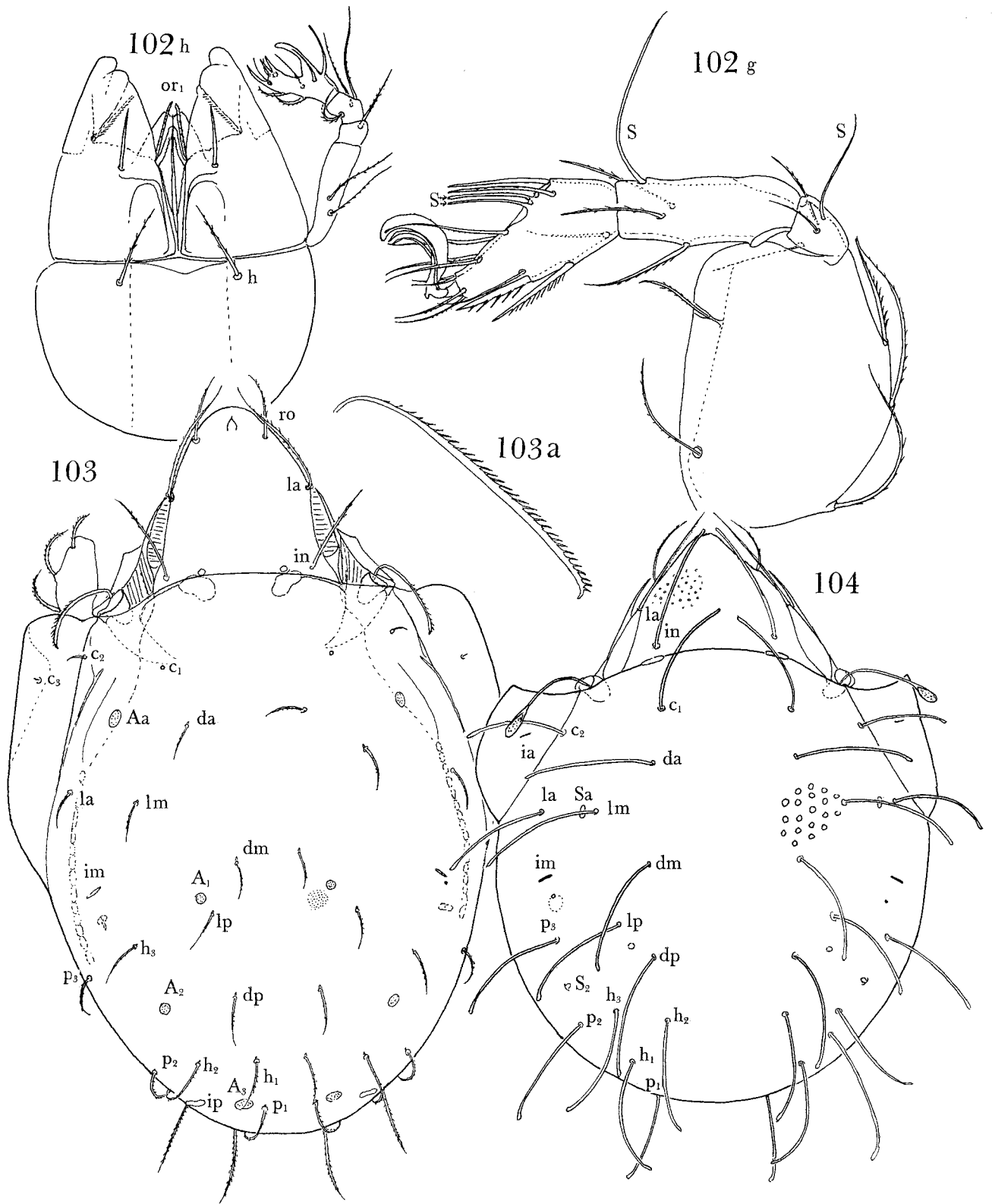




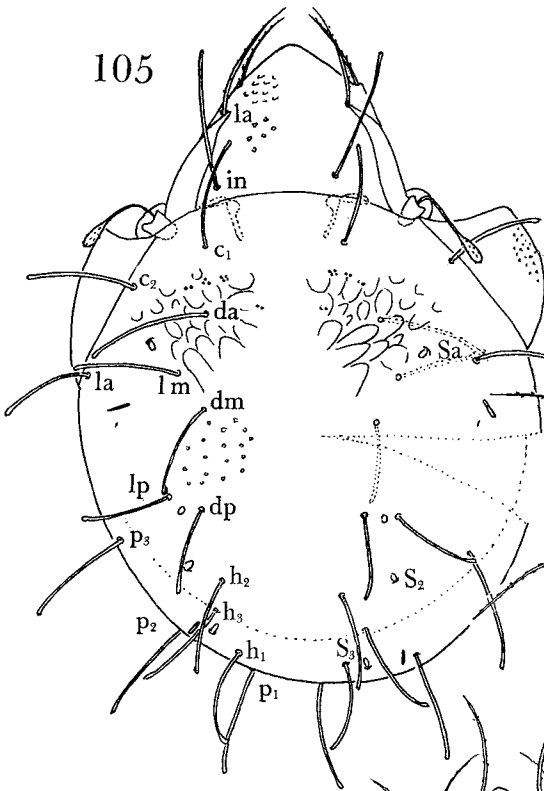




