

Generic revision of the subfamily Betylobraconinae (Hymenoptera: Braconidae) and other groups with modified fore tarsus

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The genera of the subfamilies Betylobraconinae, Hormiinae, Lysiterminae, Pambolinae-Chremylini, and Doryctinae-Ypsistocerini are revised. A key is given to the genera of groups belonging to the cyclostome grade including species with shortened and/or (partly) widened fore tarsus. Sixteen new genera and 62 new species are described and illustrated. The new genera concern: *Mannokeraiia* gen. nov. (type species: *M. apterus* spec. nov. from Australia), *Masona* gen. nov. (type species: *M. prognatha* spec. nov. from U.S.A.), *Anachyra* gen. nov. (type species: *A. setosipes* spec. nov. from Australia), *Pseudochremylus* gen. nov. (type species: *P. angulifer* spec. nov. from Australia), *Chremyloides* gen. nov. (type species: *C. cardaleae* spec. nov. from Australia), *Apoavga* gen. nov. (type species: *Avga cardalei* Belokobylskij, 1989, from Australia), *Hormiitis* gen. nov. (type species: *H. brevitarsis* spec. nov. from Australia), *Rhinoprotoma* gen. nov. (type species: *R. masneri* spec. nov. from New Zealand), *Lysitermoides* gen. nov. (type species: *L. huggerti* spec. nov. from Canada), *Aulosaphoides* gen. nov. (type species: *A. brevitarsus* spec. nov. from Malaysia (Sabah)), *Planitorus* gen. nov. (type species: *P. brevisflagellaris* spec. nov. from Australia), *Facitorus* gen. nov. (type species: *F. superus* spec. nov. from Nepal), *Jannya* gen. nov. (type species: *J. brevitarsus* spec. nov. from Colombia), *Conobregma* gen. nov. (type species: *C. cometes* spec. nov. from U.S.A.), *Promesocentrus* gen. nov. (type species: *P. tricolor* spec. nov. from Australia), and *Bulborogas* gen. nov. (type species: *B. compressifemur* spec. nov. from Panama and Brazil). One new subfamily (Masoninae) and four new tribes (Masonini and Mannokeraiini in Masoninae, and Facitorini and Planitorini in Betylobraconinae) are described. Keys to species of the following genera are added: *Conobregma* gen. nov.; *Facitorus* gen. nov.; *Jannya* gen. nov.; *Ypsistocerus* Cushman, 1923; *Hormiitis* gen. nov.; *Austrohormius* Belokobylskij, 1989; *Acanthormius* Ashmead, 1900; *Aulosaphes* Muesebeck, 1935; *Aulosaphoides* gen. nov.; *Masona* gen. nov.; *Cedria* Wilkinson, 1934; *Chremyloides* gen. nov.; *Lysitermoides* gen. nov.; *Bulborogas* gen. nov.; *Choreborogas* Whitfield, 1990; and *Stiropius* Cameron, 1911. The genus *Viridipyge* Whitfield, 1988, is synonymized with *Stiropius* Cameron, 1911. A neotype is designated for *Bracon moniliatus* Nees, 1812. The tribes Canberriini Belokobylskij, 1993, and Austrohormiini Belokobylskij, 1993, are synonymized with Avgini Belokobylskij, 1993; and Chremylomorphini Belokobylskij, 1993, with Cedriina Belokobylskij, 1993. The subtribes Acanthormiina Belokobylskij, 1993, and Tritermina Belokobylskij, 1993, are synonymized with Lysiterminae Tobias, 1968.

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Introduction

This paper was started as a generic revision of the subfamily Betylobraconinae Tobias, 1979 sensu lato, but it was soon it was clear that to avoid confusion all other cyclostome genera with robust fore tarsus should be included. These groups, or part of them, share to some degree the tendency to have shortened or widened fore tarsi or have at least the telotarsus enlarged. Therefore, in the key to the genera, I have included all genera of the Hormiinae and Lysiterminae (Hormiini sensu Wharton, 1993) and added other cyclostome groups which include genera with more or less

similar shortened legs and added their nearest relatives. Another reason to pay attention to this group is the publication of several papers (in Russian!) on Australian Hormiinae, Lysitermiinae and Chremylini (Belokobylskij, 1988b, 1989, 1991, 1992). Most of the genera included in the key were traditionally included in the Rogadinae s.l. (van Achterberg, 1976, 1984) or Doryctinae s.l. (Belokobylskij & Tobias, 1986). Recently several tribes have been given subfamily rank as result of ongoing phylogenetic analyses; Exothecinae Foerster, 1862, and Rhyssalinae Foerster, 1862, Hormiinae Foerster, 1862, Pambolinae Marshall, 1885, and Rhysipolinae Belokobylskij, 1984 (Quicke & van Achterberg, 1991; Quicke, 1992, 1994; van Achterberg, 1993). For identification of the subfamilies, see van Achterberg (1990, 1993) and for the terminology used in this paper, see van Achterberg (1988b, 1993).

Phylogeny

The position of the subfamily Betylobraconinae seems to be well secured within the cyclostome grade of the Braconidae after a recent extensive analysis (Quicke & van Achterberg, 1990; re-analysed in Wharton et al., 1992). This is despite the lack of an obvious hypoclypeal depression which is normally distinctly developed in the cyclostome grade (with the exception of the nearly complete Alysiinae/Opiinae lineage). For the analysis of the Betylobraconinae mainly the type genus, *Betylobracon* Tobias, 1979, was used; since more genera are described in this paper the position of the group can be re-evaluated within the cyclostome grade. The matrix of Whitfield (1992) was used to include the Betylobraconinae, together with the changes proposed by Quicke (1993), some additional changes were made and some characters were added. The first character was reversely coded (Whitfield's state 1 is the plesiomorphic state (Quicke, 1993)), the 31st-35th characters were not used (as was not done by Whitfield (1992) for his first analysis) because they are not known for the Betylobraconinae. In addition these characters seem to be highly correlated, thus overemphasizing the idiobiont/koinobiont change. As a result character 36 of Whitfield's analysis becomes character 31 in this analysis. Only some of the taxa were used to make a faster analysis possible; only the genera *Rhyssalus* Haliday, 1833, *Rhysipolis* Foerster, 1862, *Clinocentrus* Haliday, 1833, and *Colastes* Haliday, 1833 were used for the Rhyssalini (Rhyssalinae Foerster, 1862), Rhysipolini Belokobylskij, 1984 (Exothecinae Foerster, 1862), Clinocentrini van Achterberg, 1992 (Rogadinae Foerster, 1862) and Exothecini Foerster, 1862, respectively.

The subfamily Aphidiinae Haliday, 1833, has been added to include a related (but aberrant) koinobiont group not belonging to the cyclostome grade but likely to be closely related to it (Quicke & van Achterberg, 1990).

Table 1. List of characters used for the phylogenetic analysis. The characters numbered 1-31 are after Whitfield (1992; revised by Quicke, 1993) and 35-59 after Quicke (1994); for their polarization, see Quicke (1993, 1994). Only 34 and 36 are unordered.

1.	Occipital and hypostomal carinae meeting before jointly reaching mandibular base	0
-	Occipital and hypostomal carinae reaching mandibular base separately	1
2.	Occipital carina fully developed dorsally	0
-	Occipital carina absent dorsally	1
3.	Malar suture distinct as a fine groove between eye and mandibular base	0
-	Malar suture absent	1

4.	Hypoclypeal depression broad and round or oval, formed dorsally by a concave clypeal margin and a depressed concave labrum	0
-	Hypoclypeal depression more transverse, and with a more or less flattened labrum	1
-	Hypoclypeal depression absent and labrum flat or slightly convex	2
5.	Prepectal carina present at least ventrally	0
-	Prepectal carina completely absent	1
6.	Pronope absent	0
-	Pronope present	1
7.	Ante-propodeal groove narrow, sulcus-like	0
-	Ante-propodeal groove broad, crenulate	1
8.	Propodeal areola "double", consisting of the area petiolaris and the areola sensu stricto, separated by a carina	0
-	Propodeal areola "simple", apparently consisting of the true areola, possibly with a fused and reduced area petiolaris	1
-	Propodeal areola absent	2
9.	Propleural flange present and well developed	0
-	Propleural flange essentially absent	1
10.	Transverse sulcus of pronotum complete and well developed, usually crenulate	0
-	Transverse sulcus of pronotum absent	1
11.	Dorsope distinct, well delineated by dorsal carinae	0
-	Dorsope obsolescent or absent	1
12.	Ovipositor sheath long, at least a third length of metasoma	0
-	Ovipositor sheath very short, usually shorter than basitarsus	1
13.	Dorsal carinae of first metasomal tergite long, remaining well separated posteriorly	0
-	Dorsal carinae of first tergite converging to meet or nearly so	1
14.	Reservoir of venom apparatus entire	0
-	Reservoir of venom apparatus subdivided	1
15.	Spiracles of second metasomal tergite situated in epipleuron	0
-	Spiracles of second tergite situated near lateral edge of dorsal face (= notum) of tergum or in notum	1
16.	Anterior portion of second metasomal tergite unmodified	0
-	Anterior portion of second tergite raised into a roughly semicircular transverse region	1
17.	Longitudinal medial carina of second metasomal tergite absent	0
-	Longitudinal medial carina of second tergite present	1
18.	Epipleura of metasomal terga 2 and 3 not clearly set off by sharp lateral fold	0
-	Epipleura of terga 2 and 3 clearly set off by sharp lateral fold	1
19.	True Hagen's glands opening on ninth metasomal tergite of male absent	0
-	True Hagen's glands opening on ninth metasomal tergite of male present	1
20.	Origin of vein r in distal half of pterostigma or near middle of pterostigma	0
-	Origin of vein r in proximal 0.4 of pterostigma	1
21.	Vein M+CU of hind wing subequal in length to vein 1-M or longer	0
-	Vein M+CU of hind wing clearly shorter than vein 1-M	1
22.	Pterostigma of normal proportions, or up to five times as long as broad	0
-	Pterostigma reduced in width and elongated to become a slightly thickened vein along costal margin	1
23.	Vein m-cu of fore wing postfurcal, meeting vein M distal to SR-junction	0
-	Vein m-cu of fore wing antifurcal, meeting vein M proximal to SR-junction	1
24.	Hind tarsus subequal in length to the hind tibia	0
--	Hind tarsus clearly shorter than the hind tibia	1
25.	Larval epistomal arch essentially complete	0
-	Larval epistomal arch incomplete or completely reduced	1
26.	Larval mandible toothed	0
-	Larval mandible toothless	1
27.	Larval antenna long and prominent, papilliform	0

- Larval antenna reduced, flat	1
28. Larval skin spiny	0
- Larval skin smooth	1
29. Host attacked as late instar	0
- Host attacked as early instar	1
30. Female leaves host after the host is stung and before egg-laying	0
- Female remains with host after the host is stung and before egg-laying	1
31. Larva essentially always solitary	0
- Larva often or always gregarious	1
Alysiinae and Opiinae are essentially solitary parasites; the few exceptions in some genera (e.g. <i>Aphaereta</i> Foerster, 1862) concern secondary developments within the genera or genera-groups concerned.	
32. Laterope of first metasomal tergite absent or indistinct	0
- Laterope of first tergite distinctly differentiated within glymma	1
From the cladograms found by Quicke & van Achterberg (1990), Whitfield (1992) and Wharton et al. (1992) it is obvious that the development of a distinct laterope within the cyclostome grade is apomorphic.	
33. Anterior subalar depression with carina	0
- Anterior subalar depression smooth or at most with some fine crenulae	1
For polarisation, see van Achterberg & Quicke (1992).	
34. Lower valve of ovipositor with two valvilli	0
- Lower valve of ovipositor with one valvillus	1
- Lower valve of ovipositor without valvilli	2
For polarisation, see van Achterberg et al. (1993).	
35. Venom glands inserted on to reservoir anteriorly or medially	0
- Venom glands inserted on to reservoir posteriorly	1
36. With two venom gland insertions on to reservoir or primary duct	0
- With one venom gland insertion on to reservoir or primary duct	1
- With many venom gland insertions on to reservoir or primary duct	2
37. Primary venom duct not terminating in an unsculptured and weakly chitinized bulb	0
- Primary venom duct terminating in an unsculptured and weakly chitinized bulb	1
38. Intima of primary venom duct completely with spiral or annular sculpture	0
- Intima of primary venom duct partly with spiral sculpture (to beyond level of gland inserts), but unsculptured for at least the posterior quarter of its length	1
- Intima of primary venom duct without spiral sculpture or sculpture not reaching level of gland insertions	2
39. Venom gland reservoir weakly muscularized	0
- Venom gland reservoir highly muscularized	1
40. One pair of ovarioles	0
- Two pairs of ovarioles	1
- Three-six pairs of ovarioles	2
- More than six pairs of ovarioles	3
41. Valvilli on distal third of lower ovipositor valve	0
- Valvilli on medial third of lower ovipositor valve	1
- Valvilli on basal third of lower ovipositor valve	2
42. Valvillus simple	0
- Valvillus with a fringe	1
43. Valvillus petal-shaped, with petiole smoothly merging with anterior face	0
- Valvillus cup-shaped, with petiole located submarginally	1
44. Ventral margin of dorsal ovipositor valve deeply cleft in cross-section (i.e. considerably less deep medially than submedially)	0
- Ventral margin of dorsal ovipositor valve more or less flat or weakly emarginate	1
45. Pre-apically the two halves of dorsal ovipositor valve more broadly connected with a mid-longitudinal septem	0
- Pre-apically the two halves of dorsal ovipositor valve joined by only a thin bridge	1

46. Lumen of dorsal ovipositor valve divided by a mid-longitudinal septum	0
- Lumen of dorsal ovipositor valve not divided by a mid-longitudinal septum	1
47. Dorsally egg tube closed by lower valves	0
- Dorsally egg tube closed by upper valve	1
48. Eighth metasomal sternite of male produced medio-anteriorly (usually sharply pointed)	0
- Eighth metasomal sternite of male simple medio-anteriorly (more or less straight)	1
49. Cuspidal lobe of male genitalia well developed	0
- Cuspidal lobe of male genitalia reduced or absent	1
50. Cuspidal lobe of male genitalia articulated with volsella	0
- Cuspidal lobe of male genitalia immovably fused with volsella	1
51. Parameral processes long, extending well beyond middle of digitus	0
- Parameral processes short, not reaching middle of digitus	1
52. Basal ring or gonobase short and transverse (concave, straight or hardly produced antero-medially)	0
- Basal ring or gonobase moderately elongate (distinctly produced antero-medially)	1
- Basal ring or gonobase very elongate	2
53. Vas deferens insertion on accessory glands posterior	0
- Vas deferens insertion on accessory glands anterior	1
54. Testes fused to gut dorsally	0
- Testes separate or fused to gut ventrally	1
55. Mature spermatozoa 60-150 µm long, its structure normal	0
- Mature spermatozoa 25-50 µm long, its structure normal	1
- Mature spermatozoa 5-20 µm long, its structure highly modified	2
56. Axoneme of mature spermatozoan with a pair of central microtubules	0
- Axoneme of mature spermatozoan with only one or no central microtubule	1
57. Mitochondrial derivatives of mature spermatozoa medium-sized to large (approximately as deep as the axoneme)	0
- Mitochondrial derivatives of mature spermatozoa reduced (approximately half diameter of axoneme or less)	1
58. Placodiform sensillae on subbasal antennal segments not extending along whole length of segment, usually irregularly distributed or with strongly staggered pattern	0
- Placodiform sensillae on subbasal antennal segments extending more or less along whole length of segment, regularly distributed	1
59. Internal opening of antennal placode sensillae round to short elliptical, not more than 0.25 times external length of sensillum (Barlin & Vinson, 1981)	0
- Internal opening of antennal placode sensillae elongate, between 0.25 and 0.8 times length of sensillum	1
- Internal opening of antennal placode sensillae very elongate, occupying entire length of sensillum	2

The analysis of this first matrix was done with Hennig86 (version 1.5) using the "ie" and "bb" options. This resulted in two equally parsimonious trees (length 47, CI 0.70 and RI 0.58; figs A, B), wherein only the position of the Betylobraconinae varies, either splitted off before the Rogadinae, or being included in the same lineage as the Rogadinae. Because several members of the Betylobraconinae have a medio-basal triangle on the second tergite (an apomorphy of the Rogadinae), and according to Quicke et al. (1994) *Betylobracon* has the upper valve broadly cleft ventrally as in *Aleiodes* Wesmael, 1838 (= largest genus of Rogadini), it is most likely that the Betylobraconinae belongs to the Rogadinae lineage as shown in fig. B. They differ from the Rogadinae e.g. by the number of valvilli, the more laterally situated spiracle of the second metasomal tergite, and the straight inner margin of the eyes (which are more

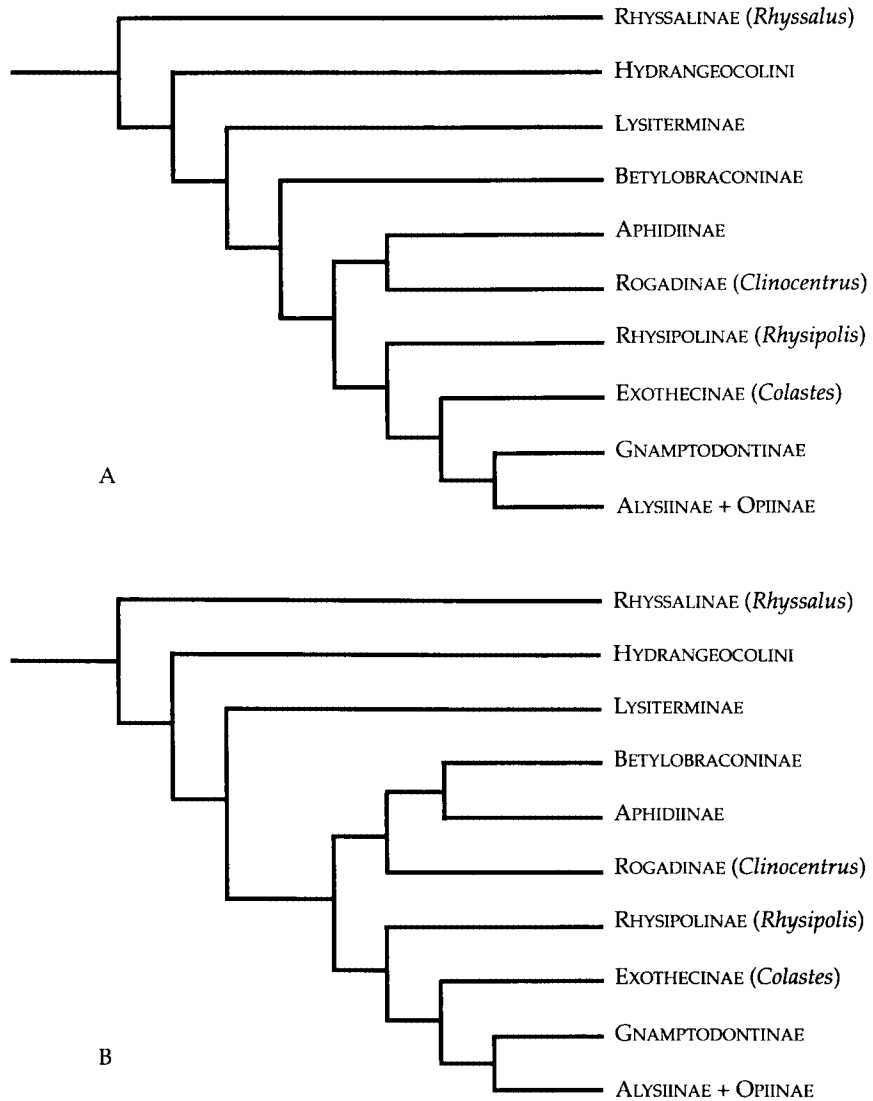
or less emarginate in the Rogadinae) and the median septum of upper valve of ovipositor (at least partly) incomplete (Quicke et al., 1994). Therefore, it will be not surprising if the Betylobraconinae are found to be endoparasites of lepidopterous larvae as the Rogadinae are.

A second matrix was made by adding 25 characters from Quicke's (1994) matrix, mainly concerning anatomical characters hardly or not used before. The matrix was run with with PAUP 3.1.1 and the resulting trees were analysed with MacClade 3.0.4 (figs C-F). The options "heuristic", "branch-and-bound search" and "exhaustive search" (maxtrees = 100; with MULPARS option, rooted with Rhyssalinae as out-group) resulted in the same four trees (in the latter option selected from 2,027,025 trees) with the minimal length of 80 (CI = 0.70 and R = 0.48). One tree (fig. C) is equal to tree of fig. B found in the first analysis. Fig. D is similar to fig. C but has Rhyssipolini separated more basally because of the different shape of the upper ovipositor valve. Figs E and F are similar to figs C and D, respectively, but have the Alysiinae + Opiinae branched off the Rogadinae-lineage. I prefer fig. D because Opiinae share many more (partly derived) characters with the Exothecinae than with the Rogadinae and because the position of the occipital and hypostomal carinae ventrally varies within the Opiinae. As a result of this analysis I prefer to give the Rhyssipolini subfamily status instead of including them in the Exothecinae (van Achterberg, 1993).

It is obvious from the analysis that the Lysitermini Tobias, 1968, does not belong

Table 2. Matrix of the character states listed in table 1 used for the phylogenetic analysis; ? = polymorphic or unknown.

	1111111112	222222223	333333334
	1234567890	1234567890	1234567890
RHYSSALINAE	0010000000	000?000000	000100000? 100011100?
HYDRANGEOCOLINI	1000000?00	0?0?000001	0101?????? ?01???????
LYSITERMINAE	00?0000100	0?0?10?100	?00?????? ????110?1?
BETYLOBRACONINAE	00?2000?00	011010?1?0	?0?0?????? ?00001001?
APHIDIINAE	00?20?0100	1000000000	?01?101?11 00121?0?10
ROGADINAE	0000000100	0010101100	?010111101 0?01010011
RHYSIPOLINAE	1000000100	001010?100	1010000001 000111001?
EXOTHECINAE	1100100100	0011100101	1010000000 0011110111
GNAMPTODONTINAE	?111100?11	1?10110110	1010000??? 001111011?
ALYSIINAE+OPIINAE	1?0?1?010?	001??0001?	???0?110?? 0111??0?1?
	4444444445	555555555	
	1234567890	123456789	
	00?0?0001?	10??00010	RHYSSALINAE
	???????????	???????????	HYDRANGEOCOLINI
	00?010?111	10?????10	LYSITERMINAE
	2??1000111	0100???10	BETYLOBRACONINAE
	???1011101	001110112	APHIDIINAE
	0??1001111	11?????10	ROGADINAE
	00?0000011	1100???10	RHYSIPOLINAE
	1011000011	110000010	EXOTHECINAE
	0001010111	11?????10	GNAMPTODONTINAE
	0?0?000101	1?01?0010	ALYSIINAE+OPIINAE



Figs A-B. The two parsimonious trees found using the first 34 characters of the matrix without weighting and generated with Hennig86 (options "ie" and "bb"). Length of trees 47 and consistency index 0.70.

to the Rogadinae (as was supposed e.g. by van Achterberg, 1992) and therefore, have been given subfamily rank (van Achterberg, 1993). Wharton (1993) preferred to include the group as the tribe Lysitermini in a wide concept of the subfamily Hormiinae, but he admits this concept "makes it more difficult to define the Hormiini as a monophyletic group". The synapomorphies listed by Wharton for his Hormiinae, which is a widely defined group, contains no autapomorphies, and the characters are

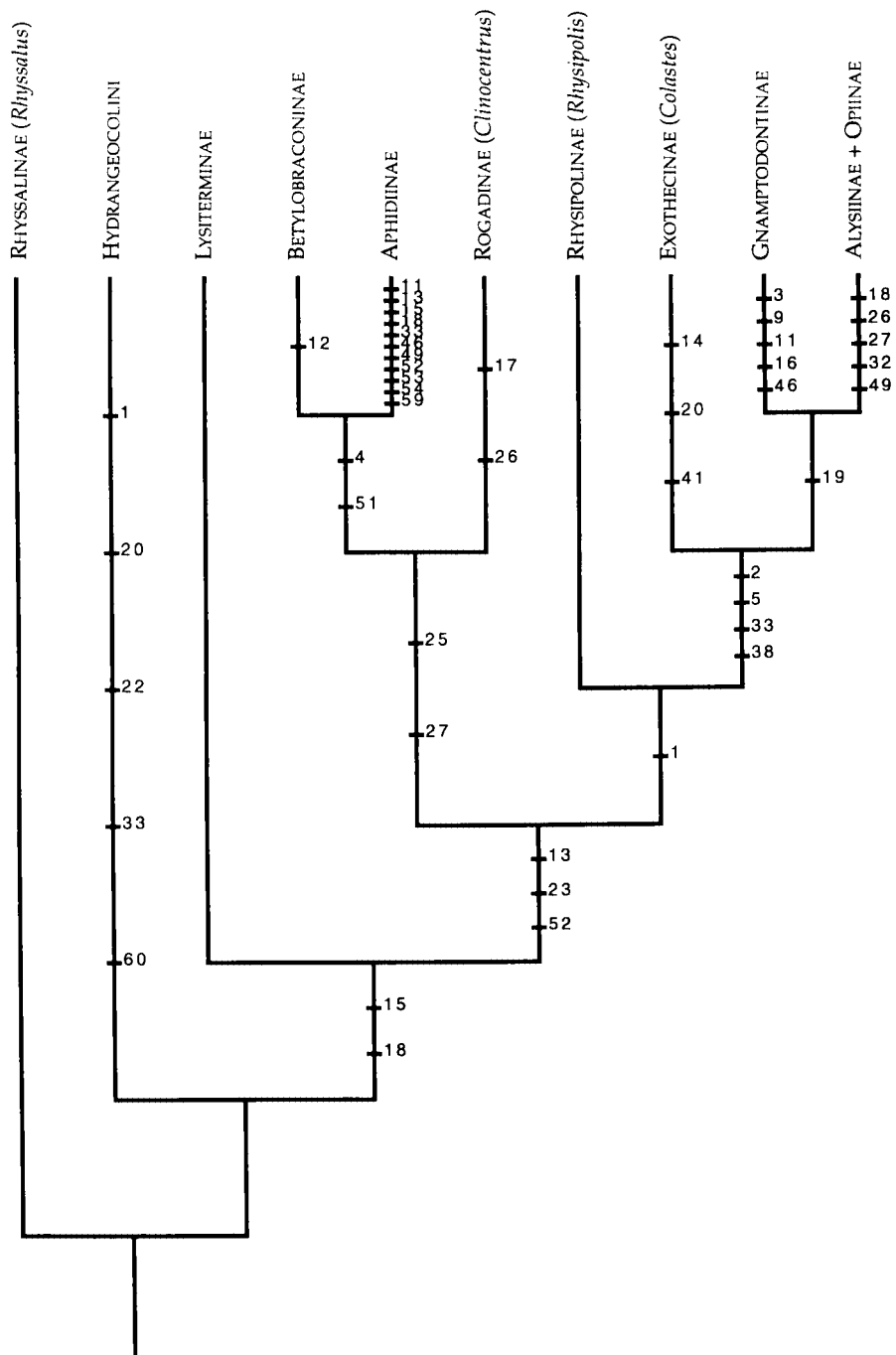


Fig. C. One of the four parsimonious trees found using the complete character-matrix without weighting and generated with PAUP 3.1.1 (option "exhaustive search") and analysed with MacClade 3.0.4. Length of tree 80 and consistency index 0.70. Numbers refer to number of characters in matrix (tables 1-2).

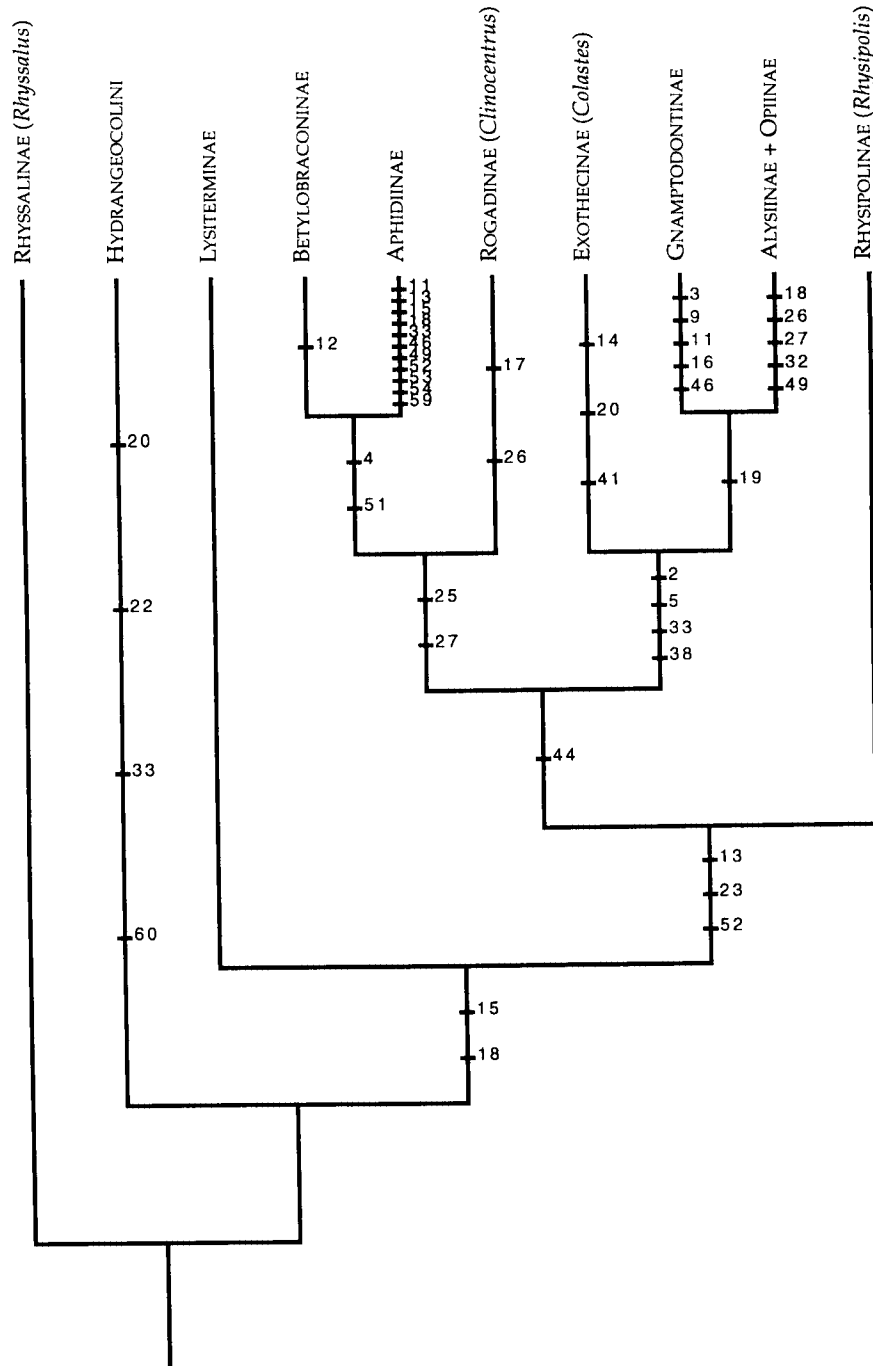


Fig. D. One of the four parsimonious trees found using the complete character-matrix without weighting and generated with PAUP 3.1.1 (option "exhaustive search") and analysed with MacClade 3.0.4. Length of tree 80 and consistency index 0.70. Numbers refer to number of characters in matrix (tables 1-2).

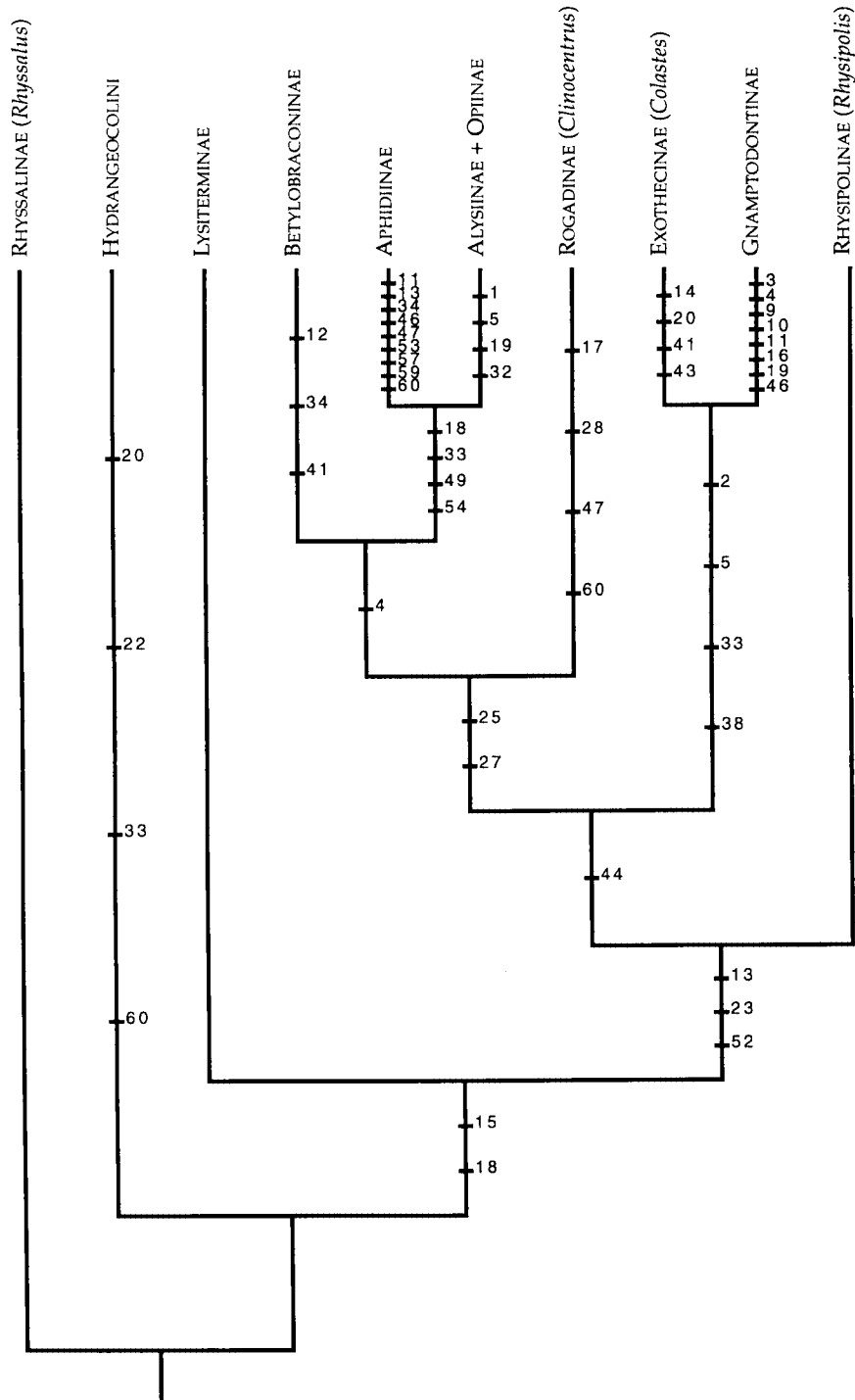


Fig. F. One of the four parsimonious trees found using the complete character-matrix without weighting and generated with PAUP 3.1.1 (option "exhaustive search") and analysed with MacClade 3.0.4. Length of tree 80 and consistency index 0.70. Numbers refer to number of characters in matrix (tables 1-2).

either quite variable within the group (e.g. relative positions of veins cu-a and m-cu of fore wing), or the same state is present in related groups (e.g. reduction of vein SR of hind wing, small latero-tergites of first and second metasomal segments). The only other apomorphic character state mentioned for the Hormiinae (the dorsal carinae of the first metasomal tergite widely separated) is most likely to be a plesiomorphous one. Therefore, I prefer the more restricted definition for the Hormiini, which has been given subfamily status recently (van Achterberg, 1993). From Wharton's (1993) analysis (including some characters states of which I doubt the apomorphy) it is obvious that the Hormiinae in the strict sense are a monophyletic group. Wharton (1993) rightfully criticizes the lack of an absolutely reliable character states for separating the Lysiterminae and Pambolinae (including Chremylini) as separate subfamilies. Nevertheless, this arrangement seems to reflect existing monophyletic entities, as shown by Wharton's consensus tree based on the shortest trees found (his fig. 93). Therefore, I prefer to recognize them as subfamilies instead of treating the whole "Hormiine"-group as a more or less amorphous conglomerate until strong evidence to the contrary shows up. I agree with Wharton (1993) that the development of a carapace-like metasoma is no good reason to separate a group, but the Lysiterminae (as the Pambolinae) are reasonably easy to define without using this character (van Achterberg, 1993).

A separate position for the Lysiterminae was also found by Whitfield (1992); however, he incorrectly assumed that data on the biology of the genus *Cedria* Wilkinson, 1934, can be used for analysis of the Lysiterminae. The genus *Cedria* belongs to the Chremylini Hellén, 1957 (of the subfamily Pambolinae Foerster, 1862; Wharton, 1993), leaving the Lysitermini without any precise data on their biology. Judging from their position in the cladograms (figs A, B; Whitfield, 1992; Wharton, 1993; Quicke, 1993) it is most likely that they are idiobiont ectoparasites of Psychidae and Xyloryctidae (van Achterberg, 1991), and may be the sister-group of the Hormiinae (Wharton, 1993).

Very recently, Quicke (1994) published an analysis encompassing several cyclostome groups (including Betylobraconinae) using an elaborate character matrix of 52 characters, among them several ones not used before. The Betylobraconinae are (in the consensus trees which have this section resolved) either with the Clinocentrini the sistergroup of the Rogadinae s.s., or the Clinocentrini are the sistergroup of the Betylobraconinae + Rogadinae s.s. If it was also to be found that the larvae of the Betylobraconinae mummify the host larva (which is still unknown) it would be best to include it as tribe in the Rogadinae, but I prefer to treat this aberrant group as a subfamily until its biology becomes known.

Biology

Nothing is known about the biology of the genera included in the subfamily Betylobraconinae in this paper. Some years ago (van Achterberg, 1991) I included the genus *Yelicones* Cameron, 1887 (of which the biology is known) because it shares with the Betylobraconinae the highly modified tarsi. However, several other characters (e.g., the pectination of the tarsal claws, the protruding prosternum, the flattened labrum, the specialized area on the inner side of the hind basitarsus) makes this relationship unlikely. It shares both biology and some morphological characters with the

Rogadinae, and in this paper a member of the tribe Rogadini is described which possesses similarly shortened tarsi. *Yelicones* is a solitary endoparasite of lepidopterous larvae pupating in the mummified host larva (Čapek, 1970); *Yelicones* differs from other Rogadinae by the variable emergence location (in the Rogadini it is at the posterior end of the host larva). The members of the tribe Stiropiini van Achterberg, 1993, show some resemblance to some Betylobraconinae (e.g. by the enlargement of the telotarsus), but this is not corroborated by other characters. The Stiropiini contains endoparasites of Lyonetiidae, which may pupate in the host "pupa", or rather in the cocooned larva (Čapek, 1970), and according to Whitfield (1988) the host larva or prepupa is mummified and the emergence hole is near the anterior end of the host. Obviously, this group also fits best in the Rogadinae, not least because of sharing the autapomorphy of mummifying the host larva.

**Key to genera of the subfamilies Betylobraconinae, Lysiterminae, Hormiinae
and other genera with shortened or widened fore tarsi**

(for convenience several related genera with slender tarsi are included)

1. Face strongly transverse (figs 7, 16, 23) and hypoclypeal depression absent (figs 7, 23); ♀ wingless and ♂ winged (♂ unknown of *Mannokeraia*), without sclerotized veins (fig. 12); second metasomal spiracle in its epipleuron (figs 3, 25); pronotum of ♀ posteriorly at same level as mesoscutum and scutellum (figs 3, 25); (Masoninae subfam. nov.) 2
- Face normal, subquadrangular (figs 69, 114, 369, 508) or hypoclypeal depression large, wide (figs 73, 125); both sexes winged and with sclerotized veins (figs 33, 120); second metasomal spiracle usually in its notum near lateral crease (figs 122, 214, 496), less commonly in its epipleuron (figs 63, 373, 448); pronotum of ♀ posteriorly much lower than mesoscutum and scutellum (figs 75, 111, 496) 3
2. Basal half of first metasomal tergite tube-shaped, its sternite immovably joined to its tergite (figs 3, 6); fore tibia with long, curved pegs antero-subapically (fig. 5); hind tarsal claws with lobe (fig. 10); gular sclerite absent; antenna of ♀ strongly moniliform and medially widened (figs 3, 8); ovipositor straight (fig. 3); occipital carina complete; ocelli of ♀ present (fig. 1); dorsal pronope present (fig. 2); maxillary and labial palpi with 6 and 4 segments, respectively; (tribe Mannokeraini); Australian *Mannokeraia* gen. nov.
- Basal half of first tergite wide, open ventrally, its sternite movably joined to its tergite (fig. 25); fore tibia without curved pegs antero-subapically (fig. 22); hind tarsal claws simple (fig. 20); gular sclerite large (♀) to medium-sized (photos 1-2); antenna of ♀ hardly or not moniliform and medially subparallel-sided (figs 14, 25, 32); ovipositor upcurved (fig. 25); occipital carina absent ventrally; ocelli of ♀ absent (fig. 17); dorsal pronope absent (fig. 18); maxillary and labial palpi with 4 and 1 segment(s), respectively; (tribe Masonini); Nearctic, Afrotropical, Australian *Masona* gen. nov.
3. Vein 1-SC+R of hind wing largely absent (figs 34, 37, 594); hypopygium of ♀ retracted far under metasoma, and ovipositor sheath issued closer to middle than to apex of metasoma (figs 46, 56, 597); body and legs densely setose (figs 42, 602); parastigma not differentiated (figs 34, 47, 594); termitophilous; (tribe Doryctinae-Ypsistocerini Cushman, 1923); Neotropical 4

- Vein 1-SC+R of hind wing complete (figs 59, 153); hypopygium of ♀ less retracted under metasoma, and ovipositor sheath issued closer to apex than to middle of metasoma (figs 62, 183); body and legs usually moderately setose, if densely setose then parastigma distinctly differentiated (fig. 98); non-termitophilous (but biology of several genera unknown) 6
- 4. Antennal sockets much closer to eyes than to each other (figs 37, 54); scutellar sulcus absent or nearly so (figs 35, 55); occipital and prepectal carinae absent; maxillary palp with 2-3 segments; first metasomal tergite open ventrally, less sclerotized than dorsally; posterior flange of propleuron absent (figs 46, 56); malar space in lateral view narrow (figs 46, 56); (subtribe Ypsistocerina) 5
- Antennal sockets closer to each other than to eyes (fig. 599); scutellar sulcus distinct (fig. 600); occipital carina laterally and prepectal carina present; maxillary palp with 5 segments; first tergite closed ventrally, as sclerotized as dorsally; posterior flange of propleuron present (fig. 597); malar space in lateral view wide (fig. 597); (subtribe Embobraconini nov.) *Embobracon* gen. nov.
- 5. Maxillary palp with 3 segments; labial palp with 2 segments (fig. 46); third-fifth antennal segments strongly oblique apically (figs 44, 45); fore wing of ♀ with vein 2-SR present (fig. 34); vein r of fore wing shorter than maximum width of pterostigma or subequal (fig. 34); metasoma smooth; upper side of wing membrane conspicuously and long setose (fig. 34); first subdiscal cell of fore wing of ♀ nearly closed and subparallel-sided (fig. 34); wing veins of ♀ slender; scapus ventrally shorter than dorsally (fig. 44); spur of fore tibia about as long as fore basitarsus; maximum length of third antennal segment about 0.9 times fourth segment (fig. 44); vein M+CU of hind wing shorter than vein 1-M (fig. 34) *Termitobracon* Brues
- Maxillary palp with 2 segments; labial palp apparently absent (fig. 56); third-fifth antennal segments truncate apically (fig. 51); fore wing of ♀ without vein 2-SR (figs 47, 49); vein r of fore wing longer than maximum width of (slender) pterostigma (figs 47, 49); metasoma (except first tergite) largely coriaceous; upper side of wing membrane normal, rather short setose (fig. 47); first subdiscal cell of fore wing of ♀ widely open and not parallel-sided (fig. 47); wing veins of ♀ widened (fig. 47); scapus ventrally longer than dorsally (fig. 56); spur of fore tibia much shorter than fore basitarsus (fig. 57); maximum length of third antennal segment about 1.3 times fourth segment (fig. 51); vein M+CU of hind wing longer than vein 1-M (fig. 47) *Ypsistocerus* Cushman
- 6. Vein m-cu of fore wing strongly diverging from vein 1-M posteriorly (fig. 59); legs and head very long bristly setose (figs 62, 67); vein 3-SR of fore wing longer than vein SR1 (fig. 59); vertex transversely striate (fig. 61); vein m-cu of fore wing postfurcal (fig. 59); malar suture present (fig. 60); (subfamily Rhyssalinae Foerster, 1862); Australian..... *Anachyra* gen. nov.
- Vein m-cu of fore wing parallel with vein 1-M posteriorly or converging to vein 1-M posteriorly (figs 71, 142, 300, 494); legs and head normally setose (fig. 347, 351, 502); vein 3-SR of fore wing shorter than vein SR1 (figs 71, 345, 535, 587), exceptionally longer (fig. 98); vertex usually smooth, if transversely striate (fig. 113) then vein m-cu of fore wing antifurcal (fig. 83) and/or malar suture absent (figs 114, 191, 302) 7

7. Face strongly transverse (fig. 73); vein cu-a of hind wing present (fig. 71); hypoclypeal depression very wide (fig. 73); anterior face of fore tibia with cluster of spiny setae (fig. 79); vein 3-M of fore wing largely sclerotized (fig. 71); second submarginal cell of fore wing large (fig. 71); vein 1r-m of hind wing long (fig. 71); vein m-cu of hind wing absent (fig. 71); (subfamily Rhyssalinae Foerster, 1862)
 *Doryctomorpha* Ashmead
- Face usually normal (figs 84, 114, 499), if strongly transverse (fig. 125), then vein cu-a of hind wing absent (fig. 120); hypoclypeal depression medium-sized, narrow (figs 499, 543) or absent (figs 447, 463, 508); anterior face of fore tibia usually only with setae (figs 466, 501) or, if with row of spiny setae (fig. 455) or a row of pegs (figs 96, 97), then vein 3-M of fore wing largely unsclerotized (figs 83, 445), and second submarginal cell of fore wing short (figs 83, 445) and vein 1r-m of hind wing short (figs 83, 445); vein m-cu of hind wing present (fig. 83) or absent (fig. 445) 8
8. Anterior face of fore tibia with row of pegs (figs 96, 97) and with small hypoclypeal depression (fig. 84); fore tibia of ♂ with groove (fig. 97); vein m-cu of hind wing present (fig. 83); vein 1-SC+R of hind wing bent apically (fig. 83); hind tarsal claws with distinct lobe (fig. 95); second metasomal suture strongly sinuate (fig. 94); apex of ovipositor sheath with distinct protuberance (fig. 87); (subfamily Doryctinae Foerster, 1862) *Stenocorse* Marsh
- Anterior face of fore tibia without row of pegs (figs 466, 501), if with some spiny setae (fig. 455) then without hypoclypeal depression (fig. 447); fore tibia of ♂ without groove; vein m-cu of hind wing variable (figs 69, 494, 518, 535); vein 1-SC+R of hind wing straight apically (figs 490, 494, 518), or nearly so; hind tarsal claws without distinct lobe (figs 107, 229, 239, 328), exceptionally more or less developed (figs 371, 378, 455); second metasomal suture straight or nearly so (figs 241, 506, 515) or absent (fig. 130); ovipositor sheath without apical protuberance (figs 347, 443) 9
9. Scapus strongly enlarged (fig. 101); hypopygium of ♀ large, acute apically (fig. 101); first subdiscal cell of fore wing strongly narrowed distad (fig. 98); occipital and prepectal carinae absent (fig. 101)l; (subfamily Vaepellinae Quicke, 1987); Afrotropical *Vaepellis* Quicke
- Scapus normal (figs 111, 325, 576); hypopygium of ♀ small or medium-sized, truncate apically (figs 111, 373, 577); first subdiscal cell of fore wing less narrowed distad, usually parallel-sided (figs 286, 300, 458); occipital and prepectal carinae variable (figs 111, 214, 303) 10
10. Antennal segments 11-14; propodeum with pair of minute tubercles (fig. 110, 111, 133), but absent in *Cedria* which has antennal sockets closer to eyes than to each other (fig. 162); prepectal carina runs to anterior margin of mesopleuron (fig. 167); (tribe Chremylini Hellén, 1957 of the subfamily Pambolinae Marshall, 1885) 11
- Antennal segments more than 15; propodeum without tubercles (figs 205, 472); antennal sockets more removed from eyes (figs 322, 446, 463), or rather close to eyes (mainly in Hormiinae: figs 173, 216, 227, 414); position of prepectal carina variable (figs 205, 461, 472) 15
11. Antennal sockets nearly touching each other (figs 113, 114); hind femur densely sculptured (fig. 115); vein cu-a of hind wing and vein r-m of fore wing present

- (fig. 109); vein 1-SR of fore wing medium-sized (fig. 109); (subtribe Chremylina Hellén, 1957); cosmopolitan *Chremylus* Haliday
- Antennal sockets distinctly removed from each other (fig. 125, 139, 162); hind femur largely smooth; vein cu-a of hind wing and vein r-m of fore wing absent (figs 131, 153); vein 1-SR of fore wing absent or very short (figs 131, 142, 153); (subtribe Cedriina Belokobylskij, 1993); Indo-Australian 12
12. Third antennal segment much shorter than fourth segment, about as long as pedicellus (figs 122, 126); head very robust (fig. 121, 122); first metasomal tergite angulate basally (fig. 130) *Pseudochremylus* gen. nov.
- Third antennal segment at least somewhat longer than fourth segment, and much longer than pedicellus (figs 133, 144, 166); head normal, not enlarged posteriorly (figs 133, 134, 164, 167); first tergite variable basally (figs 140, 155) 13
13. Vein 1-SR+M of fore wing absent (fig. 131); vein 2-SR of fore wing shorter than vein m-cu of fore wing (fig. 131); vein 1-CU1 of fore wing strongly oblique (fig. 131); first subdiscal cell of fore wing narrowed basally (fig. 131); first metasomal tergite angulate basally (fig. 140) *Chremylomorpha* Belokobylskij
- Vein 1-SR+M of fore wing present (figs 142, 153); vein 2-SR of fore wing longer than vein m-cu of fore wing (figs 142, 153); vein 1-CU1 of fore wing weakly or not oblique (fig. 153); first subdiscal cell of fore wing at most slightly narrowed basally (fig. 142); first tergite gradually narrowed basally (figs 146, 155) 14
14. Distance between antennal sockets distinctly less than twice diameter of antennal socket in dorsal view (fig. 145); second metasomal tergite and mesoscutum granulate (fig. 146, 147); metanotum without median carina (fig. 147); anterior depression of second tergite absent (fig. 146) or narrow; anteriorly vein 1-SR+M of fore wing nearly touching vein C+SC+R (fig. 142) *Chremyloides* gen. nov.
- Distance between antennal sockets more than twice diameter of antennal socket in dorsal view (fig. 164); second tergite striate (fig. 155); mesoscutum largely smooth dorsally (fig. 160); metanotum with median carina (figs 156, 157); anterior depression of second tergite distinct (fig. 155); anteriorly vein 1-SR+M of fore wing distinctly removed from vein C+SC+R (fig. 153) *Cedria* Wilkinson
15. Vein cu-a of hind wing completely absent (fig. 233); scutellar sulcus narrow and chevron-shaped (fig. 234); precoxal sulcus long, narrow and upcurved anteriorly; face rather protruding and transverse (figs 236, 240); (subfamily Hormiinae p.p.) .
..... *Austrohormius* Belokobylskij
- Vein cu-a of hind wing present (figs 202, 243, 265), exceptionally reduced (fig. 276); scutellar sulcus usually wider and not chevron-shaped (figs 246, 263, 267), but nearly chevron-shaped in *Apoavga* (fig. 285) which has precoxal sulcus absent (fig. 278); face variable, if distinctly protruding (fig. 481) then face comparatively long (figs 447, 483) 16
16. Second and third metasomal tergites less sclerotized than their epipleura and largely membranous (= desclerotized) dorsally (figs 201, 213); if exceptionally tergites are weakly sclerotized (fig. 241) then scutellum protruding into scutellar sulcus (figs 234, 285, 288) and first tergite comparatively short (fig. 241); (subfamily Hormiinae Foerster, 1862) 17
- Second and third tergites distinctly sclerotized dorsally, similarly or stronger than their epipleura (figs 343, 424, 537, 554); scutellum subtruncate or evenly curved anteriorly (figs 451, 476, 486, 556); first tergite variable, often longer (figs 324, 380, 392, 506, 530, 554, 565) 29

17. Pedicellus large relative to scapus, slightly shorter than scapus (figs 171, 181, 195, 207) **and** vein CU1b of fore wing near level of vein 2-CU1 or nearly so (figs 168, 180, 202, 568); antenna of ♀ slender (figs 171, 182); prepectal carina complete (figs 183, 205), if weakly developed then vein r-m of fore wing absent (fig. 568); (tribe Hormiini Foerster, 1862) 18
- Pedicellus normal, distinctly shorter than scapus (figs 224, 236, 268, 299, 314); if exceptionally comparatively large (fig. 214) then vein CU1b far below level of vein 2-CU1 (fig. 212); prepectal carina absent ventrally (figs 214, 224), exceptionally weakly developed ventrally; vein r-m of fore wing present (fig. 212); (tribe Avgini Belokobylskij, 1993) 20
18. Fore wing mostly without distinct fringe apically (fig. 168); vein M+CU of hind wing longer than vein 1-M (fig. 168); vein 1-R1 (= metacarp) very short, much shorter than pterostigma (figs 168, 177-179) or, if vein 2-SR is absent (but may be faintly developed, figs 177, 178) then vein m-cu of fore wing far antefurcal (fig. 168), ; South Palaearctic *Hormisca* Telenga
- Fore wing with fringe apically (fig. 180); vein 1-R1 (= metacarp) longer than pterostigma (figs 180, 194); vein M+CU of hind wing shorter than vein 1-M (figs 180, 194, 202), exceptionally somewhat longer (fig. 568); vein 2-SR distinct (figs 180, 194; note that vein r-m may be absent (fig. 568)) and vein m-cu of fore wing distinctly postfurcal 19
19. Prepectal carina reaching anterior margin of mesopleuron (fig. 183); vein 3-SR of fore wing distinctly longer than vein 2-SR **and** vein r-m of fore wing present (fig. 180); mesoscutum granulate (fig. 189); first metasomal tergite with dorsope (fig. 190); hind femur strongly sculptured (fig. 186); ovipositor sheath slender and distinctly longer than first tergite (fig. 183); Oriental ... *Taiwanhormius* Belokobylskij
- Prepectal carina remain removed from anterior margin of mesopleuron (figs 193, 205); vein 3-SR of fore wing about as long as vein 2-SR or shorter (figs 194, 202) or vein r-m absent (fig. 568); mesoscutum largely smooth (figs 210, 574) or, if granulate, then dorsope of first tergite absent; hind femur less sculptured, usually smooth (fig. 197); length of ovipositor sheath variable (figs 193, 205); cosmopolitan *Hormius* Nees
20. First metasomal tergite largely desclerotized (= membranous) medially (figs 217, 231); vein m-cu of fore wing antefurcal (fig. 222) or subinterstitial (fig. 212); notauli (shallowly) impressed anteriorly (figs 218, 226); scutellar sulcus wide and transverse (figs 218, 226) 21
- Note. If vein cu-a of hind wing is completely absent (fig. 233) and vein m-cu of hind wing long (fig. 233), cf. *Austrohormius* Belokobylskij.
- First tergite completely sclerotized medially (figs 214, 251, 264, 316); vein m-cu of fore wing variable or, if antefurcal or subinterstitial (fig. 255) then notauli absent anteriorly (fig. 263); scutellar sulcus variable (figs 234, 267, 285) 22
21. Propodeum with median carina nearly as long as propodeum (fig. 218); occipital carina absent, at most with a weak ridge; vein cu-a of fore wing (sub)interstitial (fig. 212); outer hind spur about as long as surrounding setae (fig. 219); Neotropical, South Nearctic *Allobracon* Gahan
- Propodeum with short median carina, much shorter than propodeum (figs 224, 226); occipital carina present; vein cu-a of fore wing distinctly antefurcal (fig. 222); outer hind spur much longer than surrounding setae (fig. 228); Afrotropical (Malagasy, West Africa) *Parachremylus* Granger

- 22 van Achterberg. Generic revision of the subfamily Betylobraconinae. Zool. Verh. Leiden 298 (1995)
22. Vein m-cu of fore wing (narrowly) antefurcal (figs 243, 255); head granulate dorsally (figs 245, 257); notauli absent or nearly so (figs 246, 263) 23
- Vein m-cu of fore wing postfurcal (figs 265, 300); head smooth or rugose dorsally (figs 271, 301); notauli impressed anteriorly (figs 267, 285, 308) 24
23. Vein m-cu of fore wing strongly converging to vein 1-M posteriorly (fig. 243); vein r of fore wing about as long as vein 3-SR (fig. 243); first metasomal tergite narrowed posteriorly (figs 248, 251) and punctate-rugose; vein 1-R1 (= metacarp) about as long as pterostigma (fig. 243); Old World *Avga* Nixon
- Vein m-cu of fore wing parallel to vein 1-M posteriorly (fig. 255); vein r of fore wing distinctly shorter than vein 3-SR (fig. 255); first tergite parallel-sided posteriorly or nearly so (fig. 264) and granulate; vein 1-R1 (= metacarp) shorter than pterostigma (fig. 255); Palaearctic *Pseudobiosteres* Hedwig
24. Vein m-cu of hind wing absent (figs 265, 286); vein M+CU of hind wing longer than vein 1-M (figs 265, 286); mesoscutum overreaching pronotum (fig. 291); vein r of fore wing (slightly) shorter than vein 3-SR (figs 265, 286); vein r-m of fore wing present (figs 276, 286); first subdiscal cell of fore wing usually robust (figs 276, 286); vein 3-M of fore wing largely sclerotized (figs 265, 286); Australian region 25
- Vein m-cu of hind wing present (figs 300, 310); vein M+CU of hind wing about as long as vein 1-M (fig. 310) or shorter (fig. 300); mesoscutum not overreaching pronotum (figs 303, 314); vein r of fore wing longer than vein 3-SR or about of equal length (figs 300, 310); vein r-m of fore wing present (fig. 300), or absent; first subdiscal cell of fore wing slender (figs 300, 310); vein 3-M of fore wing largely unsclerotized (figs 300, 310); cosmopolitan except Australian region 28
25. Vein r of fore wing nearly as long as vein 3-SR, subvertical (fig. 265); propodeum completely areolate (fig. 267); ovipositor sheath strongly widened (fig. 268); occipital carina running directly to base of mandible (fig. 270); first subdiscal cell of fore wing robust (fig. 265) *Proavga* Belokobylskij
- Vein r of fore wing at most 0.6 times vein 3-SR (figs 276, 286), and if moderately long then also oblique (fig. 286); propodeum without distinct areolation (figs 285, 288); ovipositor sheath slender to moderately widened (figs 278, 291); occipital carina connected to hypostomal carina distinctly above base of mandible; shape of first subdiscal cell of fore wing variable (figs 276, 286) 26
26. Prepectal carina completely absent (fig. 278); scutellar sulcus chevron-shaped, narrow (fig. 285); first discal cell of fore wing comparatively slender (fig. 276); lateral areas of first metasomal tergite narrow, posteriorly most of tergite evenly convex (fig. 280); hind femur distinctly widened (fig. 283); subbasal cell of hind wing open apically (fig. 276) *Apoavga* gen. nov.
- Prepectal carina present laterally, at least with a short part (fig. 291); scutellar sulcus transverse, wide, but narrowed medially (fig. 288); first discal cell of fore wing robust (fig. 286); lateral areas of first tergite wide, or posteriorly most of tergite flattened (fig. 296); hind femur at most moderately widened (fig. 287); subbasal cell of hind wing closed apically (fig. 286) 27
27. Submedial antennal segments slender in dorsal and lateral view (fig. 291); fore telotarsus somewhat widened (fig. 292); anterior subalar depression with carina (fig. 291); vein 3-SR of fore wing about 3 times vein r (fig. 286) *Hormiitis* gen. nov.

- Submedial antennal segments in dorsal view strongly widened (fig. 643) and shortened in lateral view (fig. 644); fore telotarsus distinctly widened (fig. 647); anterior subalar depression smooth (fig. 641); vein 3-SR of fore wing about twice as long as vein r (fig. 637) *Canberria* Belokobylskij
- 28. Mesocutum with a wide and crenulate median depression between notauli (fig. 308); notauli wide and deep posteriorly (fig. 308); vertex transversely and irregularly rugulose or aciculate (fig. 301); precoxal sulcus and mesopleuron dorsally distinctly sculptured (fig. 303); lateral area of first metasomal tergite wide (fig. 309); propodeum without areolation (fig. 309); scutellum angulate laterally (fig. 308); vein CU1a situated anteriorly (figs 300, 307); scutellar sulcus deep and wide (fig. 308); South Palaearctic, Oriental *Pseudohormius* Tobias & Alexeev
- Mesocutum with a narrow and usually smooth median depression between notauli (fig. 319); notauli narrow and shallow posteriorly (fig. 319); vertex smooth (fig. 312); precoxal sulcus and mesopleuron often smooth (fig. 314); lateral area of first tergite comparatively narrow (fig. 316); propodeum areolate (fig. 319); scutellum gently rounded laterally (fig. 319); vein CU1a situated more posteriorly (fig. 317); scutellar sulcus shallow and comparatively narrow (fig. 319); cosmopolitan, except Australian region *Parahormius* Nixon
- 29. Ventrally occipital carina directly running to base of mandible, straight (fig. 567); occipital flange absent; prepectal carina absent ventrally and occipital carina present; Australian 30
- Ventrally occipital carina curved towards hypostomal carina (fig. 531) or absent ventrally; occipital flange present (figs 531, 548), but may be narrow; prepectal carina present ventrally (figs 472, 481) 31
- 30. First metasomal tergite evenly convex posteriorly (fig. 565); prepectal carina present laterally (fig. 559); vein m-cu of fore wing subinterstitial or just antefurcal, distinctly angled with vein 2-CU1 (fig. 555); median carina of propodeum long, but may be reduced anteriorly and posteriorly (fig. 556); ovipositor sheath of ♀ comparatively slender (fig. 559); face rather bulging (fig. 559); second metasomal tergite without oblique antero-lateral grooves (fig. 565); (subfamily Rhysipolinae Foerster, 1862) *Neoavga* Belokobylskij
- First tergite with wide flattened areas posteriorly (fig. 272); prepectal carina absent laterally (fig. 268); vein m-cu of fore wing postfurcal, gradually merging into vein 2-CU1 (fig. 265); median carina of propodeum comparatively short (fig. 267); ovipositor sheath of ♀ strongly widened (fig. 268); face flat (fig. 268); second tergite with oblique antero-lateral grooves (fig. 272); (subfamily Hormiinae Foerster, 1862) *Proavga* Belokobylskij
- 31. All tarsal claws coarsely pectinate (figs 327, 341); dorsal carinae of first metasomal tergite joined to enclose a triangular area (figs 324, 343) and hind tarsus shortened (figs 331, 340); prosternum lamelliform, strongly protruding and visible in lateral view (fig. 326); fore tarsal segments comparatively wide (figs 328, 338); transverse mesoscutal suture widened in front of scutellar sulcus; labrum (largely) flat and more or less slanted backwards; second submarginal cell of fore wing small and vein r of fore wing longer than vein 2-SR (figs 321, 333); hind basitarsus with specialized area (fig. 330); (tribe Yeliconini van Achterberg, 1991 of the subfamily Rogadinae Foerster, 1862) *Yelicones* Cameron

- Tarsal claws setose (figs 350, 479) or, if exceptionally only fore claws pectinate (fig. 512), then dorsal carinae of first tergite joined to enclose a semi-circular area (fig. 515) and hind tarsus slender (fig. 516); prosternum indistinctly developed, not protruding, and invisible in lateral view; fore tarsal segments usually less transverse (figs 352, 455, 466, 512); transverse mesoscutal suture not widened medially; labrum more or less concave, vertical, not slanted backwards; second submarginal cell of fore wing medium-sized (figs 345, 434) or vein r-m absent (figs 357, 494, 546), if small (fig. 381) then vein r of fore wing shorter than vein 2-SR (fig. 381); hind basitarsus without specialized area 32
- 32. Face protruding nose-like (figs 346, 347); dorsal margin of clypeus strongly arched (fig. 346); ovipositor sheath widened (fig. 347); (provisionally included in the tribe Rogadini of the subfamily Rogadinae Foerster, 1862); Australian (New Zealand) *Rhinoprotoma* gen. nov.
- Face normal, at most moderately protruding (figs 367, 529, 548); dorsal margin of clypeus slightly arched (fig. 499) or dorsal margin invisible (fig. 447); ovipositor sheath slender (figs 443, 448) 33
- 33. Propodeum distinctly areolate (figs 372, 388); fourth metasomal tergite largely retracted under third tergite and smooth (figs 373, 433; but fourth visible and sculptured in *Tetratermus* Wharton, 1993, which has fifth and following tergites hidden below fourth tergite: fig. 385); second tergite longitudinally striate (figs 380, 392), but sometimes largely reticulate (fig. 406) 34
- Propodeum not distinctly areolate (figs 451, 476), at most with a posterior areola (figs 460, 453); fourth and fifth tergites distinctly visible behind third tergite and sometimes sculptured (figs 472, 538, 548); sculpture of first and second tergite variable (figs 462, 477, 485, 530, 554) 40
- Note. Sculpture of several Betylobraconinae is similar to that of Lysiterminae.
- 34. Spiracles of second and third metasomal segments in their epipleura (fig. 373); vein CU1a of fore wing situated near level of vein 2-1A, below middle of subdiscal cell (fig. 368); third metasomal tergite without lamella or serration posteriorly (fig. 373); first subdiscal cell of fore wing robust (fig. 368); (subfamily Rhyssalinae Foerster, 1862); Nearctic *Lysitermoides* gen. nov.
- Spiracles of second and third segments in their nota (figs 385, 395); basally vein CU1a of fore wing situated near or above middle of subdiscal cell (figs 393, 402, 409); third metasomal tergite often with lamella posteriorly or apex of tergite serrate (figs 430, 440); first subdiscal cell of fore wing slender (figs 381, 402, but less so in *Aulosaphoides*, fig. 421); (subfamily Lysiterminae Tobias, 1968) 35
- 35. Carapace consists of four segments (fig. 385); second metasomal tergite with anterior corners depressed (fig. 392); vein M+CU of hind wing shorter than vein 1-M and parastigma distinctly differentiated (fig. 381); second metasomal suture wide (fig. 392); fourth tergite with lateral crease (fig. 385); Australian *Tetratermus* Wharton
- Carapace consists of three segments (figs 367, 395, 412, 433); second tergite without anterior depressions (figs 367, 420, 424); vein M+CU of hind wing about as long as vein 1-M (figs 409, 421, 434) or, if shorter, then parastigma virtually absent (figs 357, 393, 402); second metasomal suture narrow (figs 367, 401, 420, 424); fourth tergite without lateral crease 36

36. First metasomal tergite immovably joined to second tergite (fig. 367); vein CU1b of fore wing absent, resulting in an apically open first subdiscal cell (fig. 357); vein 3-SR of fore wing comparatively long (fig. 357); vein 2-SR of fore wing largely absent (fig. 357); South Palaearctic *Tritermus* van Achterberg
- First tergite movably joined to second tergite (figs 373, 395); vein CU1b of fore wing present (at least as a pigmented trace: fig. 381) and first subdiscal cell closed (figs 368, 393, 402); vein 3-SR of fore wing shorter (figs 368, 381, 393); vein 2-SR of fore wing usually present (figs 381, 402), but frequently absent in *Lysitermus* Foerster (fig. 393) 37
37. Vein M+CU of hind wing shorter than vein 1-M (figs 393, 402); parastigma virtually absent (fig 393, 402); dorsal carinae of first tergite joined to semi-circular carina basally (fig. 401); vein CU1a of fore wing above or near level of vein 2-CU1 (figs 393, 402); vein 2-SR of fore wing often largely absent (fig. 393); Holarctic, Neotropical *Lysitermus* Foerster
- Vein M+CU of hind wing about as long as vein 1-M (figs 409, 421, 434); parastigma distinct (figs 421, 434), except in *Acanthormius* Ashmead (fig. 409); dorsal carinae of first tergite free basally (figs 420, 424), except in *Aulosaphes* Muesebeck and *Aulosaphoides* gen. nov. (figs 424, 438) which have vein CU1a of fore wing distinctly below level of vein 2-CU1 (figs 421, 434); vein 2-SR of fore wing present (figs 409, 421, 434) 38
38. Parastigma not differentiated from vein 1-SR (fig. 409); vein CU1a of fore wing at level of vein 2-CU1 or situated more anteriorly (fig. 409), exceptionally just below level of vein 2-CU1; third metasomal tergite nearly always with apical teeth laterally (fig. 420); vein cu-a of fore wing indistinct (fig. 409); Palaetropics *Acanthormius* Ashmead
- Parastigma differentiated (figs 421, 434); vein CU1a of fore wing below level of vein 2-CU1 (figs 421, 434); third tergite at most with lamella posteriorly (figs 430, 443); vein cu-a of fore wing medium-sized (figs 421, 434) 39
39. Vein r of fore wing issued distinctly in front of middle of pterostigma (fig. 421); mesoscutum with irregular median carina (or indistinct sulcus) anteriorly (fig. 425); third metasomal tergite with lamella posteriorly (figs 424, 430, 433), apex of tergite itself not serrate; mandibles unidentate; mesopleuron crenulate anteriorly (fig. 433); vein 2-SR of fore wing distinctly shorter than vein 3-SR or about as long (fig. 421); Oriental *Aulosaphoides* gen. nov.
- Vein r of fore wing issued submedially from pterostigma (fig. 434); mesoscutum without median carina or groove anteriorly (fig. 439); third tergite without lamella posteriorly (figs 440, 443), and sometimes serrate; mandibles bidentate, but second tooth sometimes minute; mesopleuron smooth anteriorly (fig. 443), at most with some short striae; vein 2-SR of fore wing longer than vein 3-SR (fig. 434) or about as long; Indo-Australian, South Palaearctic *Aulosaphes* Muesebeck
40. Median carina of propodeum absent or comparatively short (figs 451, 460, 511); metasoma normal (figs 448, 496, 510); precoxal sulcus usually more or less sculptured, at least medially (figs 448, 461, 472), but sometimes smooth (fig. 481); hypoclypeal depression absent or minute (figs 447, 463, 478, 483, 499); (subfamily Betylobraconinae Tobias, 1979) 41
- Median carina of propodeum at least half as long as propodeum (figs 536, 553); metasoma often rather carapace-like (fig. 548); precoxal sulcus absent (figs 538,