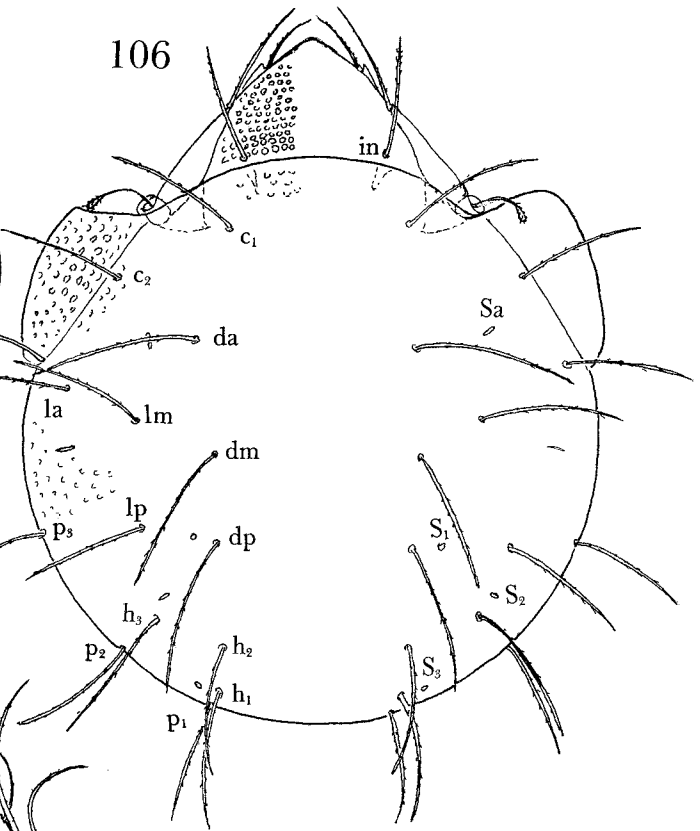




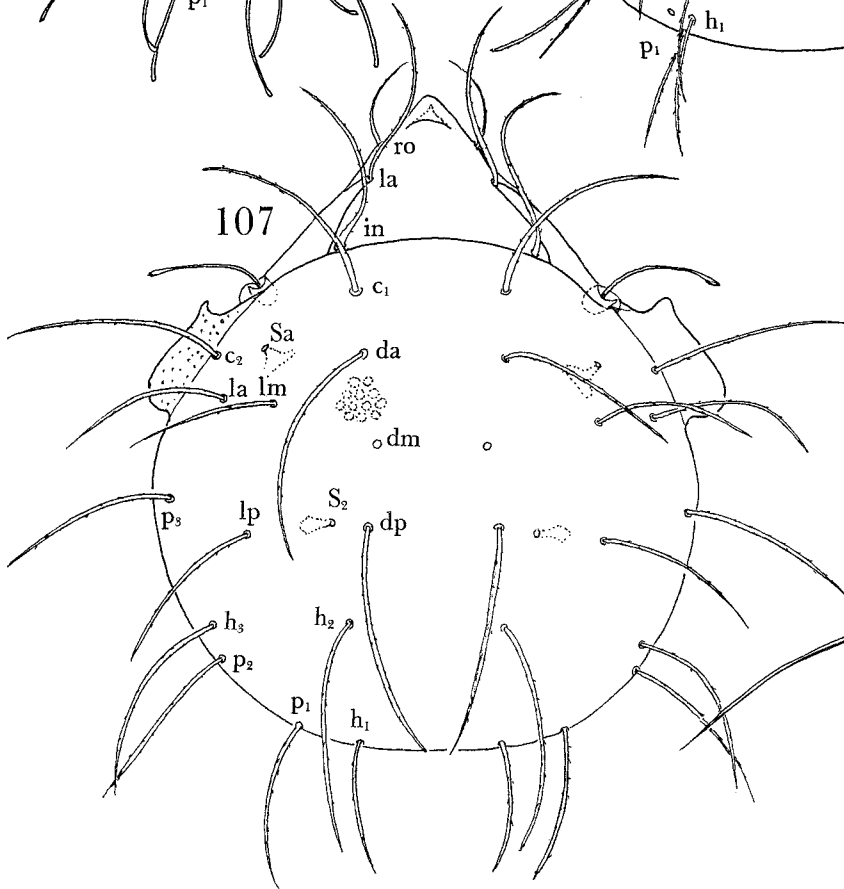
105



106



107



108b