- 548) or present as a smooth shallow depression; hypoclypeal depression present (figs. 543, 547); (subfamily Rogadinae Foerster, 1862); New World 47
41. Vein M+CU of hind wing more than twice as long as vein 1-M (fig. 445); vein M+CU1 of fore wing largely unsclerotized (fig. 445); vein m-cu of fore wing distinctly postfurcal (fig. 445); fore tibia with some spines (fig. 455); antennal sockets touching each other (fig. 446); dorsal carinae of first metasomal tergite not united basally (fig. 454); scutellar sulcus narrowed and finely crenulate (fig. 451); vein 3-M of fore wing largely unsclerotized (fig. 445); vein m-cu of hind wing absent (fig. 445); (tribe Planitorini nov.); Australian *Planitorus* gen. nov.
- Vein M+CU of hind wing about as long as vein 1-M or shorter (figs 458, 470, 480, 494); vein M+CU1 of fore wing completely sclerotized (figs 458, 470, 490); vein m-cu of fore wing interstitial or antefurcal (figs 458, 470, 494, 507); fore tibia without spines (fig. 466); antennal sockets remaining removed from each other (figs 459, 484, 508); dorsal carinae of first tergite (circularly) united or obsolescent basally (figs 462, 477, 485, 515, 530); scutellar sulcus wide and carinate (figs 476, 486, 505, 511); at least basal half of vein 3-M of fore wing sclerotized (figs 458, 470, 494, 507); vein m-cu of hind wing present, but sometimes short (figs 458, 494, 507) 42
42. Vein CU1b of fore wing absent (figs 458, 470); antennal sockets closer to eyes than to each other (figs 459, 463, 471, 478), but at about equal distance in *Promesocentrus* gen. nov.; face hardly protruding (figs 461, 472, 493), but rather convex in *Promesocentrus* gen. nov. (figs 592, 593); vein M+CU1 of fore wing straight or weakly curved subapically (figs 458, 470, 587); hind wing venation normal, its apical half with two spurious veins, which are subhorizontal (figs 458, 470); frons more or less depressed laterally (figs 459, 463, 471, 478); subbasal cell of hind wing comparatively large (figs 458, 470) to medium-sized (fig. 587); (tribe Betylobraconini Tobias, 1979); Australian 43
- Vein CU1b of fore wing present (figs 480, 490, 494); antennal sockets closer to each other than to eyes (figs 484, 497, 508); face distinctly protruding, antenna situated on a shelf (figs 481, 491, 510); vein M+CU1 of fore wing strongly curved apically (figs 480, 490, 494); apical half of hind wing with one long spurious oblique vein, which is situated comparatively far posteriorly, resulting in a wide, largely veinless, cell antero-apically (figs 480, 490, 494, 507, 518); frons flat laterally (figs 484, 497, 508); subbasal cell of hind wing comparatively small to medium-sized (figs 480, 490, 507); (tribe Facitorini nov.) 44
42. Fore coxa enlarged, and angulate posteriorly (figs 461, 469); head in dorsal view strongly transverse (fig. 459); occipital carina situated far mesad (fig. 469); head with deep and narrow transverse groove just above antennal sockets (fig. 463) *Betylobracon* Tobias
- Fore coxa normal, rounded posteriorly (fig. 472); head in dorsal view normal, less transverse (fig. 471); occipital carina situated far more laterally (fig. 472); head without distinct transverse groove just above antennal sockets (fig. 478) 44
- Note. If labrum is distinctly concave, first subdiscal cell of fore wing comparatively robust and telotarsi enlarged, cf. aberrant small specimens of the genus *Aleiodes* Wesmael, 1838 (Rogadinae-Rogadini).
44. Vein r of fore wing vertical (fig. 587); vein M+CU1 of fore wing nearly vertical (fig. 587); frons slightly convex laterally (figs 591, 592); second metasomal tergite without triangular medio-basal area; clypeus distinctly separated from face (fig. 591); face distinctly protruding (figs 592, 593); propodeum with strong lamella laterally, acute apically *Promesocentrus* gen. nov.

- Vein r of fore wing strongly oblique (fig. 470); vein M+CU1 of fore wing distinctly sinuate (fig. 470); frons more or less concave laterally (figs 471, 478); second tergite with triangular medio-basal area, but sometimes indistinct; clypeus not separated from face medially (fig. 478); face not protruding (figs 471, 472); propodeum without acute lateral lamella *Mesocentrus* Szépligeti
- 45. Vein CU1a of fore wing near or above level of vein 2-CU1 (figs 494, 507, 518); scutellum with continuous subposterior depression (figs 505, 511); dorsope small (figs 506, 515); New World 46
- Vein CU1a of fore wing distinctly below level of vein 2-CU1 (figs 480, 490); scutellum without continuous subposterior depression (fig. 486); dorsope comparatively large (figs 485, 492); South Palaearctic, Indo-Australian *Facitorus* gen. nov.
- 46. Vein r-m of fore wing absent (fig. 494); vein r of fore wing about as long as vein 2-SR or longer (figs 494, 579); vein m-cu of fore wing distinctly antefurcal (figs 494, 579); vein SR1 of fore wing unsclerotized apically, resulting in an open marginal cell (fig. 494), or sclerotized and cell closed (fig. 579); apex of vein 1-M of hind wing close to wing margin (fig. 494) *Jannya* gen. nov.
- Vein r-m of fore wing present (figs 507, 518); vein r of fore wing shorter than vein 2-SR (figs 507, 518, 528); vein m-cu of fore wing (sub)interstitial (figs 507, 518, 528); vein SR1 of fore wing sclerotized apically, resulting in a closed marginal cell (figs 507, 528); apex of vein 1-M of hind wing distinctly removed from wing margin (figs 507, 528) *Conobregma* gen. nov.
- 47. Side of scutellum normal, without large smooth triangular area posteriorly (fig. 536); dorsal carinae of first metasomal tergite enclosing a triangular area (fig. 537); occipital carina absent laterally (figs 538, 542); tarsal claws normal (figs 539, 541); second tergite with a medium-sized triangular area medio-basally (fig. 537); mesopleuron angulate posteriorly (fig. 538); hind basitarsus with wide ventral lamella (fig. 544); vein 1-SR+M of fore wing distinctly curved (fig. 535); antenna with 28-36 segments; (tribe Rogadini Foerster, 1862); Neotropical *Bulborogas* gen. nov.
- Side of scutellum with large smooth triangular area posteriorly (figs 553, 607, 616, 627); dorsal carinae of first tergite enclosing a semi-circular area (fig. 554); occipital carina present laterally (figs 548, 551); tarsal claws reduced (figs 611, 612, 622, 633, 635); second tergite without a triangular area medio-basally (figs 554, 609), at most with a median carina (figs 554, 636); mesopleuron rounded posteriorly (figs 548, 608); hind basitarsus without wide ventral row of setae (fig. 552); vein 1-SR+M of fore wing straight or slightly sinuate (figs 546, 605, 626); antenna with 13-14 segments; (tribe Stiropiini van Achterberg, 1993); Neotropical, South Nearctic 48
- 48. Malar space short to medium-sized (figs 606, 621, 630); ocelli situated between eyes in dorsal view (figs 613, 617, 632); malar suture variable (figs 606, 621, 630); if absent or obsolescent then second metasomal tergite with median carina (fig. 619); veins r-m and CU1b of fore wing variable (figs 605, 615, 626); occipital carina usually weak but present medio-dorsally (fig. 632), at most narrowly interrupted (fig. 617) 49
- Malar space long (fig. 547); ocelli situated behind eyes in dorsal view (fig. 551); malar suture absent (fig. 547) **and** median carina of second tergite absent (fig. 554); veins r-m and CU1b of fore wing absent (fig. 546); occipital carina widely absent medio-dorsally (fig. 551) *Polystenidea* Viereck

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49. Vein r-m of fore wing present, resulting in a subquadrate, subtriangular or trapezoid second submarginal cell (figs 615, 626); vein SR1 of fore wing straight or nearly so (figs 615, 626); malar suture and vein CU1b of fore wing variable; hind femur usually rather slender to rather widened (figs 624, 633) *Stiropius* Cameron
- Vein r-m of fore wing absent, without second submarginal cell (fig. 605); vein SR1 of fore wing more or less curved (fig. 605); malar suture present (fig. 606); vein CU1b of fore wing absent (fig. 605); hind femur variable, frequently distinctly inflated (figs 614, 774) *Choreborogas* Whitfield

Descriptions

Subfamily Betylobraconinae Tobias, 1979 (figs 445-534, 579-585, 587-593)

Betylobraconinae Tobias, 1979: 130-131; van Achterberg, 1984: 53; Quicke & van Achterberg, 1990: 33-34; van Achterberg, 1991: 7, 1993: 17; Quicke, 1994: 159-160.

Diagnosis.— Hypoclypeal depression absent or minute (figs 447, 463, 478, 483, 499); maxillary and labial palpi with 6 and 4 segments, respectively; occipital carina joining hypostomal carina distinctly above base of mandible and occipital flange medium-sized to small (fig. 531); ventral margin of clypeus straight; labrum flat or slightly concave, exposed vertically or slanted backwards, or largely hidden behind clypeus; prepectal carina (nearly) reaching anterior margin of mesopleuron (figs 461, 472, 481); precoxal sulcus more or less sculptured, at least medially impressed (figs 448, 461, 472), but sometimes smooth (fig. 481) or absent (fig. 448); median carina of propodeum absent or comparatively short (figs 451, 460, 511); vein 3-M of fore wing largely sclerotized (figs 458, 480), except in Planitorini (fig. 445); tarsi shortened, especially third and fourth segments of fore tarsus very short and telotarsus enlarged, wider than fourth tarsal segment (figs 455, 466, 473, 487, 501); length of fore tibial spur 0.6-1.0 times fore basitarsus (figs 455, 466); hind tibial spurs very short (fig. 516) to medium-sized (fig. 456); hind tarsus as long as hind tibia or longer (figs 468, 475, 502); metasoma normal, without carapace (figs 448, 496, 510); second metasomal tergite frequently with triangular or semicircular area medio-basally (figs 462, 477, 524), and its spiracle in notum, close to lateral fold (fig. 461, 496), but in Planitorini in epipleuron.

Distribution.— Cosmopolitan, except North Holarctic and Afrotropical regions.

Note.— The early Cretaceous Eoichneumonidae, which are a good candidate to be the sister-group of the Braconidae (Rasnitsyn & Sharkey, 1988), have a remarkably similar venation of the fore wing, several Betylobraconinae, except for the (vague) indication of vein m-cu.

Tribe Betylobraconini Tobias, 1979 (figs 458-479, 493, 587-593)

Betylobraconinae Tobias, 1979: 130-131.

Diagnosis.— Antennal sockets closer to eyes than to each other (figs 459, 471);

face normal, not protuberant (figs 461, 471, 472); frons more or less depressed laterally (figs 459, 471); hypoclypeal depression absent or minute (figs 463, 478); notauli present (figs 460, 476); scutellar sulcus moderately wide (fig. 460) or moderately narrow (fig. 476); pleural sulcus crenulate, but largely smooth in *Promesocentrus*; veins 3-M and M+CU1 of fore wing largely sclerotized, M+CU1 straight or weakly curved apically (figs 458, 470); vein m-cu of fore wing distinctly antefurcal (figs 458, 470); vein cu-a of fore wing vertical, short (figs 458, 470); vein CUb of fore wing absent; second submarginal cell of fore wing rather robust (fig. 470); vein m-cu of hind wing present, medium-sized (fig. 458); apical half of hind wing with two distinct spurious veins, with a narrow marginal cell antero-apically (figs 458, 470); vein M+CU of hind wing about as long as vein 1-M or somewhat shorter; fore tibia without spines; dorsal carinae of first metasomal tergite circularly united subbasally (figs 462, 477), but sometimes obsolescent.

Distribution.— Australian (including Papuan; two genera).

Betylobracon Tobias, 1979
(figs 458-469, 493)

Betylobracon Tobias, 1979: 131, figs 2-8. Type species (by original designation): *Betylobracon waterhousei* Tobias, 1979 [examined].

Diagnosis.— Length of fore wing 3.0-3.4 mm; antennal segments 21-23, third segment much longer than fourth segment (fig. 461), and without apical spine (fig. 465); occipital carina strong dorsally, mesally situated (fig. 469), joining hypostomal carina very far above base of mandible (fig. 448); frons very deeply impressed laterally (figs 459, 463); eyes glabrous, not emarginate; vertex short setose (fig. 461); head about normal length, slightly narrowed ventrally (fig. 463); hypoclypeal depression absent (figs 461, 463); labrum flat and setose; clypeus not differentiated from face, densely setose and punctate, its ventral margin straight, thick (fig. 463); occipital flange nearly absent (fig. 461); malar suture absent; mandible twisted, and virtually unidentate apically; prosternum inconspicuous; propleuron angularly protruding medio-posteriorly (figs 461, 469); no pronope; precoxal sulcus complete, posteriorly narrow and largely smooth and remainder sculptured (fig. 461); anterior subalar area normal, and its depression with weak carinae (fig. 461); notauli complete and narrowly crenulate (fig. 460); transverse suture of mesonotum present (fig. 460); scutellar sulcus medium-sized (fig. 460); scutellum without continuous subposterior depression (fig. 460); metanotum with short median carina (fig. 460); mesosternal sulcus deep and with some microcrenulae; metapleural flange medium-sized, acute (fig. 461); propodeum reticulate-rugose, and with a short and weak median carina, similar to surrounding sculpture and without distinct areolation (fig. 460); vein r-m of fore wing present; base of vein CU1a of fore wing near level of vein 2-1A (fig. 458); parastigma small (fig. 458); first subdiscal cell of fore wing elongate (fig. 458); vein M+CU1 of fore wing nearly straight (fig. 458); subbasal cell of hind wing medium-sized (fig. 458); vein m-cu of hind wing rather long (fig. 458); fore tibial spur with curved apex, about 0.6 times basitarsus (fig. 466); fore tarsus rather robust and its telotarsus distinctly wider than fourth tarsal segment (fig. 466); fore coxa enlarged, angulate; fore femur nearly as short as fore coxa (fig. 466); middle and hind tarsi rather slender

(figs 467, 468); tarsal claws rather slender, simple (fig. 464); dorsope rather small (fig. 462); at most first and second metasomal tergites sculptured, without transverse sculpture, second tergite with elongate semi-circular medio-basal area (fig. 462); fourth-seventh tergites exposed (fig. 461); ovipositor straight, without notch or teeth (fig. 461); length of ovipositor sheath 0.13-0.16 times fore wing.

Distribution.— Australian (including Papuan: two species examined).

Note.— The absence of the ovipositor sheath of the holotype (Tobias, 1979) is an artefact and not a character state of the genus.

Betylobracon waterhousei Tobias, 1979
(figs 458-469, 493)

Betylobracon waterhousei Tobias, 1979: 131, figs 2-8; van Achterberg, 1993: 118.

Material.— Holotype, ♀ (ANIC), "[Australia], N Qld, 6.v.1967, D.H. Colless", "Mt Edith Forest Road, 1 m off Danbulla Road", "Holotypus *Betylobracon waterhousei* Tobias"; 3 ♀♀ (RMNH, Dept. of Primary Industries Collection, Brisbane), "[Australia], N Q[ueensland], Windsor Tableland via Mt Carbone, 10.xi-26.xii.[19]83, Storey/Titmarsh", "ex Malaise trap".

Holotype, ♀, length of body 3.7 mm, and of fore wing 3.1 mm.

Head.— Remaining antennal segments 16, length of third segment 1.7 times fourth segment, length of third and fourth segments 2.0 and 1.2 times their width, respectively (fig. 461); maxillary palp 0.7 times height of head; length of eye in dorsal view 2.3 times temple (fig. 459); OOL:diameter of ocellus:POL = 8:3:10; vertex partly rugulose (fig. 459); face and clypeus convex, densely punctate (fig. 463); length of malar space 1.8 times basal width of mandible (fig. 461).

Mesosoma.— Length of mesosoma 1.6 times its height; side of pronotum smooth, except some short striae (fig. 461); epicnemial area rugose; precoxal sulcus partly rugose (fig. 461); remainder of mesopleuron smooth; metapleuron smooth medially, rather flat, rugose ventrally; mesoscutum sparsely setose; lobes of mesoscutum densely and coarsely punctate (fig. 460); scutellum punctate, rather flat; propodeum reticulate-rugose, anteriorly and apico-laterally largely smooth.

Wings.— Fore wing: r:3-SR:SR1 = 6:16:34; 1-SR+M strongly sinuate; r oblique; 1-CU1:2-CU1 = 10:19; 3-CU1 oblique, distinctly shorter than m-cu (fig. 458); 2-SR:3-SR:r-m = 8:16:9. Hind wing: 1-SC+R terminating close to anterior margin of wing (fig. 458).

Legs.— Hind coxa smooth; length of femur, tibia and basitarsus of hind leg 2.2, 5.4 and 4.8 times their width, respectively (fig. 468); length of hind tibial spurs 0.3 and 0.4 times hind basitarsus.

Metasoma.— Length of first tergite 1.4 times its apical width, its surface punctate-rugulose, its basal third smooth, and laterally with some rugae, distinctly concave basally, posteriorly rather flat, its dorsal carinae present in basal 0.4 of tergite, subparallel (fig. 462); second and following tergites smooth, except for curved basal groove of second tergite (fig. 462); second suture largely absent; second tergite without sharp lateral crease (fig. 461); length of ovipositor 0.16 times fore wing (its sheath is missing).

Colour.— Dark brown; four basal antennal segments, face, ventral half of head, body ventrally and legs, yellowish-brown; mesoscutum and scutellum black; ptero-

stigma, parastigma and veins dark brown; wing membrane largely infusate, but rather patchily and apically the membrane is paler.

Variation.— Length of body 3.7-4.1 mm, of fore wing 3.0-3.4 mm; antennal segments 21(10) or 23(1); fore femur may be infusate; ovipositor sheath yellowish with dark brown tip and sparsely setose.

Variation.— Antennal segments 17(2); length of first metasomal tergite 1.5-1.6 times its apical width; vein r of fore wing may be half as long as in holotype or even shorter; propleuron may be smooth medially.

Distribution.— Australia (Queensland).

Mesocentrus Szépligeti, 1900
(figs 470-479)

Mesocentrus Szépligeti, 1900: 56; Shenefelt, 1978: 1871. Type species (by monotypy): *Mesocentrus crassipes* Szépligeti, 1900 [examined].

Diagnosis.— Length of fore wing about 2 mm; antennal segments 15-17, third segment slightly longer than fourth segment (fig. 472); occipital carina nearly complete, ventrally and dorsally narrowly reduced, not joining occipital carina; frons distinctly impressed laterally (figs 471, 478); eyes densely setose, not emarginate; vertex short setose; head about of normal length, distinctly narrowed ventrally (fig. 478); hypoclypeal depression absent (fig. 478); labrum flat, medially largely glabrous and laterally setose; clypeus not differentiated from face medially, densely setose and smooth, its ventral margin slightly concave or straight, not differentiated (fig. 478); occipital flange nearly absent (fig. 472); malar suture shallowly impressed; mandible rather twisted, and bidentate apically; prosternum inconspicuous; propleuron normal, not protruding medio-posteriorly (fig. 472); no pronope; precoxal sulcus complete, rather widely crenulate (fig. 472); anterior subalar area normal, its depression with distinct carina (fig. 472); notauli complete and largely smooth (fig. 476); scutellar sulcus rather narrow, curved (fig. 476); scutellum without continuous subposterior depression (fig. 476); metanotum with medium-sized median carina (fig. 476); posterior transverse suture of mesonotum present (fig. 476); mesosternal sulcus deep and crenulate; metapleural flange large, obtuse (fig. 476); propodeum largely coarsely reticulate, and with a short and indistinct median carina, similar to surrounding sculpture, and without distinct areolation (fig. 476); vein r-m of fore wing present; base of vein CU1a of fore wing about near level of middle of first subdiscal cell (fig. 470); parastigma medium-sized (fig. 470); first subdiscal cell of fore wing elongate (fig. 470); vein M+CU1 of fore wing sinuate (fig. 470); subbasal cell of hind wing medium-sized; vein m-cu of hind wing rather long (fig. 470); fore spur straight apically, about as long as basitarsus (fig. 473); fore tarsus distinctly shortened (as middle tarsus) and its telotarsus distinctly wider than fourth tarsal segment (figs 473, 474); fore coxa normal (fig. 472); fore femur longer than fore coxa; hind tarsus slender (fig. 475); tarsal claws rather slender, simple (fig. 479); dorsope medium-sized, deep (fig. 477); at most first and second metasomal tergites distinctly sculptured, with transverse sculpture, second tergite with small triangular medio-basal area (fig. 477); third tergite may be superficially sculptured; fourth-seventh tergites exposed (fig. 472); ovipositor straight, without notch or teeth (fig. 472); length of ovipositor sheath

about 0.2 times fore wing.

Distribution.— Australian (including Papuan: two described and several undescribed species examined).

Mesocentrus crassipes Szépligeti, 1900
(figs 470-479)

Mesocentrus crassipes Szépligeti, 1900: 56; Shenefelt, 1978: 1871; van Achterberg, 1993: 117.

Material.— Holotype, ♀ (TMA), "N. Guinea, Biró [18]96", "Friedrich-Wilh.-hafen", "*crassipes* det Szépligeti", "Lectotypus *Mesocentrus crassipes* Szépl., 1900, ♀, Papp, '69, "Hym. Typ. No. 1759, Mus. Budapest". Paralectotype: 1 ♂, topotypic.

Holotype, ♀, length of body 3.1 mm, and of fore wing 2.2 mm.

Head.— Remaining antennal segments 16, scapus compressed, length of third segment 1.1 times fourth segment, length of third and fourth segments 2.5 and 2.3 times their width, respectively (fig. 472); length of maxillary palp 0.9 times height of head; length of eye in dorsal view 2.8 times temple (fig. 471); OOL:diameter of ocellus:POL = 7:3:4; face and clypeus rather flat, only face finely transversely rugose and indistinctly sculptured medially (fig. 478); length of malar space 0.8 times basal width of mandible (fig. 472).

Mesosoma.— Length of mesosoma 1.9 times its height; side of pronotum coriaceous, with crenulae anteriorly and striae posteriorly (fig. 492); epicnemial area rugose; precoxal sulcus evenly crenulate (fig. 472); remainder of mesopleuron smooth; metapleuron reticulate; mesoscutum setose; lobes of mesoscutum and scutellum rather flat, coriaceous-granulate (fig. 476).

Wings.— Fore wing: r:3-SR:SR1 = 9:15:26; 1-SR+M sinuate; r oblique; 1-CU1:2-CU1 = 7:18; 3-CU1 oblique, distinctly shorter than m-cu (fig. 470); 2-SR:3-SR:r-m = 8:15:9. Hind wing: 1-SC+R terminating close to anterior margin of wing (fig. 470).

Legs.— Hind coxa smooth; length of femur, tibia and basitarsus of hind leg 3.3, 5.5 and 5.0 times their width, respectively (fig. 475); length of hind tibial spurs 0.30 and 0.35 times hind basitarsus.

Metasoma.— Length of first tergite 1.4 times its apical width, its surface coarsely longitudinally rugose, with fine transverse sculpture, rather concave basally, medially convex, its dorsal carinae united basally (fig. 477); second tergite coarsely longitudinally striate, but postero-laterally smooth (fig. 477); second suture distinct; second tergite with sharp lateral crease (fig. 472); length of ovipositor sheath 0.22 times fore wing.

Colour.— Black(ish); flagellum (except 11th-16th segments which are darkened), head (except stemmaticum and labrum), mesoscutum, tegulae, ovipositor sheath, and veins, brown; labrum, legs largely, scapus, pedicellus and metasoma ventrally, pale yellowish; middle femur apico-ventrally and hind femur apico-dorsally, dark brown; hind femur and tarsus yellowish-brown; parastigma, base, apex and anterior border of pterostigma pale yellowish, remainder of pterostigma dark brown; wing membrane slightly infusate.

Variation.— Paralectotype male has antenna and pterostigma paler than lectotype, and metanotum, part of mesopleuron and first-third tergites reddish.

Distribution.— Papua New Guinea.

Promesocentrus gen. nov.
(figs 587-593)

Type species: *Promesocentrus tricolor* spec. nov.

Etymology.— From “pro” (Latin for “before, earlier” and the generic name *Mesocentrus* because this genus seems to be a less specialized relative of the genus *Mesocentrus*).

Diagnosis.— Length of fore wing about 2 mm; antennal segments about 16, third segment slightly longer than fourth segment (fig. 589), and without apical spine (fig. 588); occipital carina complete and joining hypostomal carina (fig. 593); frons slightly convex laterally (fig. 592); eyes with some setae, not emarginate; frons and vertex long setose; face somewhat protruding (figs 592, 593); head about of normal length, gradually narrowed ventrally (fig. 591); hypoclypeal depression small (figs 591, 593); labrum concave, glabrous; clypeus differentiated from face medially, its ventral margin straight or nearly so, not differentiated, thin (fig. 591); occipital flange medium-sized (fig. 593); malar suture absent; mandible distinctly twisted, and bidentate apically; prosternum inconspicuous; propleuron normal, not protruding medio-posteriorly; no pronope; precoxal sulcus complete; anterior subalar area normal, depression crenulate; mesoscutum densely rugose; notauli complete, shallow; scutellar sulcus medium-sized; scutellum only micro-sculptured posteriorly; metanotum with median lamella strongly protruding dorsally, in lateral view finger-like; transverse suture of mesonotum present; mesosternal sulcus medium-sized, crenulate; metapleural flange small; propodeum densely sculptured, without median carina, with an apically acute lateral lamella; vein r-m of fore wing present; base of vein CU1a of fore wing about near level of middle of first subdiscal cell (fig. 587); parastigma medium-sized (fig. 587); first subdiscal cell of fore wing elongate, and vein 2-1A reduced apically (fig. 587); vein M+CU1 of fore wing nearly straight (fig. 587); vein M+CU of hind wing distinctly shorter than vein 1-M (fig. 587); subbasal cell of hind wing medium-sized; vein m-cu of hind wing rather short (fig. 587); fore spur evenly curved apically, about as long as basitarsus (fig. 590); fore tarsus moderately shortened (as middle tarsus) and its telotarsus distinctly wider than fourth tarsal segment (fig. 590); tarsal claws robust, simple (fig. 590); fore coxa normal; fore femur longer than fore coxa; hind tarsus slender; dorsope medium-sized, moderately deep; at least first and second metasomal tergites densely sculptured; second tergite without triangular medio-basal area; fourth-seventh tergites exposed; ovipositor straight, without notch or teeth; length of ovipositor sheath about 0.3 times fore wing.

Distribution.— Australian (one species).

Promesocentrus tricolor spec. nov.
(figs 587-593)

Material.— Holotype, ♀ (Queensland Museum, Brisbane), “[Australia], SE Qld., Mt Glorious, 10-31.i.1982, Malaise trap, (Hiller)”.

Holotype, ♀, length of body 3.2 mm, and of fore wing 2.2 mm.

Head.— Antennal segments 16, basal half of antenna slender (fig. 589), length of third segment 1.1 times fourth segment, length of third, fourth and penultimate segments 2.7, 2.5 and 1.4 times their width, respectively (fig. 589); length of maxillary

palp 1.3 times height of head; occipital carina strong, complete; length of eye in dorsal view 1.3 times temple (fig. 592); OOL:diameter of ocellus:POL = 13:6:8; face transversely rugose (fig. 591); clypeus convex and punctate; length of malar space 1.1 times basal width of mandible (fig. 593).

Mesosoma.— Length of mesosoma 1.4 times its height; side of pronotum largely crenulate, rugulose ventrally; epicnemial area rugose dorsally; precoxal sulcus completely and widely crenulate-rugose; remainder of mesopleuron largely smooth; metapleuron densely rugose; mesoscutum largely setose; lobes of mesoscutum completely and densely rugose; scutellum smooth medially and micro-sculptured medio-posteriorly; propodeum densely reticulate-rugose, no distinct areola.

Wings.— Fore wing: r:3-SR:SR1 = 7:19:26; 1-SR+M curved; 2-M straight; r oblique; 1-CU1:2-CU1 = 1:4; 3-CU1 oblique (fig. 587); 2-SR:3-SR:r-m = 7:19:6; m-cu far antefurcal, and rather converging to 1-M posteriorly (fig. 587). Hind wing: M+CU:1-M = 9:13.

Legs.— Hind coxa micro-sculptured; length of femur, tibia and basitarsus of hind leg 3.6, 9.0 and 4.0 times their width, respectively; length of hind tibial spurs 0.2 and 0.3 times hind basitarsus; hind tibia longitudinally rugose, with distinct comb of setae at inner apex.

Metasoma.— Length of first tergite 1.1 times its apical width, its surface very densely and finely reticulate-rugose, its dorsal carinae united basally; second tergite granulate, but latero-posteriorly smooth, remainder of metasoma smooth; second suture shallow and narrow; second tergite with sharp lateral crease; length of ovipositor 0.33 times fore wing.

Colour.— Dark brown; basal half of antenna yellowish-brown, its apical half dark brown with 11th-14th segments whitish; palpi, malar space, fore and middle coxae, trochanters and trochantelli, hind trochanter, base of tibiae, and basal half of metasoma ventrally, whitish; apices of tibiae and tarsi yellowish-brown, remainder of legs dark brown; remainder of metasoma (except first tergite) and of head, and tegulae, yellowish-brown; ovipositor sheath dark brown apically, yellowish basally; fore wing largely dark brown, but paler near base of pterostigma and near apex of wing (fig. 587); hind wing somewhat infuscate anteriorly.

Distribution.— Australia (Queensland).

Tribe Facitorini nov.

(figs 480-492, 494-534, 579-585)

Diagnosis.— Antennal sockets close to, but not touching, each other (figs 484, 497, 509, 519); face strongly protuberant (figs 481, 491, 496, 509); frons without lateral depressions (figs 484, 509); hypoclypeal depression absent or minute (figs 491, 495, 584); notauli present, but sometimes only shallowly impressed (figs 486, 505, 511); propleuron strongly convex (fig. 496); scutellar sulcus wide (figs 486, 505) or moderately narrow (fig. 511); pleural sulcus smooth or nearly so (figs 481, 496); veins 3-M and M+CU1 of fore wing largely sclerotized, M+CU1 distinctly curved apically (figs 494, 507); vein m-cu of fore wing distinctly antefurcal (figs 480, 490, 494), or subinterstitial (fig. 507); vein cu-a of fore wing vertical (figs 494, 518); vein CU1b of fore wing present; second submarginal cell of fore wing (if vein r-m is present) rather slender (figs 480, 528); vein m-cu of hind wing present, but short (figs 480, 490, 507); apical

half of hind wing with one distinct spurious vein, resulting in a wide antero-apical cell (figs 480, 490, 494, 507); vein M+CU of hind wing about as long as vein 1-M or shorter (figs 490, 494, 579); fore tibia without spines; dorsal carinae of first metasomal tergite circularly united, sometimes obsolescent basally (figs 485, 506, 515, 530), exceptionally remaining separate (fig. 492).

Distribution.— Indo-Australian, Neotropical, Nearctic (three genera).

Conobregma gen. nov.
(figs 507-530, 580, 583-585)

Type species: *Conobregma cometes* spec. nov.

Etymology.— From “konos” (Greek for cone) and “bregma” (Greek for front of head), because of the protruding head. Gender: neuter.

Diagnosis.— Length of fore wing 1.4-1.8 mm; antennal segments 18-20, third segment slightly longer than fourth segment (fig. 510), and without apical spine (fig. 513); antennal sockets closer to each other than to eyes (figs 508, 509, 520); occipital carina complete, joining hypostomal carina far above base of mandible (figs 510, 531); frons flat laterally (fig. 508); face strongly protruding (figs 509, 510, 519, 531); eyes glabrous, not emarginate; vertex long setose (fig. 510); head comparatively long, gradually narrowed ventrally (fig. 508); hypoclypeal depression indistinct or minute (figs 508, 510, 529, 531); labrum flat (but dorsally slightly concave), and glabrous; clypeus flat and smooth, its ventral margin straight (fig. 508); occipital flange distinct (figs 529, 531); malar suture absent (fig. 508); mandible strongly twisted; prosternum inconspicuous; no dorsal pronope; precoxal sulcus present anteriorly and sculptured (fig. 510) or present only medially and smooth; anterior subalar depression with weak carina (fig. 510); notauli complete; scutellar sulcus medium-sized (fig. 511); scutellum with continuous and crenulate subposterior depression (fig. 511); metanotum with median carina (fig. 511), but this may be absent in posterior third of metanotum; transverse suture of mesonotum present (fig. 511); mesosternal sulcus rather shallow and smooth; metapleural flange large (fig. 510); propodeum reticulate-rugose, and with a long median carina, similar to surrounding sculpture (fig. 511); vein r-m of fore wing present (figs 507, 518, 528); vein 2-M of fore wing straight; vein m-cu of fore wing (sub)interstitial (figs 518, 528); vein CU1b of fore wing present; vein CU1a of fore wing near or above level of vein 2-CU1 (figs 507, 528); parastigma minute (fig. 528); first subdiscal cell of fore wing comparatively small (fig. 528); vein M+CU1 of fore wing strongly curved (figs 518, 528); apex of vein 1-M of hind wing distinctly removed from wing margin (figs 507, 528); vein M+CU of hind wing slightly shorter than vein 1-M or subequal (figs 518, 528); subbasal cell of hind wing comparatively small (fig. 528); vein m-cu of hind wing present (fig. 528); fore tibial spur as long as basitarsus (fig. 512); fore tarsus moderately shortened and telotarsus somewhat wider than fourth tarsal segment (fig. 512); tarsal claws robust, simple (figs 514, 517), but fore claws pectinate (fig. 512); hind tarsus slender (fig. 516); dorsope present, minute; at least first and second metasomal tergites longitudinally rugose, with fine transverse sculpture (figs 515, 526, 530); second tergite usually without medio-basal area (figs 515, 530), but a small medial area may be present (figs 524, 526); fourth-seventh tergites exposed (fig. 510); ovipositor straight, without notch or teeth (fig. 510); length of ovipositor sheath 0.10-0.14 times fore wing.

Distribution.— New World (five species).

Note.— Closely related to *Facitorus* gen. nov., but differs by the position of vein CU1a of fore wing, the size of the dorsope, the sculpture of the scutellum medio-subposteriorly and the presence of a median carina on the metanotum, and the small first subdiscal cell of fore wing.

Key to species of the genus *Conobregma* nov.

1. Length of vein r of fore wing about 0.5 times maximum width of pterostigma (figs 528, 532, 583); head (largely) brownish-yellow; vein 1-M of hind wing 1.3-1.4 times vein M+CU (figs 528, 532, 583); second metasomal tergite without narrow triangular area medio-basally (figs 530, 580) 2
- Length of vein r of fore wing about 0.8 times maximum width of pterostigma (figs 507, 518); head dark brown; vein 1-M of hind wing as long as vein M+CU (figs 507, 518); second tergite with narrow triangular area medio-basally (figs 524, 526) or area obsolescent 4
2. Fourth and fifth metasomal tergites finely rugulose and with some punctures; pterostigma comparatively wide, vein r 0.4 times maximum width of pterostigma (fig. 583); basal antennal segments slender (fig. 585); precoxal sulcus short, oval *C. brevistigma* spec. nov.
- Fourth and fifth tergites completely smooth; pterostigma narrower, vein r 0.5 times maximum width of pterostigma (figs 528, 532); basal antennal segments comparatively robust (figs 527, 533); precoxal sulcus variable 3
3. Apical segment of antenna of ♀ ivory; length of third antennal segment of ♀ about 1.4 times fourth segment (fig. 527); third metasomal tergite (except apically) largely densely rugulose (fig. 530); precoxal sulcus smooth, short and oval *C. masneri* spec. nov.
- Apical segment of antenna of ♀ dark brown; length of third antennal segment of ♀ 1.1-1.2 times fourth segment (fig. 533); third tergite (largely) smooth, at most with some indistinct microsculpture; precoxal sulcus with few crenulae, elongate and narrow *C. stigmaticum* spec. nov.
4. Length of eye in dorsal view about 2.7 times temple (♀: fig. 509); vein 1r-m of hind wing somewhat longer (fig. 507); precoxal sulcus narrower and weaker rugose (fig. 510); hind femur more robust (fig. 516); middle lobe of mesoscutum smooth posteriorly (except some rugae; fig. 511); third tergite largely smooth (fig. 515) *C. cometes* spec. nov.
- Length of eye in dorsal view 1.9-2.1 times temple (♀ ♂: figs 519, 520); vein 1r-m of hind wing shorter (fig. 518); precoxal sulcus wider and coarser rugose medially (fig. 523); hind femur less robust (fig. 525); middle lobe of mesoscutum completely granulate; anterior half of third tergite densely rugulose (fig. 526) *C. brevinervis* spec. nov.

Conobregma brevinervis spec. nov.
(figs 518-526)

Material.— Holotype, ♀ (CNC), "McClellanville, S.C., 6.v.1971, Malaise Trap". Paratype: 1 ♂ (CNC), "U.S.A., N. Carolina, Croatian State Park, Swainsboro, 6.xi.1979, D. Williams".

Holotype, ♀, length of body 2.2 mm (♂: 1.8 mm), and of fore wing 1.7 mm. Closely related to *C. cometes* but differs as follows:

Head.— Antennal segments 19 (♂: 18 and more slender), length of third segment 1.2 times fourth segment, length of third and fourth segments 2.0 and 1.7 times their width, respectively; length of eye in dorsal view 2.1 (♂: 1.9) times temple (figs. 519, 520); face strongly protruding (fig. 519; less in ♂, fig. 520); length of malar space 1.8 times basal width of mandible (fig. 522); short carina present between antennal sockets (fig. 519; absent in ♂).

Mesosoma.— Middle lobe of mesoscutum completely granulate; precoxal sulcus wider than in *C. cometes* (fig. 523), rugose; propodeum with coarser reticulate rugosity.

Wings.— Fore wing: M+CU1 of ♂ slightly less sinuate. Hind wing: 1r-m somewhat shorter than in *C. cometes* (figs 518, 521).

Legs.— Hind femur less robust, about 2.9 times its maximum width (fig. 525).

Metasoma.— Length of first tergite 1.1 times its apical width; first and anterior part of second tergite distinctly rugose-rugulose (figs 524, 526); remaining part of second tergite and third tergite (except apical 0.4) finely and densely rugulose; male has third-fifth tergites largely sculptured; length of ovipositor sheath 0.12 times fore wing.

Colour.— Dark brown; clypeus yellowish-brown; pronotum and mesoscutum of ♂, and metasoma of ♀ dorsally, largely brown; scapus, pedicellus, labrum, palpi, tegulae, legs, and metasoma ventrally, pale yellowish; pterostigma dark brown, but its margin paler; veins brown; wing membrane subhyaline.

Distribution.— U.S.A. (North and South Carolina).

Conobregma brevistigmus spec. nov.
(figs 580, 583-585)

Material.— Holotype, ♂ (CNC), "Rep. Dominicana, Paraiso Valley, 29.iii.1978, 700 m, L. Masner".

Holotype, ♂, length of body 2.3 mm, and of fore wing 1.8 mm. Closely related to *C. cometes* but differs as follows:

Head.— Apical part of antenna missing, remaining antennal segments 18, length of third segment 1.2 times fourth segment, length of third and fourth segments 4.2 and 3.5 times their width, respectively; length of eye in dorsal view 2.4 times temple (fig. 584); face strongly protruding (fig. 584); length of malar space 2.5 times basal width of mandible (fig. 522); anterior ocellus closer to posterior ocelli than in *C. cometes*.

Mesosoma.— Middle lobe of mesoscutum completely granulate; precoxal sulcus short, oval, and largely smooth; apical 0.4 of median carina of metanotum absent; propodeum coarsely rugose, with long median carina, which is part of the reticulate sculpture.

Wings.— Fore wing: pterostigma comparatively wide (fig. 583); length of r 0.4 times maximum width of pterostigma. Hind wing: 1-M:M+CU = 17:14 (fig. 583).

Legs.— Hind femur less robust, its length 3.2 times its maximum width.

Metasoma.— Length of first tergite 1.1 times its apical width, its surface coarsely longitudinally rugose, with interconnecting finer sculpture; second tergite without medio-basal area (fig. 580); second and third tergites similarly sculptured as first ter-

gite; fourth and fifth tergites finely and very densely longitudinally rugulose and with interconnecting transverse sculpture, remaining tergites smooth (fig. 580).

Colour.— Brown; head, pronotum anteriorly, basal half of antenna (except scapus and pedicellus), first tergite posteriorly, third-fifth tergites (except anteriorly and medially) and apical segment, yellowish-brown; legs (except pulvilli), scapus, pedicellus, metasoma ventrally, and tegulae, pale yellowish; palpi whitish; pterostigma brown.

Distribution.— Dominican Republic.

Conobregma cometes spec. nov.
(figs 507-517)

Material.— Holotype, ♀ (CNC), "Fla: Marion Co., Ocala, NF, Silver Springs Woods, 11-15.vi.1984, Darrill S. Marshall".

Holotype, ♀, length of body 1.9 mm, and of fore wing 1.4 mm.

Head.— Antennal segments 18, length of third segment 1.1 times fourth segment, length of third, fourth and penultimate segments 2.0, 1.8 and 1.7 times their width, respectively (figs 510, 513); maxillary palp as long as height of head; occipital carina complete, but dorsally obsolescent; length of eye in dorsal view 2.7 times temple (fig. 509); OOL:diameter of ocellus:POL = 12:5:9; face smooth, strongly protruding (figs 509, 510); clypeus flat and smooth; length of malar space 2.0 times basal width of mandible (fig. 522).

Mesosoma.— Length of mesosoma 1.8 times its height; side of pronotum anteriorly and posteriorly rugose, remainder largely smooth; epicnemial area rugulose; precoxal sulcus moderately rugose, absent posteriorly (fig. 510); remainder of mesopleuron smooth; metapleuron smooth medially, rugulose ventrally; notauli complete, rugose posteriorly, largely smooth anteriorly; mesoscutum (as head) long setose (fig. 510); lobes of mesoscutum anteriorly largely coriaceous; scutellum smooth; propodeum rugose, more finely anteriorly, its median carina only anteriorly developed, and divided posteriorly (fig. 511).

Wings.— Fore wing: r:3-SR:SR1 = 9:23:46; 1-SR+M straight; r vertical; 1-CU1:2-CU1 = 5:7; 3-CU1 horizontal, distinctly shorter than m-cu (fig. 507); 2-SR:3-SR:r-m = 14:23:10; m-cu about interstitial (fig. 507), somewhat converging to 1-M posteriorly. Hind wing: 1-SC+R terminating near dorsal third of wing (fig. 507); M+CU as long as 1-M.

Legs.— Hind coxa smooth; length of femur, tibia and basitarsus of hind leg 2.9, 6.8 and 4.0 times their width, respectively (fig. 516); length of hind tibial spurs 0.2 and 0.4 times hind basitarsus; hind femur compressed; fore and middle tarsi rather robust (figs 512, 514).

Metasoma.— Length of first tergite 1.1 times its apical width, its surface coarsely longitudinally rugose, with minute transverse sculpture (fig. 515); second tergite without distinct triangular area basally, with short median carina, and largely rugose, but posteriorly partly nearly smooth; second suture distinctly striate; third tergite largely smooth, with some striae anteriorly (fig. 515); second and third tergites with sharp lateral crease; length of ovipositor sheath 0.14 times fore wing.

Colour.— Dark brown or blackish; scapus, pedicellus, base of third segment, tegulae, legs, palpi, labrum and metasoma ventrally, yellowish; pterostigma dark

brown, but laterally paler; veins brown; wing membrane slightly infusate.

Distribution.— U.S.A. (Florida).

Conobregma masneri spec. nov.
(figs 527-530)

Material.— Holotype, ♀ (CNC), "Rep. Dominicana, La Cumbre, 22.ix.1978, 600 m, L. Masner".

Holotype, ♀, length of body 2.0 mm, and of fore wing 1.5 mm. Closely related to *C. cometes* but differs as follows:

Head.— Antennal segments 20, length of third segment 1.4 times fourth segment, length of third and fourth segments 1.8 and 1.3 times their width, respectively; length of eye in dorsal view 2.3 times temple; face strongly protruding (fig. 529); length of malar space 2.7 times basal width of mandible (fig. 529).

Mesosoma.— Middle lobe of mesoscutum completely granulate; precoxal sulcus short, oval, and smooth; propodeum coarsely and irregularly areolate and inter-spaces rugulose.

Wings.— Fore wing: pterostigma comparatively wide, r half as long as maximum width of pterostigma (fig. 528). Hind wing: 1-M:M+CU = 14:10 (fig. 528).

Legs.— Hind femur less robust, its length 3.2 times its maximum width.

Metasoma.— Length of first tergite 1.2 times its apical width, its surface coarsely longitudinally rugose, with interconnecting finer sculpture; second tergite rugose-rugulose, without distinct medio-basal area (fig. 530); third tergite (except apical third) densely rugulose (fig. 530); following tergites smooth; length of ovipositor sheath 0.10 times fore wing.

Colour.— Dark brown; head (except temple dorsally and occiput), apex of first tergite, fifth tergite dorsally, hind tibia and tarsus, brownish-yellow; scapus, pedicellus, labium, palpi, tegulae, remainder of legs, metasoma ventrally and apically, pale yellowish; pterostigma dark brown, but margins pale; ovipositor sheath, propleuron, ventral and dorsal rim of pronotum, anterior (subalar) area of mesopleuron, mesothorax and pronotum dorsally, brown; wing membrane subhyaline; flagellum brown basally, dark brown subapically, and apical antennal segment ivory.

Distribution.— Dominican Republic.

Note.— It is a great pleasure to name this species after its collector and eminent specialist of Proctotrupoidea s.l., Dr L. Masner (Ottawa).

Conobregma stigmaticum spec. nov.
(figs 531-534)

Material.— Holotype, ♀ (CNC), "[U.S.A], Fla., Manatello, Bradenton, 5-7.xi.[19]85, C. Yoshimoto". Paratype: 1 ♀ (RMNH), "Fla., Highlands Co., Archbold Biol. Sta., 26.iv.1967, B.V. Petersen".

Holotype, ♂, length of body 1.9 mm, and of fore wing 1.4 mm. Closely related to *C. cometes* but differs as follows:

Head.— Antennal segments 19, length of third segment 1.1 times fourth segment, length of third and fourth segments 2.0 and 1.8 times their width, respectively (fig. 533); length of eye in dorsal view 2.8 times temple; face strongly protruding (fig. 531); length of malar space 2.5 times basal width of mandible (fig. 531).

Mesosoma.— Middle lobe of mesoscutum completely granulate; precoxal sulcus narrow, elongate, and with few strong crenulae; propodeum moderately reticulate-rugose.

Wings.— Fore wing: pterostigma comparatively wide (fig. 532); length of r 0.5 times maximum width of pterostigma. Hind wing: 1-M:M+CU = 13:10 (fig. 532).

Legs.— Hind femur less robust, its length 3.0 times its maximum width (fig. 534).

Metasoma.— Length of first tergite 1.1 times its apical width, its surface coarsely longitudinally rugose; second tergite rugose-rugulose (but posteriorly smooth), without smooth triangular medio-basal area, only anterior border weakly sinuate; third tergite nearly completely smooth; length of ovipositor sheath 0.11 times fore wing.

Colour.— Similar to colour of *C. masneri*, but apical antennal segment brown, temple yellowish dorsally, hind tibia pale yellow, pronotum dorso-posteriorly and anterior subalar area yellowish-brown.

Variation.— Paratype is very similar to holotype, but antenna with 20 segments, temples dorsally and vertex posteriorly infuscate, length of third antennal segment 1.2 times fourth segment, length of fore wing 1.5 mm, length of ovipositor sheath 0.10 times fore wing, length of first tergite equal to its apical width, and third tergite with some very superficial micro-sculpture.

Distribution.— U.S.A. (Florida).

Facitorus gen. nov.
(figs 480-492)

Type species: *Facitorus superus* spec. nov.

Etymology.— From “facies” (Latin for “face”) and “torus” (Latin for “protuberance”), because of the protruding face. Gender: masculine.

Diagnosis.— Length of fore wing 2.1-2.4 mm; antennal segments 18-22, third segment slightly longer than fourth segment (fig. 491), and without apical spine (fig. 482); occipital carina widely interrupted medio-dorsally, joining hypostomal carina distinctly above base of mandible (fig. 481); frons convex or flat laterally; face strongly protruding (figs 481, 484, 491); eyes glabrous, not emarginate; frons and vertex long setose, smooth (fig. 491); head long, strongly narrowed ventrally (fig. 483); hypoclypeal depression absent or nearly so (figs 483, 491); labrum largely flat and glabrous; clypeus convex, differentiated from face, its ventral margin straight, thin (fig. 483) or concave; occipital flange narrow (fig. 491); malar suture absent; mandible rather twisted; prosternum flat, inconspicuous; no pronope; precoxal sulcus largely absent, indicated only as a short and smooth medial depression (fig. 481); anterior subalar area normal, its depression with short carina; notauli present, shallow (fig. 486); scutellar sulcus wide, deep (fig. 486); scutellum without continuous subposterior depression (fig. 486); metanotum with incomplete median carina; transverse suture of mesonotum present (fig. 486); mesosternal sulcus narrow, largely smooth; metapleural flange medium-sized, thick (fig. 481); propodeum densely sculptured, and without median carina; vein r-m of fore wing present (fig. 480); vein 2-M of fore wing straight or curved (figs 480, 490); base of vein CU1a of fore wing near middle of first subdiscal cell (figs 480, 490); parastigma small (fig. 480); first subdiscal cell of fore wing medium-sized, rather slender (figs 480, 490); vein M+CU1 of fore wing strongly sinuate (fig. 490); apex of vein 1-M of hind wing close to wing margin (figs

480, 490); subbasal cell of hind wing rather small (fig. 480); vein m-cu of hind wing minute (fig. 490); length of fore tibial spur about 0.7 times basitarsus (fig. 487), nearly straight apically; fore tarsus strongly shortened and telotarsus distinctly wider than fourth tarsal segment (fig. 487); hind femur distinctly compressed; tarsal claws slender, without lobe and long pectinate (fig. 488); hind tarsus slender (fig. 489); dorsope medium-sized, distinct; second metasomal tergite at least basally sculptured, without (fig. 492) or with (fig. 485) a small medio-basal area; fourth-seventh tergites exposed (fig. 481); ovipositor straight, without notch and having no teeth, narrowed apicad (fig. 481); length of ovipositor sheath about 0.1 times fore wing.

Distribution.— South Palaearctic (two species).

Key to species of the genus *Facitorus* nov.

1. Vein r of fore wing much longer than vein 2-SR and vertical (fig. 490); fourth-tenth antennal segments of ♀ subquadrate (fig. 491); antennal segments of ♀ 18-19; vein 2-M of fore wing distinctly curved (fig. 490); head more protruding behind eyes (fig. 491); vein 2-SR of fore wing short, shorter than vein r-m (fig. 490); second tergite largely smooth (fig. 492) *F. brevicornis* spec. nov.
- Vein r of fore wing about as long as vein 2-SR or slightly shorter and slightly oblique (fig. 480); fourth-tenth antennal segments of ♀ distinctly longer than wide (fig. 481); antennal segments of ♀ 21-22; vein 2-M of fore wing slightly curved (fig. 480); head less protruding behind eyes (fig. 481); vein 2-SR of fore wing medium-sized, somewhat longer than vein r-m (fig. 480); second tergite largely punctate-rugose (fig. 481) *F. superus* spec. nov.
Note.— If precoxal sulcus is completely crenulate and rather wide, head less protruding anteriorly (fig. 593), and mesoscutum densely rugulose, cf. *Promesocentrus tricolor* gen. nov. & spec. nov.

Facitorus brevicornis spec. nov. (figs 490-492)

Material.— Holotype, ♀ (AEI), "Taiwan, Meifeng, 2150 m, 29.v.[19]83, Henry Townes". Paratype: 1 ♀ (AEI), topotypic, but 10.v.1983.

Holotype, ♀, length of body 2.8 mm, and of fore wing 2.4 mm.

Head.— Antennal segments 18, length of third segment 1.3 times fourth segment, length of third, fourth and penultimate segments 1.3, 1.0 and 1.6 times their width, respectively (fig. 491); length of maxillary palp 0.8 times height of head; length of eye in dorsal view 2.0 times temple, temples subparallel-sided behind eyes; OOL: diameter of ocellus:POL = 5:2:3, ocelli in high triangle (higher than figured for *F. superus*: fig. 484); frons flat, except for median groove; vertex flat, with long greyish setae; face sparsely punctate, with weak median carina dorsally and some rugae dorso-laterally; clypeus smooth, its ventral margin distinctly concave; length of malar space 2.8 times basal width of mandible (fig. 491).

Mesosoma.— Length of mesosoma 1.9 times its height; side of pronotum smooth, except for a row of crenulae posteriorly and some micro-sculpture anteriorly; precoxal sulcus only medially impressed, rugose-crenulate, area below precoxal sulcus sparsely crenulate; notauli complete, finely crenulate; propodeum densely reticulate-

rugose, flattened and without median carina.

Wings.— Fore wing: r:3-SR:SR1 = 7:17:28; apex of SR1 desclerotized (fig. 490); r vertical; 1-CU1:2-CU1 = 5:8; 3-CU1 oblique, distinctly shorter than m-cu; 2-SR:3-SR:r-m = 4:17:5; m-cu distinctly antefurcal and slightly diverging from 1-M (fig. 490). Hind wing: basal cell comparatively wide (fig. 490).

Legs.— Hind coxa largely smooth; length of femur, tibia and basitarsus of hind leg 2.3, 5.8 and 3.4 times their width, respectively; length of hind tibial spurs 0.3 and 0.5 times hind basitarsus; tarsi slightly more robust than of *F. superus*; tarsal claws as of *F. superus*.

Metasoma.— Length of first tergite 1.2 times its apical width, rather narrowed basally (fig. 492), its surface densely rugose, but laterally weakly sculptured (fig. 492), its dorsal carinae in basal third of tergite and posteriorly, subparallel; second tergite largely smooth, only basally finely rugose (fig. 492); length of second tergite 1.4 times third tergite (fig. 492); second suture distinct, narrow and smooth; third and following tergites smooth; length of ovipositor sheath 0.08 times fore wing.

Colour.— Dark brown; palpi pale yellowish; scapus, pedicellus, legs (but hind coxa largely dark brown) and tegulae, brownish-yellow; antenna (except scapus and pedicellus), metasoma ventrally, pterostigma largely and veins, brown; distal two-thirds of fore wing largely infusate, remainder of wing membrane slightly infusate.

Variation.— The paratype is very similar to holotype; it has 19 antennal segments; length of fore wing 2.4 mm, of body 2.3 mm; length of first metasomal tergite 1.4 times its apical width; vein SR1 of fore wing nearly completely sclerotized apically; length of ovipositor sheath 0.06 times fore wing.

Distribution.— Taiwan (montane zone).

Facitorus superus spec. nov.

(figs 480-489)

Material.— Holotype, ♀ (CNC), "Nepal, Ktm., Pulchauki, 8000 '[ft], 27.vii.1967". Paratypes: 1 ♀ (RMNH), "Nepal, Ktm., Godavari, 6000 '[ft], 1-3.viii.1967, Mal. Tr., Can. Exp."

Holotype, ♀, length of body 2.6 mm, and of fore wing 2.1 mm.

Head.— Antennal segments 22, length of third segment 1.2 times fourth segment, length of third, fourth and penultimate segments 2.2, 1.8 and 2.1 times their width, respectively (figs 481, 482); length of maxillary palp 0.7 times height of head; length of eye in dorsal view 2.6 times temple (fig. 484); OOL:diameter of ocellus:POL = 12:7:11; face and clypeus smooth (figs 481); length of malar space 2.0 times basal width of mandible (fig. 481).

Mesosoma.— Length of mesosoma 1.9 times its height; side of pronotum smooth, except for some crenulae anteriorly and postero-ventrally; epicnemial area and mesopleuron smooth; metapleuron smooth dorsally, flat, rugose ventrally (fig. 481); mesoscutum anteriorly and near notauli with some long setae; lobes of mesoscutum smooth; scutellum smooth, flat; propodeum densely reticulate-rugose, and short setose (fig. 481).

Wings.— Fore wing: r:3-SR:SR1 = 8:13:33; 1-SR+M sinuate; r slightly oblique (fig. 480); 2-M straight; 1-CU1:2-CU1 = 7:12; 3-CU1 oblique; 2-SR:3-SR:r-m = 9:13:6; m-cu parallel with 1-M (fig. 480). Hind wing: M+CU much shorter than 1-M (fig. 480).

Legs.— Hind coxa smooth; fore coxa normal (fig. 487); length of femur, tibia and basitarsus of hind leg 3.0, 7.8 and 6.2 times their width, respectively (fig. 489); length of hind tibial spurs 0.2 and 0.3 times hind basitarsus.

Metasoma.— Length of first tergite 1.2 times its apical width, its surface longitudinally rugose (fig. 485), its dorsal carinae united basally, forming a basal curved carina; second tergite finely punctate-rugose, with narrow, smooth and elongate triangular area medio-basally (fig. 485); second suture narrow, shallow; second tergite with sharp lateral crease (fig. 481); median length of second tergite 1.6 times third tergite; third tergite largely smooth, with some superficial micro-sculpture; length of ovipositor sheath 0.10 times fore wing.

Colour.— Black; scapus, pedicellus, mandible, palpi, tegulae, metasoma baso-ventrally, and legs (except hind coxa, fore telotarsus, and hind basitarsus), yellowish; hind coxa (except apex), fore telotarsus, hind basitarsus, basal half of flagellum, perostigma and veins, brown; face, clypeus, antenna apically and metasoma dorsally, largely dark brown; wing membrane rather infusate.

Variation.— Paratype: antenna with 21 segments; length of fore wing 2.1 mm; length of first metasomal tergite 1.4 times its apical width; length of vein 3-SR 1.6 times vein 2-SR; second tergite (except antero-laterally) smooth.

Distribution.— Nepal.

Jannya gen. nov.

(figs 494-506, 579, 581, 582)

Type species: *Jannya brevitarsus* spec. nov.

Etymology.— Named after my wife Janny (Adriana Helena Steenvoorden) in honour of her understanding of the extensive use of my spare-time to study Braconidae, and for the many excellent meals provided. Gender: feminine.

Diagnosis.— Length of fore wing 1.5-1.7 mm; antennal segments 19, third segment slightly longer than fourth segment (fig. 496), and without apical spine (fig. 498); occipital carina complete, strong laterally, weak dorsally, joining hypostomal carina distinctly above base of mandible (fig. 496); frons nearly flat laterally; face strongly protruding (figs 496, 497, 581); eyes glabrous, not emarginate; frons and vertex long setose, smooth (fig. 496); head long, strongly narrowed ventrally (fig. 499); hypoclypeal depression narrow, shallow (figs 496, 499); labrum flat, with some setae; clypeus convex, differentiated from face, its ventral margin straight, thin (fig. 499) or concave; occipital flange narrow; malar suture absent; mandible rather twisted and slender; prosternum inconspicuous; no pronope; precoxal sulcus present anteriorly, narrowly sculptured, but absent posteriorly (fig. 496); anterior subalar area normal, its depression with weak carina (fig. 499); notauli present, narrow (fig. 505); scutellar sulcus wide, deep (fig. 505); scutellum with continuous and finely crenulate subposterior depression (fig. 505); metanotum with incomplete median carina (fig. 505); transverse suture of mesonotum largely absent (fig. 505); mesosternal sulcus rather narrow, smooth; metapleural flange wide, thick (fig. 496); propodeum densely sculptured, and without median carina (fig. 505), or with short carina; vein r-m of fore wing absent (fig. 494); vein 2-M of fore wing sinuate (fig. 494) or straight (fig. 579); base of vein CU1a of fore wing above or near level of vein 2-CU1 (figs 494, 597); parastigma small (fig. 494); first subdiscal cell of fore wing small (figs 494, 597); vein

M+CU1 of fore wing strongly sinuate (fig. 494); apex of vein 1-M of hind wing close to wing margin (fig. 494); subbasal cell of hind wing small to medium-sized (figs 494, 597); vein m-cu of hind wing minute (fig. 494); fore tibial spur about as long as basitarsus (fig. 501), nearly straight apically; fore tarsus strongly shortened and telotarsus distinctly wider than fourth tarsal segment (fig. 501); middle tarsus moderately slender (fig. 504), hind tarsus slender (fig. 502); femora strongly widened; tarsal claws slender, without lobe, and setose (fig. 503); dorsope shallow, nearly absent; second metasomal tergite at least basally sculptured, without small medio-basal area (figs 506, 582); fourth-seventh tergites exposed (fig. 496); ovipositor straight; length of ovipositor sheath about 0.1 times fore wing.

Distribution.— Neotropical (two species).

Key to species of the genus *Jannya* nov.

1. Vein 2-CU1 of fore wing distinctly longer than vein 1-CU1 (fig. 494); vein M+CU of hind wing much shorter than vein 1-M (fig. 494); head (except dorsally) yellowish; vein 1-SR of fore wing short (fig. 494); second metasomal suture obsolete (fig. 506) *J. brevitarsus* spec. nov.
- Vein 2-CU1 of fore wing about as long as vein 1-CU1 (fig. 579); vein M+CU of hind wing somewhat shorter than vein 1-M (fig. 579); head black; vein 1-SR of fore wing comparatively long (fig. 579); second metasomal suture deep (fig. 582) *J. nigriceps* spec. nov.

Jannya brevitarsus spec. nov. (figs 494-506)

Material.— Holotype, ♀ (CNC), "Colombia, Choco, 950-1000 m, 5°50'N, 76°20'W, 7-8.iv.[19]73". Paratypes (5 ♀ ♀): 1 ♀ (RMNH), "Ecuador, (Pich. Prov., 47 km S Santo Domingo", "Rio Palanque Res. Station, 250 m, 5.v.-25.vii.1985, S. & J. Peck"; 3 ♀ ♀ (RMSEL, INBIO, RMNH), "Costa Rica: Puntar, Golfo Dulce, 10 km W Piedras Blancas, 100 m, vi.-viii.1989, Hanson"; 1 ♀ (RMSEL), "Costa Rica, Puntarenas, Rd to Rincon, 10 km W of Pan-American Highway, 100 m, iii.-v.1989, Hanson & Gauld".

Holotype, ♀, length of body 1.9 mm, and of fore wing 1.7 mm.

Head.— Antennal segments 19, length of third segment 1.1 times fourth segment, length of third, fourth and penultimate segments 2.3, 2.0 and 2.1 times their width, respectively (figs 496, 498); length of maxillary palp 1.1 times height of head; length of eye in dorsal view 2.7 times temple (fig. 497); OOL:diameter of ocellus:POL = 5:3:5; face rather dull, micro-sculptured (figs 499); clypeus convex and smooth; length of malar space 2.2 times basal width of mandible (fig. 496).

Mesosoma.— Length of mesosoma 1.5 times its height; side of pronotum smooth; epicnemial area partly rugulose; precoxal sulcus moderately crenulate medially (fig. 496); mesopleuron smooth; metapleuron flat, smooth, except for some rugae ventrally (fig. 496); mesoscutum anteriorly and near notauli with some long setae; lobes of mesoscutum smooth; scutellum largely smooth, rather flat; propodeum densely and finely reticulate (fig. 505).

Wings.— Fore wing: r:3-SR+SR1:2-SR = 13:74:7; 1-SR+M straight; r slightly oblique (fig. 480); 2-M straight; SR1 unsclerotized apically, only vaguely pigmented (fig. 494); 1-CU1:2-CU1 = 2:7; 3-CU1 horizontal, about as long as m-cu (fig. 494); m-cu somewhat converging to 1-M (fig. 494). Hind wing: M+CU:1-M = 9:19 (fig. 480).

Legs.— Hind coxa smooth; fore coxa normal (fig. 501); length of femur, tibia and basitarsus of hind leg 2.8, 6.4 and 4.5 times their width, respectively (fig. 502); length of hind tibial spurs 0.2 and 0.6 times hind basitarsus.

Metasoma.— Length of first tergite 1.5 times its apical width, its surface longitudinally rugose (fig. 506); second tergite weakly rugose, largely faded and posteriorly absent (fig. 506); third and following tergites smooth; second suture obsolescent; second and third tergites with sharp lateral crease (fig. 496); length of ovipositor sheath 0.09 times fore wing.

Colour.— Black; head (except dorsally), prothorax, mesoscutum partly, scutellum, metasoma (except first tergite), dark (reddish-)brown; third antennal segment yellowish-brown; scapus, pedicellus, palpi, tegulae and legs, (brownish-)yellowish, but hind tarsus, telotarsi and base of hind coxae, somewhat darker; pterostigma and veins dark brown; wing membrane weakly infuscate.

Variation.— Antenna with 19(3) segments; length of fore wing 1.5-1.7 mm; length of first metasomal tergite 1.4-1.5 times its apical width; hind coxa sometimes rugose basally; length of ovipositor sheath 0.07-0.13 times fore wing.

Distribution.— Colombia, Costa Rica, Ecuador.

Jannya nigriceps spec. nov.
(figs 579, 581, 582)

Material.— Holotype, ♀ (INBIO), "Costa Rica: San Jose, Zwiqiu de Moravia, 1600 m, x.-xii.1989, col. Paul Hanson".

Holotype, ♀, length of body 2.7 mm, of fore wing 2.5 mm. If characters are not mentioned then very similar to those of *J. brevitarsus*.

Head.— Antennal segments 19, length of third segment 1.2 times fourth segment, length of third, fourth and penultimate segments 2.8, 2.3 and 3.0 times their width, respectively; maxillary palp as long as height of head; length of eye in dorsal view 2.6 times temple (fig. 581); OOL:diameter of ocellus:POL = 6:4:5; face shiny and smooth; frons and vertex smooth and shiny; length of malar space 1.6 times basal width of mandible.

Mesosoma.— Length of mesosoma 1.7 times its height; posterior flange of propleuron distinctly larger than of *J. brevitarsus*; propodeum with short median carina anteriorly.

Wings.— Fore wing: 1-SR and 2-SR somewhat longer than of *J. brevitarsus* (figs 494, 579); r:3-SR+SR1+2-SR = 9:60:8; SR1 completely sclerotized and marginal cell closed apically (fig. 589); 1-CU1 equal to 2-CU1; first subdiscal cell comparatively high (fig. 579). Hind wing: M+CU:1-M = 16:22.

Legs.— Middle tarsus more robust, third and fourth middle tarsal segments shorter, and middle claws pectinate; length of femur, tibia and basitarsus of hind leg 2.6, 7.0 and 4.6 times its width; length of hind tibial spurs 0.2 and 0.4 times hind basitarsus.

Metasoma.— Length of first tergite 1.2 times its apical width, its surface longitudinally rugose; second tergite completely rugose, laterally strong and oblique, medially (nearly) vertical (fig. 582); second metasomal suture deep, straight and smooth; third tergite only basally indistinctly sculptured (fig. 582); remainder of metasoma

smooth; length of ovipositor sheath 0.10 times fore wing.

Colour.— Black; scapus, pedicellus, palpi, legs (but hind tarsus dark brown and hind coxa largely black) and tegulae yellowish-brown; metasoma pale brown ventrally; pterostigma dark brown (but its base narrowly pale brown) and veins, brown; wing membrane slightly infusate.

Tribe Planitorini nov.

(figs 445-457)

Diagnosis.— Antennal sockets touching each other (fig. 446); face strongly protuberant (figs 446, 448); hypoclypeal depression absent (fig. 447); notauli largely absent (fig. 451); scutellar sulcus narrowed and finely crenulate (fig. 451); pleural sulcus crenulate (fig. 448); veins 3-M and M+CU1 of fore wing largely unsclerotized (fig. 445); vein m-cu of fore wing distinctly postfurcal (fig. 445); vein CU1b of fore wing absent; vein cu-a of fore wing distinctly oblique (fig. 445); second submarginal cell of fore wing robust; vein m-cu of hind wing absent (fig. 445); apical half of hind wing normal, with two distinct spurious veins (fig. 445); vein M+CU of hind wing more than twice as long as vein 1-M (fig. 445); fore tibia with some spines (fig. 455); dorsal carinae of first metasomal tergite not united basally (fig. 454).

Distribution.— Australian (one genus).

***Planitorus* gen. nov.**

(figs 445-457)

Type species: *Planitorus breviflagellaris* spec. nov.

Etymology.— From “planus” (Latin for “even, flat”) and “torus” (Latin for “protuberance”), because of the flattened and protruding face. Gender: masculine.

Diagnosis.— Length of fore wing about 2.2 mm; antennal segments 17-18, third segment slightly longer than fourth segment (fig. 457), and without apical spine (fig. 452); occipital carina complete, joining occipital carina distinctly above base of mandible (fig. 448); frons convex laterally; face strongly protruding (figs 446, 448); eyes glabrous, not emarginate; vertex long setose (fig. 510); head comparatively long, slightly narrowed ventrally (fig. 447); hypoclypeal depression absent (figs 447, 448); labrum not visible; clypeus flat and largely smooth, its ventral margin straight (fig. 447); occipital flange narrow (fig. 448); malar suture absent; mandible not twisted, but strongly narrowed apically; prosternum inconspicuous; no pronope; precoxal sulcus absent (fig. 448); anterior subalar area strongly convex (fig. 448), its depression with carina; notauli absent, except for row of punctures (fig. 451); scutellar sulcus narrow, deep (fig. 451); scutellum without continuous subposterior depression (fig. 451); metanotum without median carina (fig. 451); transverse suture of mesonotum absent (fig. 451); mesosternal sulcus absent; metapleural flange medium-sized, thick (fig. 448); propodeum finely and densely rugose, and without median carina (fig. 451); vein r-m of fore wing present (fig. 445); vein 2-M of fore wing straight; base of vein CU1a of fore wing near level of vein 2-1A (fig. 445); parastigma narrow, medium-sized (fig. 445); first subdiscal cell of fore wing medium-sized (fig. 445); vein M+CU1 of fore wing straight; subbasal cell of hind wing large (fig. 445); vein m-cu of hind wing absent; fore tibial spur about as long as basitarsus (fig. 455); fore tarsus moderately shortened and telotarsus wider than fourth tarsal segment (fig. 455);

tarsal claws robust, fore and middle claws with large lamelliform lobe, hind claw simple (figs 453, 455); hind tarsus slender (fig. 456); dorsope large, deep; second metasomal tergite smooth, without medio-basal area; fourth-seventh tergites exposed (fig. 448); ovipositor straight, with notch but no teeth, strongly compressed, blade-like (figs 448, 449); length of ovipositor sheath about 0.1 times fore wing.

Distribution.— Australian (one species).

Planitorus breviflagellaris spec. nov.
(figs 445-457)

Material.— Holotype, ♀ (CNC), "Australia, N Qld., Mt. Lewis, 800 m, 26.xii.[19]86, FIT [= flight interception trap], H + A. Howden". Paratypes (2 ♀♀): 1 ♀ (ANIC), "35.22S 148.50E ACT, Blundells Ck., 850 m, 3 km E Piccadilly Circus, iii.1985, Lawrence, Wier, Johnson, flight intercept./window trough trap"; 1 ♀ (Queensland Museum, Brisbane), "Windsor Tableland via Mt Carbine, N Qld., 26.xii.1983-24.i.1984, Storey & Halfpapp, MDPI, FI [= flight interception trap]".

Holotype, ♀, length of body 2.9 mm, and of fore wing 2.2 mm.

Head.— Antennal segments 17, length of third segment 1.1 times fourth segment, length of third, fourth and penultimate segments 1.4, 1.1 and 1.0 times their width, respectively (figs 448, 452, 457); length of maxillary palp 0.7 times height of head; length of eye in dorsal view 1.1 times temple (fig. 446); OOL:diameter of ocellus:POL = 8:4:7; face punctulate, evenly short setose (fig. 447); clypeus flat and punctulate; length of malar space 3.0 times basal width of mandible (fig. 448).

Mesosoma.— Length of mesosoma 1.7 times its height; side of pronotum rugose-punctate, but dorsally and medio-ventrally smooth; epicnemial area partly smooth, but dorsally crenulate; mesopleuron strongly convex, largely smooth; metapleuron flat, smooth medially, rugose laterally, and crenulate anteriorly (fig. 448); mesoscutum anteriorly and near notauli with long setae (fig. 448); lobes of mesoscutum punctulate; scutellum smooth, flat; propodeum densely rugose and short setose (fig. 451).

Wings.— Fore wing: r:3-SR:SR1 = 3:9:42; 1-SR+M weakly sclerotized, straight; r vertical, short (fig. 445); 1-CU1:2-CU1 = 2:7; 2-SR:3-SR:r-m = 13:9:10; 3-CU1 oblique, shorter than m-cu (fig. 445); m-cu parallel with 1-M (fig. 445). Hind wing: 1-SC+R terminating close to anterior margin of wing; M+CU much longer than 1-M (fig. 445).

Legs.— Hind coxa largely smooth, but baso-laterally rugose (fig. 448); fore coxa enlarged, rather angulate basally (fig. 450); length of femur, tibia and basitarsus of hind leg 2.4, 4.9 and 5.6 times their width, respectively (fig. 456); length of hind tibial spurs 0.50 and 0.65 times hind basitarsus; hind femur inflated, compressed; fore tarsus very robust (fig. 455), middle tarsus moderately robust, and hind tarsus slender (fig. 456).

Metasoma.— Length of first tergite 1.5 times its apical width, its surface longitudinally striate anteriorly, more obliquely striate latero-apically (fig. 454), its dorsal carinae present in basal quarter of tergite, converging posteriorly (fig. 454), the tergite flat basally, rather flattened medially; second and following tergites smooth; second suture absent; second tergite with sharp lateral crease (fig. 448); length of ovipositor sheath 0.13 times fore wing.

Colour.— Black(ish); flagellum, propleuron, metasoma ventrally and apically, tegula, hind leg largely (but trochanter, trochantellus and coxa (except its base) yellowish), dark brown; palpi and humeral plate pale yellowish; fore and middle legs

and hind spurs, brownish-yellow; scapus and pedicellus yellowish-brown; pterostigma and veins brown; wing membrane slightly infuscate.

Variation.— Antenna of ♀ with 17(2) segments; length of first tergite 1.5-1.6 times its apical width; vein r of fore wing may be about half as long as in holotype or even shorter; pronotum may be smooth medially.

Distribution.— Australia (Queensland, A.C.T.).

Subfamily Doryctinae Foerster, 1862
(figs 34-58, 83-97, 594-604)

Doryctoidae Foerster, 1862: 227, 238.

Doryctinae; van Achterberg, 1976: 45, 1984: 46; 1993: 20; Shenefelt & Marsh, 1976: 1264-1424; Edson & Vinson, 1979: 1014; Maeto, 1987: 34; Quicke & van Achterberg, 1990: 36-37; Quicke, 1994: 159-160.

Diagnosis.— Hypoclypeal depression distinct (fig. 84), but small or nearly absent in Ypsistocerini (figs 37, 46, 54, 598); posterior flange of propleuron largely dorsally situated (fig. 85), but absent in Ypsistocerini (fig. 56); prepectal carina nearly always present (fig. 85); vein m-cu of hind wing nearly always present (figs 34, 83); hind coxa frequently angulate antero-ventrally, or tuberculate (fig. 92); fore tibia with row of (usually) small pegs or spines, which are at most as long as 6 times their width (figs 96, 97), exceptionally (e.g. in Ypsistocerini) absent (fig. 601); first metasomal tergite with convex lateral parts and movably connected to second tergite (figs 94, 597); ovipositor nearly always with a double nodus dorso-subapically.

Biology.— Idiobiont ectoparasites of concealed larvae, especially of Coleoptera, but also Lepidoptera and occasionally Hymenoptera (sawflies); larvae of some Neotropical species may be phytophagous in seeds (Shaw & Huddleston, 1991).

Distribution.— Cosmopolitan.

Tribe Hecabolini Foerster, 1962
(figs 83-97)

Hecaboloidae Foerster, 1862: 227, 236.

Diagnosis.— Maxillary palp with 6 segments; vein CU1b of fore wing absent (fig. 83); hind wing of ♂ frequently with pterostigma; second metasomal suture frequently sinuate if present (fig. 94).

Distribution.— Cosmopolitan.

***Stenocorse* Marsh, 1968**
(figs 83-97)

Stenocorse Marsh, 1968: 110; Shenefelt & Marsh, 1976: 1332. Type species (by original designation): *Glyptocolastes bruchivorus* Crawford, 1910.

Diagnosis.— Hypoclypeal depression small (fig. 84); fore tibia of ♂ with groove (fig. 97); vein 1-SC+R of hind wing bent apically (fig. 83); hind tarsal claws with distinct lobe (fig. 95); second metasomal suture strongly sinuate (fig. 94); apex of ovipositor sheath with distinct protuberance (fig. 87); ovipositor very thick, and its two subapical nodes very weakly developed (Quicke et al., 1992).

Biology.— Parasites of Bruchidae in Fabaceae.

Distribution.— South Nearctic, Neotropical, and introduced in the Pacific region; only the type species known.

Tribe Ypsistocerini Cushman, 1923
(figs 34-58, 594-604)

Ypsistocerinae Cushman, 1923: 54; Shenefelt, 1978: 1867; van Achterberg, 1976: 44, 1984: 46-47; Quicke & van Achterberg, 1990: 45.

Ypsistocerini; Quicke et al., 1992: 1094; van Achterberg, 1993: 20.

Diagnosis.— Body and legs very densely, short setose (figs 42, 46, 48); ocelli minute (figs 40, 52); precoxal sulcus absent and mesopleuron convex; median carina of propodeum absent; parastigma not differentiated (figs 34, 37); vein 1-SR of fore wing medium-sized or long (figs 34, 49, 594); vein 1-SC+R of hind wing largely absent (figs 34, 47); vein 1r-m of hind wing short (figs 34, 47); vein cu-a of hind wing present, but partly reduced (figs 34, 47, 594); tarsal claws widened subbasally, obtuse (figs 39, 57); tarsi shortened (figs 43, 48) or only robust (figs 601, 602); first metasomal tergite robust (figs 41, 58, 604), laterope and glymma absent; hypopygium of ♀ retracted far under metasoma and ovipositor issued closer to middle than to apex of metasoma (figs 46, 56, 597); ovipositor sheath widened, and apically truncate (figs 56, 597) or rather acute (fig. 46).

Biology.— Found in termite-nests; may parasitize coleopterous larvae in these nests.

Distribution.— Neotropical.

Subtribe Embobraconina nov.
(figs 594-604)

Diagnosis.— Antennal sockets closer to each other than to eyes and situated on a distinct protuberance (fig. 597); eyes medium-sized (figs 597, 598); hypoclypeal depression present, small (fig. 598); malar space in lateral view wide (fig. 597); maxillary palp with 5 segments; posterior flange of propleuron present (fig. 597); prepectal carina present; scutellar sulcus distinct (fig. 600); tarsal segments parallel-sided (fig. 602); first metasomal tergite closed ventrally, and sclerotized as dorsally.

Distribution.— Neotropical (Central America): one genus.

***Embobracon* gen. nov.**
(figs 594-604)

Type species: *Embobracon brevistigmus* spec. nov.

Etymology.— Combination of the generic names "*Embolemus*" and "*Bracon*", because it is a member of the Braconidae, which superficially resembles an Embolemidae. Gender: masculine.

Diagnosis.— Occipital carina present laterally; labial palp with 4 segments; pronotum medium-sized; mesoscutum with median groove posteriorly (fig. 600); veins SR1 and 1-R1 of fore wing partly unsclerotized; vein CU1b present as pigmented trace (fig. 594); second subdiscal cell of fore wing strongly trapezoid (fig. 594); vein

cu-a of fore wing subinterstitial; hind tibia rather curved (fig. 602); dorsal carinae of first metasomal tergite present and subbasally united by transverse carina (fig. 604); first tergite sculptured and second tergite smooth.

Distribution.— Central America: one species.

Embobracon brevistigmus spec. nov.
(figs 594-604)

Material.— Holotype, ♀ (RMNH), "Museum Leiden, Canal Zone, 8 km NW Gamboa, Pipeline Rd, 9°10'N;79°45'W", "From *Luehea seemannii* (Tiliaceae), 2-6, 15.vii.1976, Y. Lubin & G. Montgomery".

Holotype, ♀, length of body 2.7 mm, of fore wing 1.9 mm.

Head.— Antennal segments 20, shiny, length of third segment 1.3 times fourth segment, length of third, fourth and penultimate segments 2.8, 2.1, and 1.5 times their width, respectively (figs 595, 596); scapus truncate apically (fig. 597); pedicellus small; length of maxillary palp 0.8 times height of head; length of eye in dorsal view 1.4 times temple; temples directly roundly narrowed posteriorly (fig. 599); OOL: diameter of ocellus:POL = 7:2:5; face and vertex largely smooth, finely punctulate because of dense setosity; length of malar space 1.5 times basal width of mandible.

Mesosoma.— Length of mesosoma 1.7 times its height; side of pronotum largely smooth, with groove anteriorly (fig. 597); mesopleuron smooth; pleural sulcus largely smooth; metapleuron rather flat, smooth dorsally and remainder largely rugulose; notauli absent; surface of propodeum smooth antero-laterally and medio-posteriorly, and remainder smooth (fig. 600).

Wings.— Fore wing: r emerging submedially from pterostigma (fig. 594); r:3-SR:SR1 = 9:14:20; 1-SR long (fig. 594); SR1 and 1-R1 absent apically; 1-CU1:2-CU1 = 1:20; cu-a medium-sized (fig. 594); 2-SR:3-SR:r-m = 13:14:9. Hind wing: M+CU:1-M = 15:6; m-cu absent.

Legs.— Hind coxa smooth; length of femur, tibia and basitarsus of hind leg 5.0, 8.2 and 4.0 times their width, respectively; hind tibial spurs 0.15 and 0.25 times hind basitarsus; tibiae and tarsi compressed; telotarsi not widened (figs 601, 602).

Metasoma.— Length of first tergite 1.1 times its apical width, its cross-section trapezoid, its surface largely smooth, only antero-laterally with some rugulae (fig. 604); second and following tergites smooth; length of ovipositor sheath 0.39 times fore wing.

Colour.— Dark brown; stemmaticum and ovipositor sheath, black; head, antenna, coxae, prothorax, apex of first tergite, second and third tergites and most veins, brown; pterostigma (but pale basally) and vein C+SC+R of fore wing, dark brown; wing membrane with pattern (fig. 594), especially below pterostigma and area distal to it, and patch in basal cell, brown.

Distribution.— Panama.

Subtribe Ypsistocerina Cushman, 1923
(figs 34-58)

Diagnosis.— Antennal sockets much closer to eyes than to each other (figs 37, 54); eyes small (figs 37, 46, 56); malar space in lateral view narrow (figs 46, 56); occipital carina laterally and prepectal carina completely absent; maxillary palp with 2-3 segments; hypoclypeal depression nearly absent (figs 37, 46, 54, 56); malar space not protruding posteriorly (figs 46, 56); pronotum very short anteriorly (figs 46, 56); posterior flange of propleuron absent (figs 46, 56); scutellar sulcus absent or nearly so (figs 35, 55); tarsal segments shortened and narrowed basally (figs 42, 48, 57); vein cu-a of fore wing of ♀ far postfurcal (figs 34, 47); first metasomal tergite open ventrally, less sclerotized here than dorsally, its dorsal carinae absent; first and second tergites smooth.

Distribution.— Neotropical (South and Central America): two genera.

Termitobracon Brues, 1923

(figs 34-46)

Termitobracon Brues, 1923: 429; Shenefelt, 1978: 1867; Quicke et. al., 1992: 1042. Type species (by original designation): *Termitobracon emersoni* Brues, 1923 [type lost?].

Diagnosis.— Scapus shorter ventrally than dorsally (fig. 44); maximum length of third antennal segment about 0.9 times fourth segment (fig. 44); third-fifth antennal segments strongly oblique apically (figs 44, 45); maxillary palp with 3 segments; labial palp with 2 segments (fig. 46); fore wing of ♀ with vein 2-SR present (fig. 34); vein r of fore wing shorter than maximum width of pterostigma or subequal to it (fig. 34); upper side of wing membrane conspicuously, long setose (fig. 34); vein M+CU of hind wing shorter than vein 1-M (fig. 34); first subdiscal cell of fore wing of ♀ nearly closed and subparallel-sided (fig. 34); wing veins of ♀ slender; spur of fore tibia about as long as fore basitarsus; metasoma smooth.

Distribution.— South and Central America: small genus, only the type species known.

Ypsistocerus Cushman, 1923

(figs 47-58)

Ypsistocerus Cushman, 1923: 54; Shenefelt, 1978: 1867. Type species (by original designation): *Ypsistocerus manni* Cushman, 1923 [examined].

Diagnosis.— Scapus ventrally longer than dorsally (fig. 56); maximum length of third antennal segment about 1.3 times fourth segment (fig. 51); third-fifth antennal segments truncate apically (fig. 51); maxillary palp with 2 segments; labial palp apparently absent (fig. 56); fore wing of ♀ without vein 2-SR (figs 47, 49); vein r of fore wing longer than maximum width of (slender) pterostigma (figs 47, 49); upper side of wing membrane rather short setose (fig. 47); vein M+CU of hind wing longer than vein 1-M (fig. 47); first subdiscal cell of fore wing of ♀ widely open and not parallel-sided (fig. 47); wing veins of ♀ widened (fig. 47); spur of fore tibia much shorter than fore basitarsus (fig. 57); metasoma (except first tergite) largely coriaceous.

Distribution.— South America: small genus (two species described from Bolivia).

Key to species of the genus *Ypsistocerus* Cushman

1. Eyes vestigial, smaller than an antennal socket (fig. 2 in Cushman, 1923); maxillary palp short and stout, its apical segment much shorter and smaller than its basal segment (fig. 3, l.c.); first metasomal tergite about as long as wide apically; mesoscutum longer than wide and hardly narrowed anteriorly; body mainly brownish-yellow *Y. vestigialis* Cushman, 1923
- Eyes distinctly developed, larger than an antennal socket (fig. 52); maxillary palp longer and slender, its apical segment about as long as its basal segment; first tergite shorter than its apical width (fig. 58); mesoscutum hardly as wide as long and narrowed anteriorly (fig. 55); body mainly dark brown
..... *Y. manni* Cushman, 1923

Subfamily Rhysipolinae Belokobylskij, 1984
(figs 555-567)

Rhysipolini Belokobylskij, 1984: 1021, 1993a: 146-147; van Achterberg, 1993: 24.
Rhysipolinae; Quicke, 1994: 159-160.

Diagnosis.— Pedicellus distinctly shorter than scapus (fig. 558); ventral third of occipital carina running directly to base of mandible, straight or nearly so (fig. 567); prepectal carina present laterally (fig. 559); median carina of propodeum long (fig. 556); medial areola of propodeum small or incomplete; vein m-cu of hind wing absent (fig. 555); first tergite evenly convex and its lateral areas hardly differentiated (fig. 565); second and third tergites similarly sclerotized dorsally as laterally; spiracle of second tergite at border of tergite, not surrounded by sculpture (fig. 559).

Biology.— Koinobiont ectoparasites of larval Lepidoptera.

Distribution.— Nearly cosmopolitan; not yet known from the Afrotropical region.

***Neoavga* Belokobylskij, 1989**
(figs 555-567)

Neoavga Belokobylskij, 1989: 378; Wharton, 1993: 149 (excluded from Hormiinae and included in Exothecinae). Type species (by original designation): *Neoavga pilosa* Belokobylskij, 1989 [examined].

Diagnosis.— Head smooth dorsally; face rather bulging (fig. 559); ventrally occipital carina directly running to base of mandible, straight, without occipital flange (fig. 567); prepectal carina present laterally, absent ventrally (fig. 559); notauli impressed anteriorly (fig. 559); median carina of propodeum long, but may be reduced anteriorly and posteriorly (fig. 556); vein a of fore wing distinct (fig. 555); vein m-cu of fore wing subinterstitial, distinctly angled with vein 2-CU1 (fig. 555); vein m-cu of hind wing absent; vein cu-a of hind wing present; first metasomal tergite evenly convex posteriorly (fig. 565); second metasomal tergite without oblique antero-lateral grooves, and moderately sclerotized (fig. 565); ovipositor sheath of ♀ comparatively slender (fig. 559).

Biology.— Unknown.

Distribution.— Australian (one species).

Notes.— Wharton (1993) found it impossible to indicate the relationships of this

genus and to place it within the Exothecinae (Exothecini sensu Wharton); he noted the similarity in wing venation between *Neoavga* and *Proavga* Belokobylskij, 1989. However, *Proavga* is not closely related (e.g. shape of first tergite and hypopygium of ♀, second submarginal cell of fore wing, median carina of propodeum, shape of pronotum anteriorly); because of the long median carina of the propodeum and the shape of the first tergite I prefer to include this genus in the Rhysipolinae.

Subfamily Hormiinae Foerster, 1862
(figs 168-320, 568-678, 637-661)

Hormioidae Foerster, 1862: 227, 240.
Hormiinae; van Achterberg, 1993: 21.

Diagnosis.— Occipital carina curved towards hypostomal carina (fig. 291) or absent ventrally (fig. 247); occipital flange narrow or absent; second and third tergites largely membranous, desclerotized (except the genera *Canberria* and *Austrohormius*).

Biology.— Idiobiont (gregarious) ectoparasites of larvae of Lepidoptera.

Distribution.— Cosmopolitan.

Tribe Avgini Belokobylskij, 1993
(figs 212-320, 637-648)

Avgini Belokobylskij, 1993a: 157-158; 1994a: 64.
Canberriini Belokobylskij, 1993a: 156. **Syn. nov.**
Austrohormiini Belokobylskij, 1993a: 159-160. **Syn. nov.**

Diagnosis.— Pedicellus normal, distinctly shorter than scapus (figs 224, 236, 268, 299, 314); if exceptionally comparatively large (fig. 214) then vein CU1b far below level of vein 2-CU1 (fig. 212); prepectal carina absent ventrally (figs 214, 224), exceptionally weakly developed ventrally; vein r-m of fore wing present (fig. 212); second metasomal tergite weakly sclerotized medially, if rather strongly sclerotized then scutellum protruding into scutellar sulcus medio-anteriorly (figs 234, 288, 285, 645), and usually also fore telotarsus enlarged (fig. 237), and first tergite flattened posteriorly and mesoscutum overreaching pronotum (figs 291, 641).

Distribution.— Cosmopolitan.

Notes.— The recognition of the tribe Avgini by Belokobylskij (1993) is followed in this paper, although it seems likely that recognition of the Avgini makes the Hormiini a paraphyletic group. Until an extensive cladistic analysis of the genera has been done the tribe is recognized as a matter of convenience. The tribes Canberriini and Austrohormiini are synonymized with the Avgini in this paper, despite having a more sclerotized second tergite. However, especially in *Canberria*, the anterior corners of the second tergite are more sclerotized than the middle of the tergite; because of the shape of the mesosoma, the scutellar sulcus and the enlarged telotarsi, it is most likely that both tribes belong to the Avgini. The presence of a dorsope in *Austrohormius* is interesting (a plesiomorphous character state in this section of the cyclostome Braconidae), but the dorsope is absent in the closely related genus *Apoavga* nov.

According to Belokobylskij (1993) the (then still unpublished) Oriental genus

Tamdaona Belokobylskij, 1994, belongs to the tribe Avgini. However, when this genus was finally described (Belokobylskij, 1994a) it was included in the tribe Exothecini [= Exothecinae]. Both placements seem to be inappropriate because it has strongly sclerotized second and third metasomal tergites, and it cannot be included in the tribe Avgini as treated in this paper. Besides the strongly sclerotized metasomal tergites, posteriorly diverging grooves of the second tergite are absent (if grooves are present they converge posteriorly, a feature unknown of Hormiinae). The examined holotype of *Tamdaona maga* Belokobylskij, 1994, belongs to an aberrant group of Rogadinae with the prepectal carina absent and possessing an aberrantly shaped medio-basal area of the second metasomal tergite.

Allobracon Gahan, 1915
(figs 212-221)

Allobracon Gahan, 1915: 94; Shenefelt, 1978: 1431; Wharton, 1993: 125-132. Type species (by original designation): *Diachasma pilosipes* Ashmead, 1894 [examined by Wharton].

Leurinion Muesebeck, 1958: 458; Shenefelt, 1975: 1148-1149; Wharton, 1993: 125 (as synonym of *Allobracon*). Type species (by original designation): *Leurinion primum* Muesebeck, 1958 [examined by Wharton].

Diagnosis.— Occipital carina absent, at most with a weak ridge; notauli (shallowly) impressed anteriorly (figs 218, 226); scutellar sulcus wide and transverse (figs 218, 226); propodeum with median carina nearly as long as propodeum (fig. 218); vein m-cu of fore wing antefurcal (fig. 222) or subinterstitial (fig. 212); vein cu-a of fore wing (sub)interstitial (fig. 212); outer hind spur about as long as surrounding setae (fig. 219); first metasomal tergite largely desclerotized (= membranous) medially (figs 217, 231).

Biology.— Gregarious parasites of various coleopterous (Chrysomelidae, Hispididae, Buprestidae) and lepidopterous leafminers (Wharton, 1993).

Distribution.— Neotropical, South Nearctic (rather small genus).

Apoavga gen. nov.
(figs 276-285)

Proavga p.p.; Belokobylskij, 1989: 390; Papp, 1993: 157-158.

Type species: *Avga cardalei* Belokobylskij, 1989.

Etymology.— From “apo” (Greek for “separated, away”) and the generic name “*Avga*”, because it is similar to *Avga* but it has more derived characters (e.g., the shape of the scutellar sulcus, the absence of precoxal sulcus, the reduction of the pronotum anteriorly).

Diagnosis.— Head smooth dorsally (fig. 277); occipital carina connected to hypostomal carina, distinctly above base of mandible; prepectal carina completely absent (fig. 278); scutellar sulcus chevron-shaped, narrow (fig. 285); notauli impressed anteriorly (fig. 285); mesoscutum overreaching pronotum (fig. 278); propodeum without distinct areolation (fig. 285); first discal cell of fore wing comparatively slender (fig. 276); vein m-cu of fore wing postfurcal (fig. 276); vein r of fore wing much shorter than vein 3-SR (fig. 276); vein r-m of fore wing present; vein 3-M of fore wing largely sclerotized; vein m-cu of hind wing absent (fig. 276); vein M+CU of hind wing longer

than vein 1-M (fig. 276); vein cu-a of hind wing present, but unsclerotized posteriorly resulting in an open subbasal cell (fig. 276); hind femur distinctly widened (fig. 283); lateral areas of first metasomal tergite narrow, its dorsal carinae present basally, dorsope absent, tergite completely sclerotized medio-posteriorly, posteriorly most of tergite evenly convex (fig. 280); second tergite and basal half of third tergite unsclerotized dorsally; ovipositor sheath slender (fig. 278).

Biology.— Unknown.

Distribution.— Australian (two species). The second species, *Apoavga attenuata* (Papp, 1983) **comb. nov.**, is described by Papp (1993). It differs mainly by the distinctly longer ovipositor sheath.

Austrohormius Belokobylskij, 1989
(figs 233-242, 649-661)

Austrohormius Belokobylskij, 1989: 387-388; Wharton, 1993: 133. Type species (by original designation): *Austrohormius maculipennis* Belokobylskij, 1989 [examined].

Diagnosis.— Antenna rather slender (figs 236, 650); mesoscutum not overreaching pronotum (fig. 236); vein cu-a of hind wing completely absent (fig. 233); vein m-cu of hind wing long (figs 233, 649, 658); first tergite completely sclerotized medio-posteriorly, its dorsal carinae present and with small dorsope (figs 241); second tergite nearly as sclerotized as its epipleuron.

Biology.— Unknown.

Distribution.— Australian (small genus).

Key to species of the genus *Austrohormius* Belokobylskij

1. Fore wing with dark brown patches (fig. 649); vein 1-M of fore wing distinctly curved (fig. 649); antennal segments of ♀ 20-24; rim of clypeus protruding outwards (fig. 653); precoxal sulcus finely crenulate; hind tarsus slender (fig. 652); Australia *A. maculipennis* Belokobylskij
- Fore wing subhyaline; vein 1-M of fore wing straight or nearly so (fig. 233); antennal segments of ♀ 16-20; rim of clypeus variable, if protruding outwards (fig. 236) then precoxal sulcus smooth (fig. 236) and hind tarsus robust (figs 238, 661) 2
2. Face about twice as wide as high (figs 235, 657); second metasomal tergite distinctly sculptured basally, finely transversely rugulose, remainder of tergite sparsely punctate (fig. 241); frons densely setose 3
- Face 5-10 times as wide as high (fig. 656); second tergite smooth; frons partly setose; Australia 4
3. Head brown; mesoscutum largely punctate-coriaceous; scutellum punctate; scutellar sulcus wide, transverse and shallow (fig. 659); precoxal sulcus finely crenulate; vein m-cu of hind wing curved basad (fig. 658); anterior part of clypeus very narrow, because large part of it reflexed in the hypoclypeal depression (fig. 657), and not protruding outwards; eyes largely glabrous; Australia
..... *A. sculpturator* Belokobylskij
- Head black; mesoscutum and scutellum smooth; scutellar sulcus narrow and chevron-shaped (fig. 234); precoxal sulcus smooth (fig. 236); vein m-cu of hind

- wing straight, directed posteriad (fig. 233); anterior part of clypeus normal (fig. 235), and its ventral margin protruding outwards (fig. 236); eyes distinctly setose (fig. 240); New Zealand *A. punctatus* spec. nov.
4. Mesosoma strongly depressed and comparatively long (fig. 72 in Belokobylskij, 1989), its length 3.3-3.5 times its height; width of face about 10 times its height and anterior part of clypeus medium-sized *A. planus* Belokobylskij
- Mesosoma less depressed and shorter (cf. fig. 236), its length about twice its height; width of face about 5 times its height and anterior part of clypeus very narrow (fig. 656) *A. similis* Belokobylskij

Austrohormius maculipennis Belokobylskij, 1989
(figs 649-653)

Austrohormius maculipennis Belokobylskij, 1989: 388-389, figs 64-68, 70.

Material.— Holotype, ♀ (ANIC), “[Australia], Clyde Mtn, N.S.W., (Landslip), 22.ii.1965, D.H. Colless”, “Holotypus *Austrohormius maculipennis* n. s. Belokobylskij”.

Distribution.— Australia (New South Wales, Queensland).

Austrohormius planus Belokobylskij, 1989

Austrohormius planus Belokobylskij, 1989: 390, figs 69, 71-73.

Distribution.— Australia (Tasmania, Western Australia).

Austrohormius punctatus spec. nov.
(figs 233-242)

Material.— Holotype, ♀ (RMNH), “New Zealand: South Isl., L. Rotoiti, Nelson Lakes N.P., 20.xii.1983, L. Masner, RMNH’84”. Paratypes (3 ♀♀): 2 ♀♀ (RMNH, CNC), topotypic, and same date; 1 ♀ (RMNH), “New Zealand, CO, Watts Rock, 1200 m, 15.i.1981”.

Holotype, ♀, length of body, and of fore wing both 2.3 mm.

Head.— Antennal segments 19, long whitish setose, length of third segment 1.2 times fourth segment, length of third, fourth, and penultimate segments 2.8, 2.4, and 1.6 times their width, respectively (figs 236, 242); scapus petiolate basally (fig. 236); pedicellus medium-sized, much smaller than scapus (fig. 236); length of maxillary palp 0.7 times height of head; length of eye in dorsal view 0.8 times temple; temples subparallel-sided behind eyes (fig. 240); OOL:diameter of ocellus:POL = 9:2:8; face and vertex smooth; length of malar space 1.2 times basal width of mandible.

Mesosoma.— Length of mesosoma 2.0 times its height; side of pronotum largely smooth, with some crenulae anteriorly and some rugae posteriorly (fig. 236); precoxal sulcus long, narrow, not reaching anterior and posterior borders of mesopleuron, smooth (fig. 236); remainder of mesopleuron smooth; pleural sulcus smooth dorsally, crenulate ventrally; metapleuron largely smooth; notauli smooth, only anteriorly impressed (fig. 234); surface of propodeum rugose, but antero-laterally partly smooth (fig. 234).

Wings.— Fore wing: r distinctly shorter than width of pterostigma and emerging

at basal 0.6 of pterostigma (fig. 233); r:3-SR:SR1 = 4:17:38; 1-CU1:2-CU1 = 5:16; cu-a oblique (fig. 233); first subdiscal cell slender (fig. 233); 2-SR:3-SR:r-m = 16:17:7. Hind wing; part of 1-1A present.

Legs.— Hind coxa smooth; length of femur, tibia and basitarsus of hind leg 4.0, 9.0 and 2.7 times their width, respectively; hind tibial spurs indistinct, similar to surrounding setae, about 0.2 times hind basitarsus (fig. 238).

Metasoma.— Length of first tergite 0.7 times its apical width, its dorsal carinae present in basal 0.6 of tergite (fig. 241), its surface medially rugose and laterally rugulose; second tergite micro-sculptured basally and area behind it with some punctures (fig. 241), largely smooth; second and third tergites normally (but rather weakly) sclerotized, similar to their epipleura; length of ovipositor sheath 0.19 times fore wing.

Colour.— Black; metasoma (except first tergite) and antenna (but pedicellus yellowish) dark brown; hypopygium, tegulae and legs (but telotarsi and hind coxa largely rather dark brown), yellowish-brown; palpi brown; wing membrane subhyaline; pterostigma pale yellowish; veins brown.

Variation.— Length of body 2.2-2.6 mm, and of fore wing 2.2-2.5 mm; antennal segments of ♀ 18(2); length of ovipositor sheath 0.18-0.19 times fore wing; palpi sometimes yellowish and mesoscutum with two pairs of elongate patches yellowish and basal half of hind femur may be infusate; face may be more transverse than figured.

Distribution.— New Zealand.

Austrohormius sculpturator Belokobylskij, 1989
(figs 657-661)

Austrohormius sculpturator Belokobylskij, 1989: 388-389, figs 74.

Material.— Paratype, ♀ (ANIC), "[Australia], Mt Keira, N.S.W., 15.xi.1960, I.F.B. Common & M.S. Upton", "Paratypus *Austrohormius sculpturator* Belokobylskij".

Distribution.— Australia (New South Wales, Victoria).

Austrohormius similis Belokobylskij, 1989
(figs 654-656)

Austrohormius similis Belokobylskij, 1989: 389-390.

Material.— Paratype, ♀ (ANIC), "[Australia], 36.12S 148.43E, Dainers Gap, N.S.W., 28.xii.1973, P. Morrow", "Ex *Eucalyptus stellulata*", "1585 metres. *Euc. pauciflora*, *stellata* and *perriniana* forest", "Paratypus *Austrohormius similis* Belokobylskij".

Distribution.— Australia (New South Wales).

Avga Nixon, 1940
(figs 243-254)

Avga Nixon, 1940: 490; Belokobylskij & Tobias, 1986: 65-66 (key to West Palaearctic spp.); Belokobylskij, 1986a: 60-62, 1989: 377-378, 1994b: 64-65; Papp, 1990: 177-179 (checklist); Wharton, 1993: 133-134. Type species (by original designation): *Avga choaspis* Nixon, 1940 [examined].

Diagnosis.— Head granulate dorsally (fig. 245); notauli absent or nearly so (fig. 246); vein cu-a of hind wing present (fig. 243), but sometimes unsclerotized posteriorly; vein m-cu of fore wing strongly converging to vein 1-M posteriorly (fig. 243); vein r of fore wing about as long as vein 3-SR (fig. 243); vein m-cu of fore wing (narrowly) antefurcal (figs 243, 255); vein 1-R1 (= metacarp) about as long as pterostigma (fig. 243); first metasomal tergite completely sclerotized medially, narrowed posteriorly (figs 248, 251) and punctate-rugose.

Biology.— Parasite of Gelechiidae and Limacodidae.

Distribution.— Old World (medium-sized genus; occurs in generally more arid regions (Wharton, 1993)).

Canberria Belokobylskij, 1991
(figs 637-648)

Canberria Belokobylskij, 1991: 644. Type species (by original designation): *Canberria rieki* Belokobylskij, 1991 [examined].

Diagnosis.— Head smooth dorsally; submedial antennal segments strongly widened in dorsal view, and strongly shortened in lateral view (figs 643, 644); occipital carina connected to hypostomal carina, distinctly above base of mandible; notauli impressed anteriorly (fig. 645); prepectal carina present laterally, at least short part of it; scutellar sulcus transverse, wide (fig. 645); antero-medially scutellum protruding into scutellar sulcus and lateral depression on side of scutellum comparatively narrow (fig. 645); mesoscutum overreaching pronotum (fig. 641); anterior subalar depression smooth; propodeum without distinct areolation (fig. 645); subbasal cell of hind wing closed apically (fig. 637); vein 3-SR of fore wing about twice as long as vein r; vein m-cu of fore wing just postfurcal (fig. 637); vein m-cu of hind wing absent; vein M+CU of hind wing much longer than vein 1-M; vein r of fore wing much shorter than vein 3-SR (fig. 637); vein r-m of fore wing present; first subdiscal cell of fore wing robust (fig. 637); vein cu-a of hind wing present; vein 3-M of fore wing largely sclerotized; first discal cell of fore wing robust (fig. 637); hind femur at most moderately widened (fig. 647); lateral areas of first tergite wide, posteriorly most of tergite flattened and tergite completely sclerotized medially (fig. 640); second tergite rather weakly sclerotized, but antero-lateral corners more sclerotized; ovipositor sheath widened distally, subtruncate apically (fig. 641).

Biology.— Unknown.

Distribution.— Australia (only type species described).

Note.— *Canberria* was originally included by Belokobylskij (1991) in the tribe Rhysipolini (before it was included in its own tribe), but e.g. the rather weakly sclerotized second tergite, the enlarged telotarsi, and the absence of vein m-cu of hind wing indicate a relationship with the Avgini.

Hormiitis gen. nov.
(figs 33, 286-299, 586)

Type species: *Hormiitis brevitarsis* spec. nov.

Etymology.— From the generic name *Hormius* and “itis” (Latin for “depart”)

because it is a group derived from the Hormiine-stemgroup. Gender: masculine.

Diagnosis.— Head smooth dorsally (fig. 289); antenna slender (fig. 291); occipital carina connected to hypostomal carina distinctly above base of mandible; prepectal carina present laterally, at least with a short part (fig. 291); scutellar sulcus transverse, wide, but narrowed medially (fig. 288); mesoscutum overreaching pronotum (fig. 291); notauli impressed anteriorly (fig. 288); anterior subalar depression with carina (fig. 291); propodeum without distinct areolation (fig. 285); vein m-cu of hind wing absent (fig. 286); vein M+CU of hind wing longer than vein 1-M (figs 33, 286); vein r of fore wing much shorter than vein 3-SR (fig. 286); vein r-m of fore wing present; first subdiscal cell of fore wing robust (fig. 286); first discal cell of fore wing robust (figs 33, 286); vein 3-M of fore wing largely sclerotized (figs 33, 286); subbasal cell of hind wing closed apically (fig. 286); vein 3-SR of fore wing about 3 times vein r (fig. 286); vein m-cu of fore wing just postfurcal (fig. 286); vein CU1 of fore wing distinctly shorter than vein 3-CU1 (fig. 286); vein cu-a of hind wing present (figs 33, 286), but sometimes unsclerotized posteriorly; hind femur at most moderately widened (fig. 287); telotarsi enlarged (figs 292-294); lateral areas of first tergite wide, tergite completely sclerotized medially, posteriorly most of tergite flattened (fig. 296); ovipositor sheath rather slender (fig. 291) or distinctly widened (fig. 586).

Distribution.— Australian region.

Key to species of the genus *Hormiitis* nov.

1. Ovipositor sheath widened subapically (fig. 586); mesosoma nearly completely yellowish; vein 1-SR of fore wing discontinuous with vein 1-M (fig. 33) *H. elliptivalva* spec. nov.
- Ovipositor sheath slender (fig. 291); mesosoma partly darkened; vein 1-SR of fore wing continuous with vein 1-M (fig. 286) *H. brevitarsis* spec. nov.

Hormiitis brevitarsis spec. nov.
(figs 286-299)

Material.— Holotype, ♀ (ANIC), "[Australia], 31.185S 119.33E, 2 km W by S of Yellowdine, W.A., 4.v.1983, E.S. Nielsen, E.D. Edwards".

Holotype, ♀, length of body 1.8 mm, of fore wing 2.4 mm.

Head.— Antennal segments 24, length of third segment 1.5 times fourth segment, length of third, fourth, and penultimate segments 4.0, 2.7 and 2.2 times their width, respectively (figs 291, 298); pedicellus normal, shorter than scapus (fig. 299); length of maxillary palp 0.8 times height of head; length of eye in dorsal view 1.9 times temple; temples roundly narrowed posteriorly (fig. 289); OOL:diameter of ocellus:POL = 8:5:9; face and vertex smooth; length of malar space equal to basal width of mandible.

Mesosoma.— Length of mesosoma 1.5 times its height; side of pronotum crenulate medially and remainder with some micro-sculpture and partly smooth (fig. 291); precoxal sulcus only medially shallowly impressed, finely crenulate; remainder of mesopleuron smooth; pleural sulcus deep and largely smooth; metapleuron rugose; only anterior half of notauli impressed, crenulate; surface of propodeum densely and finely rugose, posteriorly with some coarser oblique striae (fig. 288).

Wings.— Fore wing: r about as long as width of pterostigma and emerging from basal 0.3 of pterostigma (fig. 286); r:3-SR:SR1 = 6:22:32; 1-CU1:2-CU1 = 8:9; cu-a short (fig. 286); 2-SR:3-SR:r-m = 15:22:10. Hind wing: M+CU:1-M = 19:8.

Legs.— Hind coxa smooth; length of femur, tibia and basitarsus of hind leg 3.1, 6.4 and 4.5 times their width, respectively; hind tibial spurs 0.35 and 0.40 times hind basitarsus.

Metasoma.— Length of first tergite 0.8 times its apical width, its dorsal carinae absent, its surface flattened, densely and finely rugose laterally, densely rugulose medially (fig. 296); second and following tergites smooth and largely desclerotized, except second tergite anteriorly (fig. 296); ovipositor upcurved (fig. 291); length of ovipositor sheath 0.27 times fore wing, rather widened subapically (fig. 291).

Colour.— Yellowish-brown; palpi, tegulae and legs pale yellowish; apical half of antenna and apices of segments of basal half of flagellum, side of pronotum, mesopleuron (except ventrally and anteriorly), metapleuron, third and following tergites (except laterally), and ovipositor sheath, dark brown; pterostigma and most veins dark brown; wing membrane hyaline.

Distribution.— Australia (Western Australia).

Hormiitis elliptivalva spec. nov.
(figs 33, 586)

Material.— Holotype, ♀ (Queensland Museum, Brisbane), “[Australia], Lake Broadwater, nr Dalby, Qld, 27°21’S 151°06’S, 26.ix.1986, G and A. Daniels, MV lamp”. Paratype, ♂ (id.), topotypic, but “site B, 25-26.x.1986”.

Holotype, ♀, length of body 2.3 mm, of fore wing 2.6 mm.

Head.— Antennal segments 24, length of third segment 1.6 times fourth segment, length of third, fourth, and penultimate segments 4.3, 3.0 and 2.0 times their width, respectively; pedicellus rather small; length of maxillary palp 0.9 times height of head; length of eye in dorsal view 2.7 times temple; temples directly roundly narrowed posteriorly; OOL:diameter of ocellus:POL = 4:3:3; face distinctly punctate; vertex smooth; length of malar space 1.4 times basal width of mandible.

Mesosoma.— Length of mesosoma 1.9 times its height; side of pronotum coarsely crenulate medially, largely rugulose dorsally and remainder largely smooth; precoxal sulcus only medially distinctly impressed, absent posteriorly and obsolescent anteriorly, finely crenulate; remainder of mesopleuron mainly smooth; pleural sulcus finely crenulate; metapleuron densely rugulose, dull; notauli smooth, largely absent on disc; surface of propodeum densely and finely rugose, with a vaguely indicated areola.

Wings.— Fore wing: r oblique (fig. 33); r:3-SR:SR1 = 8:27:41; 1-CU1:2-CU1 = 6:13; 2-SR:3-SR:r-m = 21:27:11. Hind wing: M+CU:1-M = 3:1; cu-a medium-sized and rather reclivous.

Legs.— Hind coxa smooth; length of femur, tibia and basitarsus of hind leg 2.8, 5.3 and 7.0 times their width, respectively; hind tibial spurs 0.15 and 0.20 times hind basitarsus.

Metasoma.— Length of first tergite 0.6 times its apical width, its surface densely and finely rugose, dull, its dorsal carinae present up to basal 0.7 of tergite; second-fifth tergites weakly sclerotized, nearly membranous dorsally; ovipositor straight;

length of ovipositor sheath 0.16 times fore wing, distinctly widened, elliptical (fig. 586).

Colour.— Yellowish-brown; palpi, tegulae and legs, pale yellowish; apical half of antenna, ovipositor sheath and metasoma medially, dark brown; pterostigma largely subhyaline, only laterally brownish; veins brown; pronotum anteriorly and ventrally, mesopleuron partly, outer side of scapus, apices of basal segments of flagellum and telotarsi apically, infusate; wing membrane subhyaline.

Distribution.— Australia (Queensland).

Parachremylus Granger, 1949
(figs 222-232)

Parachremylus Granger, 1949: 185; Shenefelt, 1975: 1150; Wharton, 1993: 150. Type species (by original designation): *Parachremylus seyrigi* Granger, 1949 [examined].

Diagnosis.— Occipital carina present; notauli (shallowly) impressed anteriorly (figs 218, 226); scutellar sulcus wide and transverse (figs 218, 226); propodeum with short median carina, much shorter than propodeum (figs 224, 226); vein m-cu of fore wing antefurcal (fig. 222) or subinterstitial (fig. 212); vein cu-a of fore wing distinctly antefurcal (fig. 222); outer hind spur much longer than surrounding setae (fig. 228); first metasomal tergite largely desclerotized (= membranous) medially (figs 217, 231).

Biology.— Unknown.

Distribution.— Afrotropical (small genus: Malagasy, West Africa (Wharton, 1993)).

Parahormius Nixon, 1940
(figs 310-320)

Parahormius Nixon, 1940: 473; Shenefelt, 1975: 1151-1153; Belokobylskij, 1990: 59-64 (key to Palaearctic spp.), 1994b: 15; Papp, 1990: 186-189 (checklist); Whitfield & Wagner, 1991: 740; Wharton, 1993: 150-158 (key to New World spp.). Type species (by original designation): *Parahormius jason* Nixon, 1940 [examined].

Diagnosis.— Head smooth or nearly so and sparsely setose dorsally (fig. 312); antenna slender (fig. 303); mesoscutum not overreaching pronotum (figs 303, 314), with a narrow and usually smooth median depression between notauli (fig. 319); notauli narrow and shallow posteriorly, impressed anteriorly (fig. 319); scutellum gently rounded laterally (fig. 319); scutellar sulcus shallow and comparatively narrow (fig. 319); precoxal sulcus and mesopleuron smooth (fig. 314); propodeum areolate (fig. 319); vein m-cu of hind wing present (fig. 310); vein M+CU of hind wing about as long as vein 1-M (fig. 310); vein r of fore wing longer than vein 3-SR or of about equal length (fig. 310); vein r-m of fore wing usually present (fig. 300); first subdiscal cell of fore wing slender (fig. 310); vein 3-M of fore wing largely unsclerotized (fig. 310); vein CU1a situated just below level of vein 2-CU1 (fig. 317); vein m-cu of fore wing postfurcal; vein cu-a of hind wing present, short (fig. 310); first tergite completely sclerotized medially, lateral areas of tergite comparatively narrow (fig. 316); ovipositor sheath somewhat widened (fig. 313).

Biology.— Parasite of Gelechiidae, Lyonetiidae, Coleophoridae and Cosmopterygidae.

Distribution.— Cosmopolitan, except Australian region (medium-sized genus).

Proavga Belokobylskij, 1989
(figs 265-275)

Proavga Belokobylskij, 1989: 390-391; Papp, 1993: 157 (p.p.); Wharton, 1993: 159. Type species (by original designation): *Proavga lativalva* Belokobylskij, 1989 [examined].

Diagnosis.— Head smooth dorsally (fig. 271); occipital carina running directly to base of mandible (fig. 270); notauli impressed anteriorly (fig. 267); vein cu-a of hind wing present (fig. 265); mesoscutum overreaching pronotum (fig. 268); propodeum completely areolate (fig. 267); ovipositor sheath strongly widened (fig. 268); vein r of fore wing (slightly) shorter than vein 3-SR (fig. 265); vein r-m of fore wing present; vein m-cu of fore wing postfurcal (fig. 265); vein cu-a of fore wing far postfurcal; first subdiscal cell of fore wing robust (fig. 265); vein 3-M of fore wing largely sclerotized (fig. 265); vein m-cu of hind wing absent (fig. 265); vein M+CU of hind wing longer than vein 1-M; first tergite completely sclerotized medially (figs 272).

Biology.— Unknown.

Distribution.— Australian (only type species described).

Notes.— According to Wharton (1993) not a true Hormiine because of the presence of an interanal vein, the far postfurcal vein cu-a of fore wing and position of metasomal spiracles, and he placed it in his Exothecini. However, the characters mentioned are synplesiomorphous for the group; the desclerotization of the metasoma, the position of the occipital carina, the shape of the first tergite, and the enlarged telotarsi makes it more likely that it is an aberrant genus within the Hormiinae (as e.g. *Hormiitis*).

Pseudobiosteres Hedwig, 1961
(figs 255-264)

Pseudobiosteres Hedwig, 1961: 297; van Achterberg, 1980: 28; Belokobylskij & Tobias, 1986: 65 (as synonym of *Avga* Nixon, 1940); Wharton, 1993: 133 (id.). Type species (by original designation): *Pseudobiosteres dorsomaculatus* Hedwig, 1961 [examined].

Popoviella Tobias, 1962: 1192; van Achterberg, 1980: 28 (as synonym of *Pseudobiosteres*); Belokobylskij & Tobias, 1986: 65 (as synonym of *Avga* Nixon, 1940); Wharton, 1993: 133 (id.). Type species (by original designation): *Popoviella pilosa* Tobias, 1962.

Diagnosis.— Head granulate dorsally (fig. 257); notauli absent or nearly so (fig. 263); vein m-cu of fore wing parallel to vein 1-M posteriorly (fig. 255); vein r of fore wing distinctly shorter than vein 3-SR (fig. 255); vein m-cu of fore wing (narrowly) antefurcal (fig. 255); vein cu-a of hind wing present; vein 1-R1 (= metacarp) shorter than pterostigma (fig. 255); first tergite completely sclerotized medially, parallel-sided posteriorly or nearly so (fig. 264) and granulate.

Distribution.— Palaearctic (only type species described).

Note.— According to Belokobylskij & Tobias, 1986, a junior synonym of the genus *Avga*, but the type species has its venation different from that of the *Avga* spp. I have examined and therefore it seems justified to retain *Pseudobiosteres* as a valid genus until intermediates are found.

***Pseudohormius* Tobias & Alexeev, 1973**
(figs 300-309)

Pseudohormius Tobias & Alexeev, 1973: 287; Wharton, 1993: 159-160. Type species (by original designation): *Pseudohormius turkmenus* Tobias & Alexeev, 1973 [examined by Wharton].

Diagnosis.— Head transversely and irregularly rugulose or aciculate dorsally (fig. 301); antenna slender (fig. 303); mesocutum with a wide and crenulate median depression between notauli (fig. 308); notauli wide and deep posteriorly, impressed anteriorly (fig. 308); mesoscutum not overreaching pronotum (fig. 303); scutellum angulate laterally (fig. 308); scutellar sulcus deep and wide (fig. 308); precoxal sulcus and mesopleuron dorsally distinctly sculptured (fig. 303); propodeum without areolation (fig. 309); vein m-cu of hind wing present (fig. 300); vein M+CU of hind wing shorter than vein 1-M (fig. 300); vein r of fore wing longer than vein 3-SR or of about equal length (fig. 300); vein r-m of fore wing present (fig. 300), or absent (Wharton, 1993); first subdiscal cell of fore wing slender (fig. 300); vein 3-M of fore wing largely unsclerotized (fig. 300); vein m-cu of fore wing postfurcal (fig. 300); notauli wide, crenulate (fig. 308); vein CU1a anteriorly situated (figs 300, 307); vein cu-a of hind wing present; first tergite completely sclerotized medially, lateral area of tergite wide (fig. 309).

Distribution.— South Palaearctic, Oriental, Afrotropical, ?Nearctic (Wharton, 1993; small genus).

Tribe Hormiini Foerster, 1862
(figs 168-211, 568-578)

Hormiini; Belokobylskij, 1989: 376, 1993a: 149 (sensu stricto!), 1994: 58; Quicke & van Achterberg, 1990: 39-40; van Achterberg, 1993: 21; Quicke, 1994: 159-160.

Diagnosis.— Pedicellus large relative to scapus, slightly shorter than scapus (figs 171, 181, 195, 207); antenna of ♀ slender (figs 171, 182); prepectal carina complete (figs 183, 205), if weakly developed then vein r-m of fore wing absent (fig. 568); vein CU1b of fore wing near level of vein 2-CU1 or nearly so (figs 168, 180, 202, 568).

Biology.— Gregarious ectoparasites of lepidopterous larvae.

Distribution.— Cosmopolitan.

***Hormisca* Telenga, 1941**
(figs 168-179)

Hormisca Telenga, 1941: 115, 397; Tobias, 1974: 262 (as synonym of *Hormius* Nees, 1818); Shenefelt, 1975: 1142-1143; Wharton, 1993: 136-137. Type species (by original designation): *Hormisca tatarianae* Telenga, 1941.

Diagnosis.— Apical fringe of fore wing largely absent (fig. 168); vein M+CU of hind wing longer than vein 1-M (fig. 168); vein 1-R1 (= metacarp) very short, much shorter than pterostigma (figs 168, 177-179); vein SR1 of fore wing curved; vein m-cu of fore wing far antefurcal (fig. 168) if vein 2-SR is absent (but if faintly developed (figs 177, 178) then narrowly postfurcal).

Distribution.— South Palaearctic (small genus).

Note.— Wharton (1993) hypothesized a sister group relationship between the *Hormius tatianae* species group (= *Hormisca*) and the *H. propodealis* group (= *Anhormius*). Both groups have the occipital carina clearly separated from the hypostomal carina ventrally, the pronotum comparatively small and little sculptured, the notauli narrow, the mesoscutum rugose medio-posteriorly and the sculpture of propodeum little dominating the areolation. However, considering the existing variation in the genus *Hormius* only the position of the occipital carina would seem to be useful to establish relationships at this level. The different wing venation (e.g. position of vein 2-SR of fore wing (present in subgenus *Anhormius*: fig. 568; usually absent in *Hormisca*: figs 168, 177-179), which is reversed in these groups for vein 3-SR), the length of vein 1-R1 of fore wing and shape of vein SR1, the reduction of apical fringe of fore wing in *Hormisca* (fringe present in *Anhormius*), the presence of latero-posterior depressions of first tergite in *Anhormius* (absent in *Hormisca*), the absence of dorsal carinae in *Hormisca* and the position of the prepectal carina together make a sister relationship between these groups very unlikely.

***Hormius* Nees, 1818 sensu lato**
(figs 191-211, 568-578)

Hormius Nees, 1818: 305; Shenefelt, 1975: 1143-1148; Belokobylskij & Tobias, 1986: 67 (key to West Palaearctic spp.); Belokobylskij, 1989: 380-381 (key to Australian spp.), 1994b: 58-60; Papp, 1990: 179-186 (checklist of Palaearctic and Oriental spp.); Wharton, 1993: 136-141. Type species (by monotypy): *Bracon moniliatus* Nees, 1812 [examined (neotype)].

Chlidonia Herrich-Schäffer, 1838: 157; Shenefelt, 1975: 1143. Type species (by monotypy): *Bracon moniliatus* Nees, 1812 [examined].

Hormiellus Enderlein, 1912: 20; Shenefelt, 1975: 1142; Wharton, 1993: 136 (as synonym of *Hormius*). Type species (by original designation): *Hormiellus solocipes* Enderlein, 1912 [examined].

Mediella Hedqvist, 1963: 52; Shenefelt, 1975: 1149; Belokobylskij, 1989: 380 (as subgenus of *Hormius*); Wharton, 1993: 136 (as synonym of *Hormius*). Type species (by original designation): *Mediella romani* Hedqvist, 1963 [examined].

Anhormius Belokobylskij, 1989: 387; Wharton, 1993: 136 (synonym of *Hormius*). Type species (by original designation): *Anhormius propodealis* Belokobylskij, 1989 [examined].

Diagnosis.— Prepectal carina remains comparatively far removed from anterior margin of mesopleuron (figs 193, 205); fore wing with fringe apically (fig. 180); vein 1-R1 (= metacarp) longer than pterostigma (figs 180, 194); vein SR1 of fore wing straight; vein M+CU of hind wing shorter than vein 1-M (figs 180, 194, 202), exceptionally somewhat longer (fig. 568); vein m-cu of fore wing distinctly postfurcal and vein 2-SR distinct (figs 180, 194; but vein r-m may be absent (fig. 568)); vein 3-SR of fore wing about as long as vein 2-SR or shorter (figs 194, 202) or vein r-m absent (fig. 568); mesoscutum largely smooth (figs 210, 574) or, if granulate then dorsope of first tergite absent; hind femur less sculptured, usually smooth (fig. 197); length of ovipositor sheath short to medium-sized (figs 193, 205).

Biology.— Parasite of Tortricidae and Pyralidae.

Distribution.— Cosmopolitan.

Note.— According to Wharton (1993) the genus *Hormius* is heterogeneous in the character of the connection of the occipital carina with the hypostomal carina. Normally these carinae meet (fig. 193) or nearly meet (fig. 575) well above the base of the mandible, but in some species the occipital carina remains separated from the hypo-

stomal carina ventrally. *Anhormius* may be recognized as a subgenus because it has vein M+CU of hind wing longer than vein 1-M (fig. 568), vein r-m of fore wing absent, and vein 3-M of fore wing unsclerotized. Its latero-posterior depressions of the first tergite are peculiar but occur also in the genus *Hormius*.

Hormius moniliatus (Nees, 1812)
(figs 191-201)

Bracon moniliatus Nees, 1812: 36-37, figs 11 a-c [type(s) lost].
Hormius moniliatus; Shenefelt, 1975: 1145-1146.

Material.— Neotype (here designated), ♀ (ZMB), "22/313", "Aachen, August", "Frst", "*moniliatus* Nees"; 1 ♂ (RMNH), "Nederland, Heerde, 1-20.vii.1973, J.B. Wolschrijn"; 1 ♂ (RMNH), "Nederland, Oostvoorne, Biol. Station, 26.vi-17.vii.1975, C. v. Achterberg".

Holotype, ♀, length of body 3.0 mm, of fore wing 2.2 mm; length of antenna 1.2 times fore wing.

Head.— Antennal segments 22, length of third segment 1.1 times fourth segment, length of third, fourth, and penultimate segments 2.7, 2.3, and 1.5 times their width, respectively (figs 192, 193); length of maxillary palp 0.7 times height of head; length of eye in dorsal view 2.5 times temple; temples directly narrowed posteriorly (fig. 196); head in frontal view rather long (fig. 191); OOL:diameter of ocellus:POL = 14:5:5; face only laterally rugulose; vertex distinctly rugulose (fig. 196); length of malar space 1.4 times basal width of mandible; malar suture absent.

Mesosoma.— Length of mesosoma 1.7 times its height; side of pronotum coriaceous, but smooth dorso-posteriorly (fig. 193); mesoscutum gradually declivous anteriorly (fig. 193); mesosternal sulcus shallow, indistinctly rugulose, but posterior triangle rugose; precoxal sulcus distinct except posteriorly, and only medially crenulate; mesopleuron smooth, but striate(-rugose) below speculum and dorsally; metapleuron densely rugulose; mesoscutum smooth, largely glabrous, and shiny; lateral carinae of scutellum weak, absent posteriorly; notauli rather narrow, complete, largely smooth, posteriorly ending in a rugulose area, without depression; scutellar sulcus wide, with one median carina (fig. 200); depressed part of side of scutellum comparatively narrow (fig. 200); surface of propodeum coriaceous anteriorly and remainder transversely rugose, and its areola narrow (fig. 200).

Wings.— Fore wing: length of r equal to width of pterostigma and emerging distinctly behind middle of pterostigma (fig. 194); r:3-SR:SR1 = 15:24:66; 1-CU1:2-CU1 = 1:20; basally CU1a at level of vein 2-CU1 and emerging near CU1b (fig. 194); 2-SR:3-SR:r-m = 32:24:13. Hind wing: M+CU:1-M = 16:18; m-cu distinct.

Legs.— Hind coxa largely rugulose; length of femur, tibia and basitarsus of hind leg 4.7, 9.8 and 5.7 times their width, respectively; hind tibial spurs indistinct, somewhat longer than surrounding setae.

Metasoma.— Length of first tergite 0.8 times its apical width, rather flat, its surface largely coriaceous, shiny, its dorsal carinae distinct on basal 0.7 of tergite (fig. 201); second-sixth tergites slightly sclerotized, except laterally (fig. 201); length of ovipositor sheath 0.14 times fore wing.

Colour.— Largely yellowish-brown (by ageing?); mesopleuron dorsally, propodeum, first tergite, and lateral parts of remaining tergites, dark brown; wing mem-

brane largely slightly infuscate; pterostigma pale yellowish, with distal margin somewhat darker; veins largely rather dark brown; eight basal segments of antenna yellowish, remainder of antenna infuscate.

Distribution.— Palaeartic, Greenland (Shenefelt, 1975).

Taiwanhormius Belokobylskij, 1988
(figs 180-190)

Taiwanhormius Belokobylskij, 1988a: 20-21; Wharton, 1993: 160. Type species (by original designation):
Taiwanhormius granulatus Belokobylskij, 1988 [examined].

Diagnosis.— Prepectal carina reaching anterior margin of mesopleuron (fig. 183); mesoscutum granulate (fig. 189); fore wing with fringe apically (fig. 180); vein 1-R1 (= metacarp) longer than pterostigma (figs 180, 194); vein M+CU of hind wing shorter than vein 1-M (figs 180, 194, 202), exceptionally somewhat longer (fig. 568); vein m-cu of fore wing distinctly postfurcal and vein 2-SR distinct (figs 180, 194); vein 3-SR of fore wing distinctly longer than vein 2-SR; vein r-m of fore wing present (fig. 180); hind femur strongly sculptured (fig. 186); first metasomal tergite with dorsope (fig. 190); ovipositor sheath slender and distinctly longer than first tergite (fig. 183).

Biology.— Unknown.

Distribution.— Oriental (only type species described).

Subfamily Lysiterminae Tobias, 1968
(figs 357-367, 381-444, 662-727, 729-732)

Lysitermini Tobias, 1968: 28; van Achterberg, 1991: 8, 15; Belokobylskij, 1993a: 150-151, 1994: 61; Quicke, 1994: 159-160.

Lysiterminae; van Achterberg, 1993: 26.

Lysitermina; Belokobylskij, 1993a: 151.

Acanthormiina Belokobylskij, 1993a: 151. **Syn. nov.**

Tritermina Belokobylskij, 1993a: 152. **Syn. nov.**

Diagnosis.— Antennal segments 14-34; occipital carina distinctly connected to hypostomal carina ventrally (fig. 433); first subdiscal cell of fore wing usually slender (figs 381, 402), but sometimes comparatively wide (fig. 421); vein CU1a of fore wing near middle of first subdiscal cell (figs 381, 421) or above its middle (figs 357, 393, 402, 409); dorsal carinae of first tergite variable (figs 380, 392, 401, 420), if connected to each other subbasally then semicircularly united (fig. 401); second metasomal spiracle in notum of tergite (figs 395, 433); third metasomal tergite strongly sculptured and with complete, sharp, lateral margin (figs 367, 385, 395, 443); third and fourth tergite without transverse striae (figs 392, 443); third tergite (if fourth tergite is retracted) with lamella or thin serrate rim apically (figs 395, 406b, 412, 430); ovipositor valve with one valvillus; ovipositor sheath distinctly protruding and slender, but shorter than metasoma (fig. 443).

Biology.— Parasites of Psychidae and Xyloryctidae (Lepidoptera), but biology hardly known.

Distribution.— Cosmopolitan.

Notes.— The genus *Cedria* Wilkinson is rather similar to the Lysiterminae but differs by the shortened tarsi and distinctly enlarged telotarsi (telotarsi in lateral view at

most weakly enlarged in the *Lysiterminae*), the absence of the veins 1-SR and r-m of fore wing, the presence of a medial groove on the mesoscutum, by the absence of vein cu-a of hind wing, the low number of antennal segments (13), the larger scapus, and the second and third metasomal spiracles near lateral fold of tergites (in *Lysiterminae* distinctly removed from lateral fold).

The subtribes *Acanthormiina* and *Tritermina* are synonymized because firstly the genus *Acanthormius* is sometimes separable from the genus *Lysitermus* only with difficulty and these genera are very closely related, and secondly *Tritermus* is also closely related to *Lysitermus*, differing mainly by the open first subdiscal cell of fore wing and the immovably joined first and second metasomal tergites.

***Acanthormius* Ashmead, 1906**
(figs 409-420, 662-691)

Acanthormius Ashmead, 1906: 200; Shenefelt, 1975: 1139-1140; Papp, 1986: 343-349; Tobias & Belokobylskij, 1981: 357-358; Belokobylskij, 1986: 62-63, 1987: 85-87, 1988: 29-37, 1990: 135-139, 1994b: 64; van Achterberg, 1991: 15-18 (key); Wharton, 1993: 123-124; Belokobylskij, 1994b: 61-64. Type species (by monotypy): *Acanthormius japonicus* Ashmead, 1906 [examined].

Diagnosis.— Antennal segments (of both sexes) 14-25; apex of scapus oblique (fig. 412); antennal sockets protruding laterally (figs 413, 414); head gradually narrowed ventrally (fig. 414); malar suture absent (figs 412, 414); mesoscutum largely setose or with setae only near notauli and laterally; at least distal half of vein 2-SR of fore wing sclerotized (fig. 409); vein m-cu of fore wing short (fig. 409); vein 1-SR of fore wing long (fig. 409); first subdiscal cell of fore wing narrow and vein CU1b present (fig. 417); parastigma hardly or not differentiated (fig. 409); first metasomal tergite movably joined to second tergite (fig. 412); dorsople of first tergite present, but small (fig. 420); posteriorly third tergite with strongly to weakly protruding corners (figs 412, 416, 420), at least with a slightly pointed lamella or minutely serrated; fourth and fifth tergites smooth, weakly sclerotized, largely retracted and without lateral crease (fig. 412); ovipositor sheath distinctly protruding, short to medium-sized, and shorter than metasoma.

Biology.— Parasites of Xyloryctidae.

Distribution.— Afrotropical (one species in Malagasy), Indo-Australian (many species), and East Palaearctic (few species). Large genus, with most of its species undescribed.

Key to species of the genus *Acanthormius* Ashmead

(After van Achterberg (1991) and mainly compiled from the original descriptions; *A. capensis* (Hedqvist) is excluded because in a paper to be published this year Dr S.A. Belokobylskij will include it in a new genus).

1. Mesoscutum densely sculptured, rugose or granulate, rather mat 2
- Mesoscutum largely smooth, at most punctulate, shiny 18
2. Mesoscutum only finely granulate, at most with some rugulae laterally; ovipositor sheath longer than second metasomal tergite and 0.7-1.0 times combined length of second and third tergites (but females of several spp. unknown) 3
- Mesoscutum distinctly rugose between granulation; ovipositor sheath about as long as second tergite 13

3. Ventral margin of apical tooth of third tergite in lateral view at nearly same level as ventral margin of third tergite (fig. 59 in Belokobylskij, 1990), tooth about 0.3 times medial length of third tergite (excluding lamella); lateral sides of second and third tergites distinctly curved (fig. 60, l.c.); antennal segments of ♀ 21; antenna blackish apically and with 6 yellowish segments subapically; pterostigma brown; vein r of fore wing emitted distinctly behind middle of pterostigma (fig. 56, l.c.); Vietnam *A. nixonii* Belokobylskij, 1990
- Ventral margin of apical tooth of third tergite in lateral view distinctly above level of ventral margin of third tergite, tooth 0.3-0.9 times medial length of third tergite (excluding lamella); lateral sides of second and third tergites slightly curved; antennal segments 15-21; colour of apical third of antenna and of pterostigma variable; vein r of fore wing emitted usually submedially from pterostigma 4
4. Apical teeth of third tergite small, 0.3-0.4 times medial length of third tergite (excluding lamella; fig. 662; fig. 7 in Belokobylskij, 1986) and broad; antennal segments 17-19 5
- Apical teeth of third tergite medium-sized to large, 0.5-0.9 times medial length of third tergite (excluding lamella; figs 668, 673, 675, 678), if medium-sized then rather slender apically; antennal segments 15-21 7
5. Apical tooth of third tergite wide in lateral view and margin of lamella below it smooth or nearly so (fig. 8 in Belokobylskij, 1986); third tergite without ventral protuberance (fig. 8, l.c.); basal third of pterostigma yellowish and remainder dark brown; medial length of second tergite about 1.3 times medial length of third tergite (excluding lamella); apical third of antenna of ♀ dark brown; Russia (Primorskij kraj) *A. crustatus* Belokobylskij, 1986
- Apical tooth of third tergite slender in lateral view and margin of lamella below it serrate (fig. 665), if rather wide and lamella smooth then with ventral protuberance (fig. 48 in Papp, 1991); pterostigma unicoloured pale yellowish or brown; medial length of second tergite 1.6-1.7 times medial length of third tergite (excluding lamella); apical third of antenna of ♀ brown or with whitish subapical ring 6
6. Apical tooth of third tergite wide in lateral view and margin of lamella below it nearly smooth (fig. 48 in Papp, 1991); third tergite with distinct ventral protuberance; apical third of antenna of ♀ pale yellowish, with four apical segments whitish; pterostigma pale yellowish; India (West Bengal) *A. gilvov* Papp, 1991
- Apical tooth of third tergite slender in lateral view and margin of lamella below it distinctly serrate (fig. 665); third tergite without ventral protuberance (fig. 665); apical third of antenna of ♂ and pterostigma brown; Malaysia (Sabah) *A. brevidentatus* spec. nov.
7. Apical tooth of third tergite narrow, nearly acute apically (fig. 667), 0.8-0.9 times medial length of third tergite (excluding lamella; fig. 668); apical third of antenna (dark) brown and apically apically 8
- Apical tooth of third tergite wide, obtuse apically (figs 672, 677), 0.5-0.7 times medial length of third tergite (excluding lamella; figs 673, 675); colour of apical third of antenna variable, frequently partly ivory 9
8. Vertex smooth; third tergite in lateral view with one wide and one minute ventral protuberance, both robust (fig. 667); antennal segments of ♂ 17-18; pterostigma completely rather dark brown; medial length of second tergite about 1.5 times

- medial length of third tergite (fig. 668); Indonesia (Sula Islands: Mangole)
 *A. yasirae* spec. nov.
- Vertex granulate; third tergite in lateral view with two slender ventral protuberances (fig. 54 in Belokobylskij, 1990); antennal segments of ♂ 19-20; distal half of pterostigma pale brown and its basal half whitish; medial length of second tergite about 1.3 times medial length of third tergite; Vietnam
 *A. flavoapicalis* Belokobylskij, 1990
9. Medial length of second tergite 1.0-1.2 times medial length of third tergite (excluding lamella; figs 763, 675); pterostigma (dark) brown, with its basal 0.4 whitish; apical segment of antenna ivory (unknown of *A. kabaenensis*); apical tooth of second tergite more or less slightly bent ventrad (figs 672, 677) 10
- Medial length of second tergite 1.4-1.6 times medial length of third tergite (excluding lamella; fig. 678); if about 1.4 times then pterostigma unicoloured dark brown; apical segment of antenna yellowish or (dark) brown; apical tooth of second tergite straight apically (fig. 681) 11
10. Vertex smooth; metasoma largely orange-brown; medially second tergite distinctly longer than third tergite (fig. 673); head in frontal view distinctly trapezoid (fig. 671); vein r of fore wing medium-sized (fig. 670); Malaysia (Sabah)
 *A. sabahensis* spec. nov.
- Vertex rugulose; metasoma blackish-brown; medially second tergite somewhat longer than third tergite (fig. 675); head in frontal view more elongate (fig. 676); vein r of fore wing comparatively short (fig. 674); Indonesia (Sulawesi: Kabaena Island) *A. kabaenensis* spec. nov.
11. Vertex rugose; apical third of antenna of ♀ (brownish-)yellow; pterostigma greyish-yellow; India (West Bengal) *A. obstitus* Papp, 1986
- Vertex smooth or superficially granulate; apical third of antenna of ♀ partly ivory or whitish, and apical segment dark brown; pterostigma dark brown, at most its basal third yellowish 12
12. Basal third of pterostigma yellowish and remainder dark brown; antennal segments of ♀ 15-17, of ♂ 17-20; vertex smooth; Japan *A. takadai* Watanabe, 1968
 Note. I have examined a male of a similar and probably new species from Sabah (Sipitang; ZIL) which has basal width of third tergite about 0.9 times medial length of tergite (instead of about 0.5 times).
- Pterostigma completely brown, at most basally slightly paler (fig. 679); antennal segments of ♀ about 21, of ♂ unknown; vertex superficially rugulose-coriaceous; Malaysia (Sabah) *A. royi* spec. nov.
13. Vertex rugose; antenna of ♀ without subapical ivory ring; antennal segments of ♀ 17-19 14
- Vertex smooth; colour of antenna of ♀ various; antennal segments of ♀ 17-24 . 15
14. Mesopleuron rugose; apical teeth of third metasomal tergite about half as long as third tergite medially; Japan (Ryukyu Islands) *A. rugosus* Watanabe, 1968
- Mesopleuron smooth; apical teeth of third tergite about 0.7 times length of third tergite medially; Taiwan *A. rugosivertex* Belokobylskij, 1988
15. Antennal segments of ♀ about 24; antenna of ♀ without ivory segments subapically; teeth of third metasomal tergite about 0.7 as long as third tergite medially; Philippines (Luzon) *A. philippinensis* Watanabe, 1968
- Antennal segments of ♀ 17-19; antenna of ♀ with ivory ring subapically; teeth of

- third tergite about 0.5 times as long as third tergite medially or teeth absent 16
16. Third metasomal tergite without apical teeth or lobes, only its lateral lamella somewhat pointed apically; ovipositor sheath about 0.8 times combined length of second and third tergites; malar space directly narrowed below eyes, outer border of cheeks straight; Taiwan *A. wusheensis* Belokobylskij, 1988
- Third tergite with pair of large apical teeth; ovipositor sheath about as long as second tergite or slightly longer; malar space gradually narrowed below eyes, outer border of cheeks curved 17
17. Length of temple in dorsal view about 0.6 times eye; precoxal sulcus smooth; length of hind femur about 5 times its maximum width; first metasomal tergite about as long as wide apically; third tergite with one small ventro-lateral tooth; apical 4-6 segments of antenna yellowish-white; Taiwan
..... *A. unidens* Belokobylskij, 1988
- Length of temple in dorsal view about 0.75 times eye; precoxal sulcus rugose; length of hind femur 5.6-6.3 times its width; length of first tergite about 0.6 times its apical width; third tergite with two small ventro-lateral teeth; antenna dark brown apically, but subapically with 2-5 yellowish-white segments; Russia (Far East) *A. rossicus* Tobias & Belokobylskij, 1981
18. Apex of third metasomal tergite without distinct teeth apically, at most its lamella protruding or serrate latero-apically (figs 682, 683) 19
- Apex of third tergite with pair of distinct apical teeth (figs 685, 687, 689, 690).... 20
19. Antennal segments of ♀ about 14, of ♂ 14-15; apical antennal segments of ♀ ivory, of ♂ yellowish-brown; second submarginal cell of fore wing short (fig. 684), vein r about as long as vein 3-SR; ovipositor sheath about as long as second tergite; temples gradually narrowed behind eyes; length of fore wing and of body about 1.2 mm; lamella of third tergite somewhat protruding postero-laterally, hardly serrate (fig. 682); Malaysia (West Malaysia; Sabah)
..... *A. malayensis* Watanabe, 1968
- Antennal segments of ♀ about 19; second submarginal cell of fore wing elongate (fig. 4 in Watanabe, 1968); apical third of antenna of ♀ brown; ovipositor sheath about as long as second and third tergites combined; temples strongly narrowed behind eyes; length of fore wing and body about 1.5 mm; lamella of third tergite only finely serrate, not protruding; Philippines, India ... *A. bakeri* Watanabe, 1968
Note. Provisionally included in *Acanthormius*; it may belong to the species-group of the genus *Lysitermus* with vein 2-SR of fore wing complete.
20. Ovipositor sheath about as long as metasoma; teeth of third tergite rather diverging posteriad (fig. 2 in Papp, 1986), in lateral view distinctly longer than wide, and about 0.4 times as long as third tergite medially; antenna of ♀ with about 21 segments, and its apical third dark brown; India (Tamil Nadu)
..... *A. alius* Papp, 1986
- Ovipositor sheath at most as long as second and third metasomal tergites combined (unknown for *A. nitidinotum*); teeth of third tergite parallel or nearly so, if somewhat diverging then in lateral view about as long as wide (fig. 687), and about 0.3 times long as third tergite medially (fig. 685)..... 21
21. Apical teeth of third tergite distinctly curved ventrad (fig. 687) 22
- Apical teeth of third tergite straight, directed posteriad (figs 416, 690) 23

22. Antenna of ♀ with subapical white band (16th-20th segments) and with about 23 segments; pterostigma pale yellowish medially; third tergite without distinct ventral protuberances and apical tooth rather slender (figs 41, 42 in Papp, 1991), its length about 0.7 times medial length of third tergite; India (Orissa)
 *A. propensus* Papp, 1991
- Antenna of ♀ unicoloured brown, without subapical white band, and with 17-19 segments; pterostigma dark brown medially, only basally pale yellowish; third tergite with distinct ventral protuberance and apical tooth robust, about as long as wide (fig. 687), its length about 0.3 times medial length of third tergite (fig. 685); Malaysia (Sabah) *A. curvidentatus* spec. nov.
23. Apical tooth of third tergite 0.6-0.8 times medial length of third tergite (excluding lamella), and lamella below tooth frequently serrate; antennal segments of ♀ 20-22, of ♂ 19-25 (but unknown for several spp.) 24
- Apical tooth of third tergite 0.3-0.4 times medial length of third tergite (excluding lamella), and lamella below tooth usually smooth; antennal segments of ♀ 18-21, of ♂ unknown 28
24. Pterostigma pale yellowish medially; antenna of ♀ with ivory ring subapically (antenna of ♂ brownish-yellow subapically); apical teeth of third tergite pale yellowish basally; length of ovipositor sheath about equal to combined length of second and third tergites; Japan (Ryukyu Islands)
 *A. iriomotensis* Watanabe, 1968
- Pterostigma (dark) brown medially; antenna of ♀ (dark) brown subapically (but antenna of ♀ unknown for most spp.); apical teeth of third tergite dark brown or yellowish-brown basally; length of ovipositor sheath slightly longer than second tergite (but ♀ of most spp. unknown) 25
25. Vein r of fore wing emitted distinctly behind middle of pterostigma (fig. 3 in Watanabe, 1968); apical tooth of third tergite 0.6 times medial length of third tergite; basal third of pterostigma yellowish and remainder dark brown; apical third of antenna of ♀ ♂ dark brown; antennal segments of ♀ ♂ 20-22; Japan (including Ryukyu Islands), Taiwan *A. japonicus* Ashmead, 1906
- Vein r of fore wing emitted submedially from pterostigma (fig. 409); apical tooth of third tergite 0.7-0.8 times medial length of third tergite (figs 412, 420); colour of pterostigma and antenna variable; antennal segments of ♂ 19-25 (unknown for ♀) 26
26. Third and fourth antennal segments (yellowish-)brown, paler than following segments; both apical segments of antenna of ♂ ivory; antennal segments of ♂ about 25; wing membrane subhyaline, only slightly infuscate near veins 1-M, 1-SR and r of fore wing; medial length of second tergite 1.3 times medial length of third tergite (excluding lamella; fig. 420); basal 0.4 of pterostigma brownish-yellow and remainder dark brown; Indonesia (Sumatra)
 *A. sumatrensis* van Achterberg, 1991
- Third and fourth antennal segments dark brown, similarly coloured to following segments; both apical segments of antenna of ♂ dark brown or pale brown; antennal segments of ♂ 19-23; wing membrane subhyaline or evenly slightly infuscate; medial length of second tergite 1.4-1.6 times medial length of third tergite (excluding lamella; fig. 689); colour of pterostigma variable 27

27. Pterostigma largely brown; antennal segments of ♂ 19-20; third tergite comparatively wide (fig. 689), its basal width 2.3-2.8 times its medial length; apex of antenna of ♂ (pale) brown; apical tooth of third tergite more robust (fig. 690); length of body 1.3-1.5 mm; length of first tergite about 1.2 times its apical width (fig. 689); Indonesia (Sulawesi; ?Sula Islands: Mangole) *A. dentifer* spec. nov.
- Pterostigma light brown and its base whitish; antennal segments of ♂ 21-23; third tergite less wide, its basal width about 1.7 times its medial length; apex of antenna of ♂ dark brown; apical tooth of third tergite more slender (fig. 65 in Belokobylskij, 1988); length of body 1.9-2.2 mm; length of first tergite about equal to its apical width (fig. 64, l.c.); Taiwan *A. nitidiotum* Belokobylskij, 1988
28. Length of ovipositor sheath less than length of first metasomal tergite; antennal segments of ♀ about 21; Solomon Islands *A. dubitatus* Brues, 1918
- Ovipositor sheath about as long as second tergite; antennal segments of ♀ 18-19 .
..... 29
29. Apical teeth of third metasomal tergite about 0.3 times length of third tergite medially; apical half of antenna tricoloured; Malagasy *A. dentatus* Granger, 1949
- Apical teeth of third tergite about 0.4 times length of third tergite medially; apical half of antenna dark brown; India (West Bengal) *A. balanus* Papp, 1986

Acanthormius brevidentatus spec. nov.
(figs 662-665)

Material.— Holotype, ♂ (ZIL), "Malaysia: Sabah, Sipitang, Mendolong, A1L, 11.iv.1988, leg. S. Adebratt".

Holotype, ♂, length of both body and of fore wing 1.3 mm; length of antenna 1.7 times fore wing.

Head.— Antennal segments 19, length of third segment equal to fourth segment, length of third, fourth, and penultimate segments 4.0, 4.0 and 3.5 times their width, respectively; length of maxillary palp 1.1 times height of head; length of eye in dorsal view 2.0 times temple; temples directly narrowed posteriorly; head in frontal view rather globular; OOL:diameter of ocellus:POL = 8:4:5; face and vertex smooth; length of malar space 1.1 times basal width of mandible.

Mesosoma.— Largely long and moderately densely setose; length of mesosoma 1.5 times its height; side of pronotum crenulate medially and remainder largely smooth; precoxal sulcus only medially distinctly impressed, smooth, complete; mesopleuron smooth; metapleuron rather sparsely erect setose, smooth; mesoscutum granulate, middle lobe more strongly sculptured, mat and somewhat elevated above lateral lobes; lateral carinae of scutellum rather weak; notauli rather narrow, complete, largely smooth, posteriorly without distinct depression; surface of propodeum granulate between carinae and median carina very short.

Wings.— Fore wing (comparatively narrow; fig. 664): r distinctly oblique, somewhat longer than width of pterostigma and emerging submedially from pterostigma (fig. 664); r:3-SR:SR1 = 5:9:30; cu-a indistinct, interstitial; basally CU1a nearly at level of vein 2-CU1; 2-SR:3-SR:r-m = 11:9:5. Hind wing: M+CU:1-M = 9:15; m-cu weak.

Legs.— Hind coxa smooth, with some long setae; length of femur, tibia and basitarsus of hind leg 5.6, 10.1 and 9.0 times their width, respectively; hind tibial spurs indistinct, similar to surrounding setae.

Metasoma.— Length of first tergite equal to its apical width; surface of three basal tergites coarsely longitudinally rugose (but weak on third tergite) with finely transverse sculpture in between; medial length of second tergite 1.4 times medial length of third tergite (fig. 662); third tergite with pair of short and parallel apical teeth, teeth in lateral view slender, distinctly above level of ventral margin of third tergite, obtuse apically and straight (fig. 665) and 0.3 times as long as medial length of third tergite (excluding posterior lamella); lamella below apical tooth somewhat concave and serrate apically (fig. 665); third tergite with one minute ventral protuberance and second tergite without protuberance (fig. 665).

Colour.— Dark brown; clypeus, prothorax, mesospleuron ventrally, mesosternum and metasoma, yellowish-brown; face, scapus and pedicellus, tegulae, pterostigma and veins, brown; remainder of antenna dark brown; palpi pale yellowish; legs and metasoma ventrally, brownish-yellow; wing membrane evenly slightly infuscate.

Distribution.— Malaysia (East Malaysia: Sabah).

Acanthormius curvidentatus spec. nov.
(figs 685-688)

Material.— Holotype, ♀ (RMNH), "Malaysia- SW Sabah, nr Long Pa Sia (West), c. 1000 m, 1-13.iv.1987, Mal. trap 4, C. van Achterberg, RMNH'87". Paratype: 1 ♀ (ZIL), "Malaysia: Sabah, Sipitang, Mendolong, T6/R, 11.v.1988, leg. S. Adebratt".

Holotype, ♀, length of body 1.9 mm, of fore wing 1.8 mm; length of antenna 1.4 times fore wing.

Head.— Antennal segments 19, length of third segment equal to fourth segment, length of third, fourth, and penultimate segments 4.5, 4.5, and 3.5 times their width, respectively; length of maxillary palp 1.1 times height of head; length of eye in dorsal view 2.8 times temple; temples directly roundly narrowed posteriorly; head in frontal view comparatively transverse, directly narrowed ventrally (fig. 688); OOL:diameter of ocellus:POL = 5:2:3; face and vertex smooth; length of malar space 0.8 times basal width of mandible.

Mesosoma.— Largely long and densely setose; length of mesosoma 1.6 times its height; side of pronotum largely smooth and densely setose; precoxal sulcus shallow, smooth, complete, mainly indicated by a narrow band of dense setosity; mesopleuron smooth; metapleuron finely rugulose and densely setose; mesoscutum smooth and shiny; lateral carinae of scutellum indistinct; notauli rather wide, complete, sparsely crenulate, posteriorly ending in a rather long elliptical depression; surface of propodeum largely smooth and posteriorly rugulose between carinae and median carina absent.

Wings.— Fore wing: r distinctly longer than width of pterostigma and emerging submedially from pterostigma (fig. 686); r:3-SR:SR1 = 5:7:18; 1-CU1:2-CU1 = 1:9; cu-a indistinct; basally CU1a near level of vein 2-CU1; 2-SR:3-SR:r-m = 8:7:5. Hind wing: M+CU:1-M = 7:10; m-cu distinct.

Legs.— Hind coxa smooth; hind leg long setose; length of femur, tibia and basitarsus of hind leg 4.8, 10.2 and 7.0 times their width, respectively; hind tibial spurs indistinct, similar to surrounding setae.

Metasoma.— Length of first tergite equal to its apical width; surface of three basal tergites coarsely longitudinally rugose with finely transverse sculpture in between; medial length of second tergite 1.3 times medial length of third tergite (fig. 685); third tergite with pair of rather short and slightly diverging apical teeth (fig. 685), teeth in lateral view hardly longer than wide, obtuse apically and curved ventrad (fig. 687) and 0.3 times as long as medial length of third tergite (excluding posterior lamella); lamella below apical tooth straight and smooth apically (fig. 687); third tergite with one medium-sized ventral protuberance and second tergite with minute protuberance (fig. 687); length of ovipositor sheath 0.33 times fore wing (and about as long as combined length of second and third tergites).

Colour.— Brownish-yellow; flagellum, apex of ovipositor sheath, pterostigma (but basal third whitish), and veins (but vein 1-R1 and veins of basal third of fore wing yellowish), rather dark brown; metasoma dorsally dark brown; palpi and metasoma ventrally whitish; legs and tegulae pale yellowish; mesopleuron, metapleuron and propodeum, brown; wing membrane subhyaline.

Variation.— Antennal segments of ♀ 17(1), 18(1) or 19(1); length of body 1.8-2.0 mm, of fore wing 1.4-1.8 mm; length of ovipositor sheath 0.29-0.33 times fore wing; vein CU1a of fore wing just below or at level of vein 2-CU1; paratype has pterostigma largely brown, with its base paler brown and membrane of fore wing slightly infusate.

Distribution.— Malaysia (East Malaysia: Sabah).

Acanthormius dentifer spec. nov.
(figs 689-691)

Material.— Holotype, ♂ (RMNH), "Indonesia: Sulawesi, nr Mamasa, Penannang, 1620 m, Mal. trap 20, 9-22.iv.1991, C. v. Achterberg, RMNH'91".

Holotype, ♂, length of both body and of fore wing 1.6 mm; length of incomplete antenna 1.6 times fore wing.

Head.— Remaining antennal segments 18, length of third segment equal to fourth segment, length of third, and fourth segments both 4.7 times their width, respectively; length of maxillary palp 1.2 times height of head; length of eye in dorsal view 1.7 times temple; temples roundly narrowed posteriorly; head in frontal view rather globular; OOL:diameter of ocellus:POL = 3:2:3; face and vertex smooth; length of malar space 1.2 times basal width of mandible.

Mesosoma.— Largely rather long and sparsely setose; length of mesosoma 1.5 times its height; side of pronotum largely smooth and sparsely setose; precoxal sulcus only anteriorly and medially distinctly impressed, rather narrow, smooth; mesopleuron smooth; metapleuron largely smooth and sparsely setose, ventrally rugose; mesoscutum smooth and shiny, largely setose; lateral carinae of scutellum indistinct; notauli narrow, complete, largely smooth, posteriorly without depression; surface of propodeum largely smooth between carinae and median carina short.

Wings.— Fore wing: length of r somewhat less than width of pterostigma and emerging submedially from pterostigma (fig. 691); r:3-SR:SR1 = 5:12:35; cu-a indistinct and subinterstitial; basally CU1a just above level of vein 2-CU1 (fig. 691); 2-SR:3-SR:r-m = 13:12:7. Hind wing: M+CU:1-M = 5:15; m-cu distinct.

Legs.— Hind coxa smooth and sparsely setose; length of femur, tibia and basitar-

sus of hind leg 6.0, 11.7 and 9.0 times their width, respectively; hind tibial spurs minute, somewhat longer than surrounding setae.

Metasoma.— Length of first tergite 1.2 times its apical width (fig. 689); surface of two basal tergites coarsely longitudinally rugose with finely transverse sculpture in between, of third tergite densely reticulate; medial length of second tergite 1.6 times medial length of third tergite (fig. 689); third tergite with pair of long and parallel apical teeth, teeth in lateral view longer than wide, obtuse apically and straight (fig. 690) and 0.7 times as long as medial length of third tergite (excluding posterior lamella); lamella below apical tooth concave and serrate apically (fig. 690); both second and third tergites with a rather small triangular ventral protuberance (fig. 690).

Colour.— Dark (reddish-)brown; antenna dark brown; head (but dorsally partly infusate), pronotum dorsally, mesonotum, metanotum, and mesopleuron near precoxal sulcus, yellowish-brown; palpi and metasoma ventrally, whitish; tegulae and legs, pale yellowish; pterostigma and veins, brown; wing membrane slightly infusate.

Distribution.— Indonesia (Sulawesi; ?Sula Islands: Mangole).

Note.— I have examined a male from Mangole (RMNH: "Indonesia: Sula Isl., Mangole, Mandafuhi Camp, c. 50 m, 26.x.1993, C. v. Achterberg & Y. Yasir, RMNH '93") which is very similar to the holotype of *A. dentifer*. It differs by the sculpture of the third metasomal tergite (which is normally longitudinally rugose), the reduction of the ventral protuberance of second tergite (virtually absent) and of third tergite (minute), and the colour of the metasoma (blackish-brown dorsally). Its antennae have 19 (right) or 20 (left) segments, the apical segment is pale brown, the medial length of second tergite 1.5 times medial length of third tergite, and the apical tooth of third tergite 0.8 times medial length of tergite.

Acanthormius kabaenensis spec. nov.
(figs 674-677)

Material.— Holotype, ♀ (RMNH), "Indonesia: SE Sulawesi, Kabaena Isl., xi.1989, J. Huisman & R. de Jong, RMNH'89".

Holotype, ♀, length of body 2.2 mm, of fore wing 2.0 mm.

Head.— Remaining antennal segments 7, length of third segment equal to fourth segment, length of third, and fourth segments both 4.5 times their width; length of maxillary palp 1.2 times height of head; length of eye in dorsal view 2.3 times temple; temples roundly narrowed posteriorly; head in frontal view comparatively elongate (fig. 676); OOL:diameter of ocellus:POL = 9:4:6; face partly densely rugulose medio-dorsally, remainder smooth; vertex distinctly rugulose; frons distinctly rugose; length of malar space 1.4 times basal width of mandible.

Mesosoma.— Largely moderately long and densely setose; length of mesosoma 1.4 times its height; side of pronotum largely rugulose-granulate and densely setose; precoxal sulcus only medially distinctly impressed, smooth; mesopleuron smooth; metapleuron finely rugulose-granulate, moderately densely setose; mesoscutum distinctly granulate, rather mat, middle lobe distinctly elevated above lateral lobes; lateral carinae of scutellum indistinct; notauli rather shallow, complete, largely smooth, posteriorly with few striae and no distinct depression; surface of propodeum distinctly rugulose between carinae and median carina indistinct.

Wings.— Fore wing: length of r about equal to width of pterostigma and emerging just behind middle of pterostigma (fig. 674); r:3-SR:SR1 = 5:11:34; cu-a indistinct, just postfurcal; basally CU1a at level of vein 2-CU1; 2-SR:3-SR:r-m = 15:11:8. Hind wing: M+CU:1-M = 11:19; m-cu distinct.

Legs.— Hind coxa smooth, densely setose; remainder of hind leg missing.

Metasoma.— Length of first tergite 0.9 times its apical width (fig. 675); surface of three basal tergites coarsely longitudinally rugose with finely transverse sculpture in between; medial length of second tergite 1.1 times medial length of third tergite (fig. 675; longer in figure because third tergite is not in same plane as second tergite); third tergite with distinct dorsal rim medio-apically, and with pair of medium-sized and subparallel apical teeth, teeth in lateral view longer than wide, obtuse apically and slightly curved ventrad (fig. 677) and 0.5 times as long as medial length of third tergite (excluding posterior lamella); lamella below apical tooth straight and smooth apically (fig. 677); third tergite with one slender ventral protuberance and a wide, minute one and second tergite with minute protuberance (fig. 677); length of ovipositor sheath 0.29 times fore wing.

Colour.— Blackish-brown; mesopleuron medially and ventrally, and mesoscutum, dark orange-brown; head (but occiput infuscate), antenna (basally), mesoscutum medio-posteriorly, tegulae, scutellum posteriorly, and ovipositor (except apically), yellowish-brown; basal 0.4 of pterostigma, vein C+SC+R of fore wing, legs and metasoma ventrally, pale yellowish; remainder of veins and pterostigma, brown; fore wing membrane weakly infuscate.

Distribution.— Indonesia (Sulawesi: Kabaena Island).

Note.— Very similar to *A. rugosivertex* Belokobylskij, 1988, from Taiwan, but the latter has the mesoscutum rugulose, the length of the mesosoma 1.7 times its height, the head and the mesosoma reddish-brown, and the medial length of the second tergite 1.6 times medial length of the third tergite (fig. 60 in Belokobylskij, 1988).

Acanthormius malayensis Watanabe, 1968
(figs 682-684)

Acanthormius malayensis Watanabe, 1968: 63-64, figs 1, 9; Shenefelt, 1975: 1139.

Material.— 1 ♀ (ZIL), "Malaysia: Sabah, Sipitang, Mendolong, A1L, 7.iv.1988, leg. S. Adebratt".

First record outside the type-locality (Batu Caves, near Kuala Lumpur, West Malaysia). It has the ovipositor sheath exerted, 1.5 times length of second tergite, medial length of second tergite 1.4 times medial length of third tergite (figs 683), and length of antenna 1.2 times length of body (excluding extended part of metasoma). Further agreeing with the original description.

Acanthormius royi spec. nov.
(figs 678-681)

Material.— Holotype, ♀ (ZIL), "Malaysia: Sabah, Sipitang, Mendolong, A1L, 16.iv.1988, leg. S. Adebratt".

Holotype, ♀, length of body 1.8 mm, of fore wing 1.5 mm; length of antenna 1.7 times fore wing.

Head.— Antennal segments 21, length of third segment 1.1 times fourth segment, length of third, fourth, and penultimate segments 5.0, 4.7, and 3.3 times their width, respectively; length of maxillary palp 1.2 times height of head; length of eye in dorsal view 2.6 times temple; temples directly narrowed posteriorly (fig. 680); head in frontal view comparatively long; OOL:diameter of ocellus:POL = 9:4:5; face largely densely rugulose; vertex superficially rugulose-coriaceous, partly smooth; frons rugulose; length of malar space 1.3 times basal width of mandible.

Mesosoma.— Largely long and densely setose; length of mesosoma 1.3 times its height; side of pronotum superficially rugulose, but largely smooth dorsally; precoxal sulcus only medially distinctly impressed, smooth; mesopleuron smooth; metapleuron rugulose and densely long setose; mesoscutum distinctly granulate, and middle lobe distinctly protruding above lateral lobes; lateral carinae of scutellum distinct; notauli moderately wide, complete, anteriorly distinctly crenulate, posteriorly ending in a small depression; surface of propodeum distinctly densely rugulose between carinae, areola rather weak anteriorly and median carina absent.

Wings.— Fore wing: length of r about equal to width of pterostigma and emerging just behind middle of pterostigma (fig. 679); r:3-SR:SR1 = 5:11:38; 1-CU1:2-CU1 = 1:17; cu-a indistinct; basally CU1a just above level of vein 2-CU1 (fig. 679); 2-SR:3-SR:r-m = 14:11:8. Hind wing: M+CU:1-M = 11:21; m-cu indistinct.

Legs.— Hind coxa smooth; hind leg long setose; length of femur, tibia and basitarsus of hind leg 5.4, 10.4 and 11.2 times their width, respectively; hind tibial spurs indistinct, similar to surrounding setae.

Metasoma.— Length of first tergite 0.9 times its apical width (fig. 678); surface of three basal tergites moderately strongly longitudinally rugose with finely transverse sculpture in between; medial length of second tergite 1.4 times medial length of third tergite (fig. 678); third tergite with pair of rather long and parallel apical teeth, teeth in lateral view longer than wide, obtuse apically and straight (fig. 681) and 0.55 times as long as medial length of third tergite (excluding posterior lamella); lamella below apical tooth straight and largely smooth apically (fig. 681); third tergite with one rather slender and one wide ventral protuberance and second tergite with indistinct protuberance (fig. 681); length of ovipositor sheath 0.26 times fore wing (and about 1.3 times length of second tergite).

Colour.— Dark orange-brown; stemmaticum, mesoscutum (except medio-posteriorly), propodeum (id.), metasoma basally and laterally, and apex of ovipositor sheath, dark brown or blackish; palpi and metasoma ventrally, pale yellowish; three apical segments of antenna dark brown, five subapical segments ivory, and remainder of antenna dark brown; veins and pterostigma brown, but base of pterostigma slightly paler than medially; wing membrane somewhat infuscate; apex of hind femur slightly infuscate; legs and tegulae yellowish-brown.

Distribution.— Malaysia (East Malaysia: Sabah).

Note.— It is pleasure to name this species after Dr Roy Danielsson (Lund), who made this and several other interesting specimens available to me.

Acanthormius sabahensis spec. nov.
(figs 670-673)

Material.— Holotype, ♀ (RMNH), "Malaysia- SE Sabah, nr Danum Valley Field C., WON1, c. 140 m, 24.ii-24.iii.1987, Mal. trap 13, C. van Achterberg, RMNH".

Holotype, ♀, length of body 2.2 mm, of fore wing 1.6 mm; length of antenna 1.6 times fore wing.

Head.— Antennal segments 19, length of third segment 1.1 times fourth segment, length of third, fourth, and penultimate segments 5.0, 4.4, and 2.7 times their width, respectively; length of maxillary palp 1.3 times height of head; length of eye in dorsal view 3.0 times temple; temples directly narrowed posteriorly; head in frontal view distinctly trapezoid (fig. 671); OOL:diameter of ocellus:POL = 6:2:3; face and vertex smooth; length of malar space 1.3 times basal width of mandible.

Mesosoma.— Largely long and densely setose; length of mesosoma 1.4 times its height; side of pronotum crenulate antero-medially and remainder largely smooth, densely setose; precoxal sulcus deep anteriorly and medially, smooth, posterior third absent; mesopleuron smooth; metapleuron punctate and densely whitish setose (setosity similar to anterior and posterior patches of mesopleuron); mesoscutum evenly densely granulate, mat, middle lobe of mesoscutum slightly elevated above lateral lobes; lateral carinae of scutellum strong; notauli narrow, complete, sparsely crenulate, posteriorly ending in a medium-sized elliptical depression; surface of propodeum strongly granulate and posteriorly striate between carinae and median carina rather short.

Wings.— Fore wing (rather slender): r somewhat longer than width of pterostigma and emerging submedially from pterostigma (fig. 670); r:3-SR:SR1 = 5:7:26; cu-a indistinct, just postfurcal; basally CU1a at level of vein 2-CU1; 2-SR:3-SR:r-m = 10:7:6. Hind wing: M+CU:1-M = 10:17; m-cu distinct.

Legs.— Hind coxa densely setose, smooth; length of femur, tibia and basitarsus of hind leg 4.9, 11.0 and 7.0 times their width, respectively; hind tibial spurs indistinct, similar to surrounding setae.

Metasoma.— Length of first tergite 0.8 times its apical width (fig. 673); surface of three basal tergites densely longitudinally rugose with finely transverse sculpture in between; medial length of second tergite 1.2 times medial length of third tergite (fig. 673, longer in figure because third tergite is not in same plane as second tergite); third tergite comparatively wide, with pair of rather long and parallel apical teeth, teeth in lateral view slender, obtuse apically and slightly bent ventrad (fig. 672) and 0.6 times as long as medial length of third tergite (excluding posterior lamella); lamella below apical tooth concave and largely smooth apically (fig. 672); third tergite with pair of medium-sized ventral protuberances and second tergite with small-protuberance (fig. 672); length of ovipositor sheath 0.36 times fore wing (and about as long as combined length of second and third tergites).

Colour.— Brownish-yellow; metasoma dorsally orange-brown, partly infuscate medially; eight apical segments of antenna (and apical half of ninth segment) whitish, four basal segments yellowish, and remainder dark brown; palpi, coxae, metasoma ventrally, basal half of pterostigma and veins in pale parts of wing, whitish; remainder of pterostigma and of veins, and apex of ovipositor sheath dark brown; fore wing with dark band below apical half of pterostigma and one below apical third of vein C+SC+R; hind wing somewhat darkened medially; remainder of wing subhyaline; remainder of legs pale yellowish.

Distribution.— Malaysia (East Malaysia: Sabah).

Acanthormius yasirae spec. nov.
(figs 666-669)

Material.— Holotype, ♂ (RMNH), "Indonesia: Sula Isl., Mangole, near Buya, Mal. trap 14, c. 450 m, 13.x-2.xi.1993, C. van Achterberg, RMNH'93". Paratype: 1 ♂ (RMNH), topotypic, same trap and date.

Holotype, ♂, length of body 1.6 mm, of fore wing 1.3 mm; length of antenna 1.8 times fore wing.

Head.— Antennal segments 17 (right) or 18 (left), length of third segment equal to fourth segment, length of third, fourth, and penultimate segments 4.5, 4.5, and 4.0 times their width, respectively; length of maxillary palp 1.1 times height of head; length of eye in dorsal view 2.0 times temple; temples roundly narrowed posteriorly; head in frontal view comparatively globular; OOL:diameter of ocellus:POL = 4:2:3; face and vertex smooth; length of malar space 1.4 times basal width of mandible.

Mesosoma.— Largely long and sparsely setose; length of mesosoma 1.5 times its height; side of pronotum largely rugulose, dorsally largely smooth; precoxal sulcus only medially distinctly impressed, smooth; mesopleuron smooth; metapleuron rugulose ventrally, remainder smooth and sparsely setose; mesoscutum distinctly granulate, but less distinct on lateral lobes, middle lobe somewhat elevated; lateral carinae of scutellum weak; notauli rather narrow, complete, sparsely crenulate, posteriorly without distinct depression; surface of propodeum largely superficially granulate between carinae and median carina very short.

Wings.— Fore wing (narrow; fig. 666): r nearly vertical, somewhat longer than width of pterostigma and emerging submedially from pterostigma (fig. 666); r:3-SR:SR1 = 5:8:26; cu-a indistinct, subinterstitial; basally CU1a at level of vein 2-CU1; 2-SR:3-SR:r-m = 11:8:5. Hind wing: M+CU:1-M = 7:17; m-cu distinct, short.

Legs.— Hind coxa smooth, sparsely setose; length of femur, tibia and basitarsus of hind leg 5.2, 12.0 and 7.2 times their width, respectively; hind tibial spurs indistinct, similar to surrounding setae.

Metasoma.— Length of first tergite 0.9 times its apical width; surface of three basal tergites coarsely longitudinally rugose with finely transverse sculpture in between, rugae of third tergite somewhat converging medio-posteriorly; medial length of second tergite 1.5 times medial length of third tergite (fig. 668); third tergite with pair of long and parallel apical teeth, teeth in lateral view slender, acute apically and straight (fig. 667) and 0.8 times as long as medial length of third tergite (excluding posterior lamella); lamella below apical tooth straight, wide and hardly serrate apically (fig. 667); third tergite with one wide and one minute ventral protuberance and second tergite without protuberance (fig. 667).

Colour.— Dark brown; two apical antennal segments brown and remainder of flagellum dark brown; scapus, pedicellus, face, clypeus, tegulae, and legs, yellowish-brown; remainder of head, mesonotum, metanotum, propodeum largely, and mesopleuron dorsally, dark orange-brown; palpi and metasoma ventrally, whitish; pterostigma and veins, brown; wing membrane slightly infusate.

Variation.— Paratype has 17 antennal segments, apical antennal segment yellowish-brown; length of body 1.5 mm, of fore wing 1.2 mm; first tergite partly brown; mesosoma largely dark brown, including mesoscutum.

Distribution.— Indonesia (Sula Islands: Mangole).

Note.— It is a real pleasure to me to name this species after the entomologist Ms Yasmidar Yasir (Ujung Pandang), who was an excellent counter-part during the fieldwork on Mangole.

Aulosaphes Muesebeck, 1935
(figs 434-444, 692-715)

Aulosaphes Muesebeck, 1935: 248-249; Shenefelt, 1975: 1140; Papp, 1991: 145-146. Type species (by original designation): *Rhyssalus unicolor* Ashmead, 1905 [examined].

Diagnosis.— Antennal segments of ♀ 20-29; scapus truncate apically (fig. 442); antennal sockets not or hardly protruding (fig. 444); head rather strongly narrowed ventrally (fig. 437); frons of larger specimens rugulose or striate, in small specimens this sculpture largely absent or superficial; malar suture absent (fig. 437); mandibles bidentate, but second tooth may be minute; mesopleuron smooth anteriorly or nearly so (fig. 443); metanotum hardly or not protruding postero-dorsally (fig. 443); mesoscutum largely glabrous; vein r of fore wing issued submedially from pterostigma (fig. 434); vein 2-SR of fore wing complete, longer than vein 3-SR (fig. 434) or about as long; first subdiscal cell of fore wing narrow and with vein CU1b present (fig. 434); parastigma differentiated (fig. 434); vein M+CU of hind wing about as long as vein 1-M; first metasomal tergite movably joined to second tergite (figs 438, 443), its dorsal carinae united subbasally (fig. 438), and without dorsope; third tergite more or less rounded posteriorly and serrate (figs 440, 443; less so in ♂), without wide lamella; fourth and fifth tergites smooth, weakly sclerotized, and largely retracted.

Biology.— Parasites of Psychidae.

Distribution.— Indo-Australian, South Palaearctic (small genus).

Key to species of the genus *Aulosaphes* Muesebeck

1. Length of eye in dorsal view about 5 times temple, temples directly receding (fig. 694); eyes strongly enlarged, minimum width of face nearly equal to transverse diameter of eye (fig. 693); length of fore wing 2.5-2.7 mm; ovipositor sheath somewhat longer than hind tibia, about 0.4 times fore wing 2
- Length of eye in dorsal view 1.8-3.6 times temple, temples more gradually receding behind eyes (figs 444, 699, 706); eyes medium-sized, minimum width of face 1.3-1.8 times transverse diameter of eye (figs 437, 704); length of fore wing 1.5-2.3 mm, exceptionally up to 2.7 mm; length of ovipositor sheath variable 3
2. Whole pterostigma dark brown; first tergite and basal half of second tergite pale yellowish, much paler than mesosoma; scutellum with shallow longitudinal depression; precoxal sulcus deeply impressed medially; Australia
..... *A. wellsae* spec. nov.
- Pterostigma bicoloured, basally yellow and remainder brown; first and second tergites yellow, in colour similar to mesosoma; scutellum convex; precoxal sulcus indistinct; Indonesia (Java), Philippines *A. psychidivorus* Muesebeck
3. Dorsal carinae of first tergite parallel (fig. 438); frons at most superficially and finely strate; antennal segments of ♀ 20-23; colour of setae on vein C+SC+R of fore wing various; length of fore wing 1.6-2.3 mm 4

- Dorsal carinae of first tergite distinctly converging posteriorly (fig. 698); frons densely rugulose; antennal segments of ♀ about 29; setae on vein C+SC+R of fore wing yellowish-brown or pale yellowish; length of fore wing about 2.6 mm; East Malaysia (Sabah) *A. convergens* spec. nov.
- 4. Mesoscutum granulate; areola of propodeum (shortly) petiolate (fig. 439); vein 2-SR of fore wing longer than vein 3-SR (fig. 434); vein r of fore wing usually longer than vein 3-SR (fig. 434), if shorter then ovipositor sheath somewhat longer than hind tibia; Oriental 5
- Mesoscutum punctate; areola of propodeum sessile (fig. 2 in Papp, 1991); vein 2-SR of fore wing about as long as vein 3-SR; vein r of fore wing somewhat shorter than vein 3-SR (fig. 3, l.c.); ovipositor sheath about half as long as hind tibia; South Palaearctic (Yemen) *A. deserticola* Papp
- 5. Vein r of fore wing 0.8-1.1 times vein 3-SR (figs 700, 708); anterior border of pterostigma paler than middle of pterostigma; rugae of third tergite distinctly curved posteriorly (fig. 707); temples in dorsal view narrower (figs 706, 710); apex of third tergite of ♀ with some separate slender teeth (figs 705, 707, 709); at least distal half of vein C+SC+R of fore wing with dark brown setae 6
- Vein r of fore wing 1.2-1.4 times vein 3-SR (figs 434, 712); anterior border of pterostigma largely dark brown or pale brown (except basally) and in colour similar to middle of pterostigma (fig. 434), except in *A. vechti*; rugae of third tergite hardly curved posteriorly (figs 440, 443); temples in dorsal view wider (figs 444, 714); apex of third tergite of ♀ serrate, but without separate slender teeth (figs 443, 715); setae of vein C+SC+R of fore wing yellowish 7
- 6. Setae of hind femur numerous, long and erect (fig. 702); complete vein C+SC+R of fore wing with dark brown setae; fore wing without dark band below pterostigma; length of fore wing about 2.3 mm; antenna of ♀ (except basally) dark brown; second tergite completely black; Mangole *A. rasuli* spec. nov.
- Setae of hind femur rather sparse, medium-sized and less erect (fig. 711); basal half of vein C+SC+R of fore wing with yellowish setae and remainder of setae dark brown; fore wing with faint dark band below pterostigma (fig. 708); length of fore wing 1.6-2.1 mm; antenna of ♀ yellowish, somewhat infusate; second tergite largely yellowish-brown; Sabah *A. semifasciatus* spec. nov.
- 7. Length of ovipositor sheath about 0.40 times fore wing, slightly longer than hind tibia; area between dorsal carinae of first tergite wider (fig. 713) and superficially longitudinally rugulose and with transverse sculpture; third tergite dark brown medio-basally; apex of third tergite of ♀ comparatively widely serrate (fig. 715); posterior third of precoxal sulcus absent; frons superficially transversely striate medially; Indonesia (Java) *A. vechti* spec. nov.
- Length of ovipositor sheath about 0.25 times fore wing, about half as long as hind tibia (figs 436, 443); area between dorsal carinae of first tergite narrower (fig. 438) and granulate; third tergite brownish-yellow medio-basally; apex of third tergite of ♀ narrowly serrate (figs 440, 443); posterior third of precoxal sulcus impressed (fig. 443); frons largely smooth medially (fig. 444); Philippines
..... *A. unicolor* (Ashmead)

Aulosaphes convergens spec. nov.
(figs 697-699)

Material.— Holotype, ♀ (ZIL), "Malaysia: Sabah, Sipitang, Mendolong, A1L, 13.iv.1988, leg. S. Adebratt".

Holotype, ♀, length of body 3.3 mm, of fore wing 2.7 mm.

Head.— Antennal segments 29, length of third segment 1.3 times fourth segment, length of third, fourth and penultimate segments 2.8, 2.2, and 3.0 times their width, respectively; frons densely rugulose (except near eyes); length of maxillary palp 1.2 times height of head; length of eye in dorsal view 3.6 times temple; temples rather strongly receding behind eyes; eyes rather enlarged, minimum width of face 1.4 times transverse diameter of eye (fig. 699); OOL:diameter of ocellus:POL = 7:5:3; face and vertex smooth; malar suture distinct except near eye; length of malar space 0.6 times basal width of mandible.

Mesosoma.— Length of mesosoma 1.5 times its height; side of pronotum shiny granulate and with some crenulae anteriorly; precoxal sulcus deep only medially, shallow anteriorly and its apical third absent, smooth; remainder of mesopleuron smooth, except for some striae dorsally; pleural sulcus largely smooth, sinuate; metapleuron largely smooth, with some carinae ventrally; notauli deep and crenulate anteriorly, posteriorly merging into coarsely rugose area; mesoscutum mat, granulate and without median groove, posteriorly smooth; surface of propodeum superficially granulate between coarse carinae, its median carina short, and posterior half with transverse rugae.

Wings.— Fore wing: r:3-SR:SR1 = 15:12:45; 1-CU1:2-CU1 = 1:8; 2-SR:3-SR:r-m = 19:12:11. Hind wing: M+CU:1-M = 16:15.

Legs.— Hind coxa smooth; hind femur long erect setose; length of femur, tibia and basitarsus of hind leg 4.4, 9.2 and 5.2 times their width, respectively; hind tibial spurs 0.15 and 0.25 times hind basitarsus.

Metasoma.— Length of first tergite 0.7 times its apical width, its dorsal carinae distinctly converging posteriorly (fig. 698), enclosed area shiny and rugulose; antero-lateral corners of second tergite rather far protruding beside first tergite; surface of three basal tergites longitudinally striate with fine transverse sculpture in between, striae near apex of third tergite somewhat curved; third tergite distinctly and widely serrate posteriorly, with narrow part largely simple medio-posteriorly, with several separate slender teeth; length of ovipositor sheath 0.49 times fore wing and 1.4 times length of hind tibia.

Colour.— Yellowish-brown; stemmaticum black; pterostigma anteriorly and basally pale yellowish; remainder of pterostigma, ovipositor sheath, first tergite laterally, second tergite antero-laterally and narrowly posteriorly, third tergite (except posteriorly and laterally), dark brown; palpi, fore and middle coxae, and tegulae, whitish; basal third of antenna, remainder of legs, metasoma ventrally, veins (except brown 1-CU1, r and 2-SR of fore wing), pale yellowish; remainder of antenna infusate; setae on vein C+SC+R of fore wing pale yellowish or yellowish-brown; wing membrane subhyaline, without distinct infusate band below pterostigma.

Biology.— Unknown.

Distribution.— Malaysia (East Malaysia: Sabah).

Aulosaphes deserticola Papp, 1990

Aulosaphes deserticola Papp, 1991: 146-147, figs 1-6.

Biology.— Unknown.

Distribution.— Only known from ♀ holotype from Yemen.

Aulosaphes psychidivorus Muesebeck, 1935

Aulosaphes psychidivorus Muesebeck, 1935: 249-250; Shenefelt, 1975: 1140; Papp, 1991: 150.

Biology— *A. psychidivorus* has been reared from the Psychid *Dappula tertia* (Templeton).

Distribution.— Indonesia (Java); Philippines.

Aulosaphes rasuli spec. nov.

(figs 700-707)

Material.— Holotype, ♀ (RMNH), "Indonesia: Sula Isl., Mangole, near Buya, Mal. trap 14, c 450 m, 13.x-2.xi.1993, C. v. Achterberg, RMNH'93".

Holotype, ♀, length of body 2.8 mm, of fore wing 2.3 mm.

Head.— Antennal segments 23, length of third segment 1.1 times fourth segment, length of third, fourth, and penultimate segments 2.8, 2.5, and 2.8 times their width, respectively; frons finely and superficially striate; length of maxillary palp 1.1 times height of head; length of eye in dorsal view 2.7 times temple; temples rather strongly receding behind eyes (fig. 706); eyes strongly enlarged, minimum width of face 1.6 times transverse diameter of eye (fig. 704); OOL:diameter of ocellus:POL = 8:6:5; face and vertex smooth; malar suture present, shallow; length of malar space 0.6 times basal width of mandible.

Mesosoma.— Length of mesosoma 1.4 times its height; side of pronotum largely smooth, with some rugulosity and crenulae; side of mesoscutum with some distinct striae; precoxal sulcus deep medially, shallow anteriorly and its apical third absent, smooth; remainder of mesopleuron smooth, except some striae dorsally; pleural sulcus smooth, somewhat sinuate; metapleuron largely smooth, with some rugae ventrally; anteriorly notauli deep, crenulate, medially shallow and posteriorly merging into distinctly rugose area; mesoscutum rather mat, distinctly granulate and without median groove, posteriorly smooth; surface of propodeum largely smooth between coarse carinae (but with some indistinct granulation) and median carina short.

Wings.— Fore wing: r:3-SR:SR1 = 10:9:35; 1-CU1:2-CU1 = 1:7; 2-SR:3-SR:r-m = 15:9:8. Hind wing: M+CU:1-M = 16:13.

Legs.— Hind coxa smooth; hind femur long and erect setose; length of femur, tibia and basitarsus of hind leg 4.0, 8.6 and 7.7 times their width, respectively; hind tibial spurs both 0.20 times hind basitarsus.

Metasoma.— Length of first tergite 0.9 times its apical width, its dorsal carinae parallel, enclosed area with longitudinal rugae and fine transverse sculpture; antero-lateral corners of second tergite rather protruding besides first tergite; surface of three basal tergites longitudinally striate with fine transverse sculpture in between,

striae near apex of third tergite distinctly curved (figs 707); third tergite distinctly and rather narrowly serrate posteriorly and no distinct simple area medio-posteriorly, with separate slender teeth (fig. 705); length of ovipositor sheath 0.37 times fore wing and 1.1 times length of hind tibia.

Colour.— Yellowish-brown; six basal segments of antenna, and remainder of legs, brownish-yellow; stemmaticum, first tergite (except medially), second and third tergite (latter except posteriorly and narrowly laterally), black; palpi, tegulae, fore and middle legs (except tibiae and tarsi), and metasoma ventrally, whitish; anterior border of pterostigma and its base, pale yellowish; remainder of pterostigma, veins r, 2-SR and 1-CU1 of fore wing, and ovipositor sheath, dark brown; remainder of veins brown or brownish-yellow; setae of vein C+SC+R of fore wing dark brown; wing membrane subhyaline, without distinct infuscate band.

Biology.— Unknown.

Distribution.— Indonesia (Sula Islands: Mangole).

Note.— It is real pleasure to name this species after the very helpful guide during my fieldwork on Mangole, Mr Rasul Rara (Mandafuhi Camp, Mangole).

Aulosaphes semifasciatus spec. nov.
(figs 708-711)

Material.— Holotype, ♀ (ZIL), "Malaysia: Sabah, Sipitang, Mendolong, A1L, 20.ii.1989, leg. S. Adebratt". Paratypes: 2 ♂♂ (ZIL, RMNH), topotypic, but 19.ii.1989 or 18.iv.1988.

Holotype, ♀, length of body 2.5 mm, of fore wing 2.1 mm.

Head.— Antennal segments 22, length of third segment 1.1 times fourth segment, length of third, fourth, and penultimate segments 2.5, 2.3, and 2.9 times their width, respectively; frons finely and transversely striate-rugulose; length of maxillary palp 1.1 times height of head; length of eye in dorsal view 3.2 times temple; temples gradually receding behind eyes (fig. 710); eyes rather strongly enlarged, minimum width of face 1.4 times transverse diameter of eye; OOL:diameter of ocellus:POL = 10:6:5; face smooth; vertex faintly transversely striate; malar suture absent; length of malar space 0.5 times basal width of mandible.

Mesosoma.— Length of mesosoma 1.4 times its height; side of pronotum shiny, superficially granulate, and anteriorly with few crenulae; side of mesoscutum only superficially rugulose; precoxal sulcus deep medially, largely absent anteriorly and its apical third completely absent, smooth; remainder of mesopleuron smooth, except some striae dorsally; pleural sulcus smooth, angulate; metapleuron largely smooth, with some rugae ventrally; notauli deep and crenulate anteriorly, shallow medially and posteriorly merging into rugose area; mesoscutum rather mat, distinctly granulate and without median groove posteriorly, posteriorly smooth; surface of propodeum superficially granulate between coarse carinae and median carina short.

Wings.— Fore wing: r:3-SR:SR1 = 10:10:36; 1-CU1:2-CU1 = 2:13; 2-SR:3-SR:r-m = 16:8:9. Hind wing: M+CU as long as 1-M.

Legs.— Hind coxa smooth; length of femur, tibia and basitarsus of hind leg 4.0, 9.4 and 6.7 times their width, respectively; hind tibial spurs both 0.25 times hind basitarsus; hind femur medium-sized and suberect setose (fig. 711).

Metasoma.— Length of first tergite 0.8 times its apical width, its dorsal carinae

parallel, enclosed area moderately wide and longitudinally rugulose; antero-lateral corners of second tergite slightly protruding besides first tergite; surface of three basal tergites longitudinally striate with fine transverse sculpture in between, striae near apex of third tergite somewhat curved; third tergite distinctly and rather narrowly serrate posteriorly and with simple part medio-posteriorly, with separate slender teeth (fig. 709); length of ovipositor sheath 0.32 times fore wing and 0.9 times length of hind tibia.

Colour.— Yellowish-brown; stemmaticum, first tergite laterally, second tergite antero-laterally and postero-laterally, and narrowly along second suture, and third tergite (except laterally and narrowly posteriorly) brownish-black; palpi, tegulae, fore and middle coxae, whitish; antenna basally, remainder of legs and metasoma ventrally, pale yellowish; antenna (except basally) slightly infusate; anterior border and base of pterostigma brown, remainder of pterostigma, ovipositor sheath, veins r, 2-SR and 1-CU1 of fore wing, rather dark brown; setae of basal half of vein C+SC+R of fore wing yellow, of its distal half dark brown; fore wing with a faint infusate band below pterostigma, remainder of membrane subhyaline.

Variation (males).— Length of fore wing 1.6-1.8 mm, and of body 2.1-2.3 mm; antennal segments of ♂ 20(1) or 22(1); third tergite serrate posteriorly, but no separate teeth; antenna of ♂ (except basal 0.4) dark brown or largely yellowish; vein r of fore wing 0.8-0.9 times vein 3-SR; colour as of holotype.

Biology.— Unknown.

Distribution.— Malaysia (East Malaysia: Sabah).

Aulosaphes unicolor (Ashmead, 1905)
(figs 434-444)

Rhyssalus unicolor Ashmead, 1905: 970.

Aulosaphes unicolor; Muesebeck, 1935: 248; Shenefelt, 1975: 1140; Papp, 1991: 149.

Material.— Holotype, ♀ (USNM), "PI [= Philippine Islands], Manila", "Robt. Brown Collector", "♀, Type No. 8320, U.S.N.M.", "*Rhyssalus unicolor* Ashm., ♀", "*Aulosaphes unicolor* (Ashm.), det. Muesebeck".

Holotype, ♀, length of body 1.8 mm, of fore wing 1.7 mm.

Head.— Remaining antennal segments 19, length of third segment 1.1 times fourth segment, length of third and fourth segments 3.0, and 2.7 times their width, respectively (fig. 442); frons largely smooth, with some micro-sculpture laterally (fig. 444); length of maxillary palp equal to height of head; length of eye in dorsal view 1.8 times temple; temples gradually receding behind eyes (fig. 444); eyes medium-sized, minimum width of face 1.8 times transverse diameter of eye (fig. 444); OOL: diameter of ocellus:POL = 5:4:9; face and vertex smooth; malar suture absent; length of malar space 0.6 times basal width of mandible.

Mesosoma.— Length of mesosoma 1.4 times its height; side of pronotum largely smooth, with some micro-sculpture posteriorly and anteriorly (fig. 443); precoxal sulcus complete, rather shallow and smooth, but anteriorly with a few short striae; remainder of mesopleuron smooth; pleural sulcus smooth, only with some crenulae dorsally; metapleuron largely smooth dorsally, rugose ventrally; notauli complete. shallow, rugulose, posteriorly merging into largely smooth depression (fig. 439);

mesoscutum shiny, granulate and without median groove, posteriorly smooth; surface of propodeum largely smooth, but with some micro-sculpture between coarse carinae and median carina short (fig. 439).

Wings.— Fore wing: r:3-SR:SR1 = 12:10:40; 1-CU1:2-CU1 = 5:36; 2-SR:3-SR:r-m = 16:10:8. Hind wing: M+CU:1-M = 16:18.

Legs.— Hind coxa smooth; hind femur moderately long setose, suberect (fig. 436); length of femur, tibia and basitarsus of hind leg 4.1, 8.0 and 5.0 times their width, respectively; hind tibial spurs 0.1 and 0.2 times hind basitarsus.

Metasoma.— Length of first tergite 0.8 times its apical width, dorsal carinae parallel, enclosed area only granulate (fig. 438); surface of three basal tergites longitudinally striate with fine transverse sculpture in between, striae near apex of third tergite straight (fig. 443); third tergite thin posteriorly, narrowly serrate and simple medio-posteriorly, no slender teeth (figs 440, 443); length of ovipositor sheath 0.24 times fore wing and 0.5 times length of hind tibia (figs 436, 443).

Colour.— Yellowish-brown; stemmaticum and pterostigma (except its whitish basal third and its distal tip) dark brown; palpi, antenna basally, tegulae and legs, whitish-yellow; wing membrane subhyaline, only area below pterostigma (including vein r) slightly infusate.

Biology.— Unknown.

Distribution.— Philippines.

Aulosaphes vechti spec. nov.
(figs 712-715)

Material.— Holotype, ♀ (RMNH), "Museum Leiden, [Indonesia], W Java, 400 m, Bogor (Tjikaret), 20.ix.1953, J. v. d. Vecht".

Holotype, ♀, length of body 2.2 mm, of fore wing 1.9 mm.

Head.— Remaining antennal segments 14, length of third segment 1.1 times fourth segment, length of third, and fourth segments 3.0, and 2.7 times their width, respectively; frons superficially and sparsely striate; length of maxillary palp equal to height of head; length of eye in dorsal view 3.1 times temple; temples gradually receding behind eyes (fig. 714); eyes medium-sized, minimum width of face 1.6 times transverse diameter of eye; OOL:diameter of ocellus:POL = 6:3:2; face and vertex smooth; malar suture only near base of mandible; length of malar space 0.6 times basal width of mandible.

Mesosoma.— Length of mesosoma 1.4 times its height; side of pronotum largely smooth, with some rugulae and crenulae, shiny; precoxal sulcus deep medially, shallow anteriorly and its apical third absent, smooth; remainder of mesopleuron smooth, except some striae dorsally; pleural sulcus largely smooth; metapleuron largely smooth, with some rugae ventrally; notauli sparsely crenulate, posteriorly merging into longitudinally costate area, posteriorly smooth; mesoscutum rather mat, distinctly granulate and without median groove, posteriorly smooth; surface of propodeum largely smooth (with some indistinct micro-sculpture) between coarse carinae, its median carina short.

Wings.— Fore wing: r:3-SR:SR1 = 10:8:32; 1-CU1:2-CU1 = 1:17; 2-SR:3-SR:r-m = 16:8:9. Hind wing: M+CU:1-M = 16:17.

Legs.— Hind coxa smooth; hind femur moderately long and erect setose; length of femur, tibia and basitarsus of hind leg 3.6, 9.2 and 5.4 times their width, respectively; hind tibial spurs 0.15 and 0.25 times hind basitarsus.

Metasoma.— Length of first tergite 0.8 times its apical width, its dorsal carinae parallel, enclosed area rather wide (fig. 719) and longitudinally striate; antero-lateral corners of second tergite weakly protruding besides first tergite; surface of three basal tergites longitudinally striate with fine transverse sculpture in between, striae near apex of third tergite straight or nearly so; third tergite distinctly and widely serrate posteriorly and narrow part simple medio-posteriorly, no separate slender teeth (fig. 715); length of ovipositor sheath 0.38 times fore wing and 1.1 times length of hind tibia.

Colour.— Yellowish-brown; stemmaticum, ovipositor sheath, first tergite laterally, second tergite antero-laterally and postero-laterally, second metasomal suture, third tergite (except laterally and posteriorly), dark brown; antenna (except seven basal segments) infusate; palpi whitish; base of antenna, legs, tegulae, and most veins, pale yellowish; anterior border and base of pterostigma rather pale brownish, nearly subhyaline; remainder of pterostigma, veins 1, 2-SR, 1-CU1, and C+SC+R apically, rather dark brown; wing membrane subhyaline, except for a faint brownish band below pterostigma; setae of vein C+SC+R of fore wing yellowish.

Biology.— Unknown.

Distribution.— Indonesia (Java).

Notes.— This species is named after its famous collector, the hymenopterist Prof. Dr J. v. d. Vecht (1906-1992).

Aulosaphes wellsae spec. nov.
(figs 692-696)

Material.— Holotype, ♀ (ANIC), "Australia: N.T., Kakadu N.P., Baroalba Springs, 16.iii.1991, ex Psychid pupae on *Acacia*, A. Wells & Webber". Paratypes: 1 ♂ + 4 ♀♀ (RMNH; Museum & Art Galleries of the Northern Territory, Darwin; Quicke collection), topotypic and same batch.

Holotype, ♀, length of body 3.2 mm, of fore wing 2.6 mm.

Head.— Antennal segments 27, length of third segment 1.1 times fourth segment, length of third, fourth, and penultimate segments 3.0, 2.8, and 2.5 times their width, respectively; frons finely and transversely striate medially; length of maxillary palp 1.1 times height of head; length of eye in dorsal view 4.9 times temple; temples strongly receding behind eyes (fig. 694); eyes strongly enlarged, minimum width of face nearly equal to transverse diameter of eye (fig. 693); OOL:diameter of ocellus: POL = 6:6:5; face and vertex smooth; malar suture obsolete; length of malar space 0.5 times basal width of mandible.

Mesosoma.— Length of mesosoma 1.5 times its height; side of pronotum sparsely rugose; precoxal sulcus deep medially, shallow anteriorly and its apical third absent, smooth, but anteriorly with a few short striae; remainder of mesopleuron smooth, except some striae dorsally; pleural sulcus largely smooth, only with some crenulae dorsally; metapleuron largely smooth, with some rugae ventrally; notauli crenulate, posteriorly merging into costate area; mesoscutum shiny, granulate and with a shallow median groove, posteriorly smooth; surface of propodeum granulate between coarse carinae and median carina short.

Wings.— Fore wing: r:3-SR:SR1 = 10:8:38; 1-CU1:2-CU1 = 2:21; 2-SR:3-SR:r-m = 18:8:8. Hind wing: M+CU:1-M = 17:14.

Legs.— Hind coxa smooth; length of femur, tibia and basitarsus of hind leg 4.6, 9.8 and 5.2 times their width, respectively; hind tibial spurs 0.15 and 0.20 times hind basitarsus.

Metasoma.— Length of first tergite 0.7 times its apical width, its dorsal carinae parallel and enclosed area rugose and granulate; surface of three basal tergites longitudinally striate with fine transverse sculpture in between, striae near apex of third tergite somewhat curved; third tergite distinctly and widely serrate posteriorly and unarmed medio-posteriorly, no slender teeth; length of ovipositor sheath 0.39 times fore wing and 1.2 times length of hind tibia.

Colour.— Yellowish-brown; stemmaticum black; ovipositor sheath, veins below pterostigma, vein 1-CU1 of fore wing and pterostigma, dark brown; malar space, antenna, and tegulum, brownish-yellow; palpi whitish; legs, metasoma (except rather dark brown apical half of second tergite and third tergite (except apically and laterally), and remainder of veins (including vein 1-R1 of fore wing), pale yellowish; wing membrane subhyaline, except the rather dark brown band below pterostigma.

Variation.— Length of body 2.3(♂)-3.1-3.2 mm, and of fore wing 1.9(♂)-2.5-2.6 mm; antennal segments of ♀ 26(1) or 27(2), of ♂ 24(1); length of ovipositor sheath 0.39-0.42 times fore wing; posterior area of third tergite without serrations varies from narrow to wide (0.3 times width of tergite); male has fourth and following tergites retracted, and has posterior half of second tergite and most of third tergite blackish.

Biology.— Parasite of Psychidae on *Acacia*.

Distribution.— Australia (Northern Territory).

Notes.— The note on the label "ex Psychid pupae..." has to be read (Dr A. Wells, in litt.) as "reared from Psychid cases with pupae (including those of the parasite)...".

It is a real pleasure to name this species after Dr Alice Wells (Canberra), who took the effort to rear and preserve the Psychid parasites, and who has been extremely helpful during my short but fruitful stay in Darwin (N.T.) in 1991.

Aulosaphoides gen. nov.
(figs 421-433, 716-727, 729-732)

Type species: *Aulosaphoides brevitarsus* spec. nov.

Etymology.— The suffix "oides" (Greek for "resembling" is added to the generic name *Aulosaphes*, because the new genus resembles the latter genus.

Diagnosis.— Antennal segments of ♀ 19-26; scapus slightly oblique apically, longer ventrally than dorsally (fig. 432); antennal sockets not or hardly protruding (fig. 429); head gradually or directly narrowed ventrally (fig. 428); malar suture absent (fig. 428); mandibles unidentate; mesopleuron crenulate anteriorly (fig. 433); metapleuron protruding dorsally (fig. 433); mesoscutum largely glabrous, but medial lobe may be sparsely setose and with irregular median carina (or indistinct sulcus) anteriorly (fig. 425); vein r of fore wing issued distinctly in front of middle of pterostigma (fig. 421); vein 2-SR of fore wing complete, distinctly shorter than vein 3-SR or about as long (fig. 421); first subdiscal cell of fore wing rather robust and with vein CU1b present (fig. 421); parastigma distinctly differentiated (fig. 421); first metasomal tergite movably joined to second tergite (figs 424, 433), and with dorsope

(fig. 424); third tergite with wide lamella posteriorly (figs 424, 430, 433) and apex of tergite itself simple; fourth and fifth tergites smooth, weakly sclerotized, completely retracted (fig. 433).

Biology.— Gregarious parasite of Tortricidae.

Distribution.— Oriental (small genus).

Key to species of the genus *Aulosaphoides* nov.

1. Length of eye in dorsal view about 1.7 times temple (fig. 12 in Papp, 1991; fig. 44 in Belokobylskij, 1990); pterostigma with yellowish basal spot and remainder brownish (cf. fig. 727); apical lamella of third tergite of ♀ narrower and less emarginate (fig. 15 in Papp, 1991); length of malar space about 1.3 times basal width of mandible; length of mesosoma 1.7 times its height 2
 - Length of eye in dorsal view about 2.5 times temple (fig. 429) or, if 1.2-1.3 times (fig. 720), then pterostigma without yellowish basal spot (fig. 716); apical lamella of third tergite of ♀ wider and deeply emarginate (figs 430, 721, 726, 729); length of malar space and of mesosoma various 3
2. Head in dorsal view rather trapezoid, its posterior width about twice posterior width of stemmaticum (fig. 12 in Papp, 1991); antennal segments 21-22; India *A. topali* (Papp)
 - Head in dorsal view comparatively transverse, its posterior width about three times posterior width of stemmaticum (fig. 44 in Belokobylskij, 1990); antennal segments about 18; Vietnam *A. fallax* (Belokobylskij)
3. Length of mesosoma in lateral view 1.4-1.5 times its height (fig. 433); face and frons smooth; ovipositor sheath 0.5-0.7 times as long as hind tibia 4
 - Length of mesosoma in lateral view about twice its height; face with some rugulae; frons with transverse striae; ovipositor sheath about half as long as hind tibia; Philippines *A. pugnatus* (Papp)
4. Mesosoma blackish dorsally; vein r from basal third of pterostigma (fig. 421); precoxal sulcus absent medially, smooth (fig. 433); pterostigma unicoloured, brown; lamella of third tergite not serrate (figs 424, 430, 433); East Malaysia (Sabah) *A. brevitarsus* spec. nov.
 - Mesosoma reddish- or yellowish-brown dorsally; vein r from basal 0.4 of pterostigma (fig. 716); precoxal sulcus present in middle of mesopleuron, distinctly crenulate; pterostigma bicoloured, its basal third pale yellowish, and remainder brown or only anteriorly paler brown; lamella of third tergite various (figs 721, 726, 729) 5
5. Malar space short (fig. 719), its length about 0.6 times basal width of mandible; precoxal sulcus complete, comparatively narrow; pterostigma brown, its anterior border faintly paler; fore tarsus shortened (fig. 718); Indonesia (Sumbawa) *A. breviceps* spec. nov.
 - Malar space medium-sized (fig. 724), its length about equal to basal width of mandible; precoxal sulcus mainly medially impressed, and wide; pterostigma various if brown and only anteriorly faintly paler than fore tarsus normal, slender (fig. 722) 6
6. Segments of fore tarsus of ♀ slender (fig. 722); third tergite comparatively slender, its rugae distinct and partly converging medio-posteriorly (fig. 726); ptero-

stigma brown, with its anterior border faintly paler; Indonesia (Sumbawa)

- *A. robberti* spec. nov.
- Segments of fore tarsus of ♀ robust (fig. 731); third tergite comparatively robust, its rugae less developed and parallel medio-posteriorly (fig. 729); pterostigma bicoloured, its basal third pale yellowish, and remainder brown (fig. 727); India, Sri Lanka *A. lampas* (Nixon)

Aulosaphoides breviceps spec. nov.
(figs 716-721)

Material.— Holotype, ♀ (RMNH), "Indonesia: Sumbawa, nr Pancasila, Gn. Tambora, Mal. trap 1, c 1250 m, 22.ix-2.x.1993, C. van Achterberg, RMNH'93". Paratypes (2 ♀♀; MZB, RMNH): topotypic, same date, but from Malaise trap 5, c. 1025 m.

Holotype, ♀, length of body 2.6 mm, of fore wing 2.3 mm.

Head.— Antennal segments 21, third segment 1.1 times fourth segment, length of third, fourth and penultimate segments 3.4, 3.0 and 3.0 times their width, respectively; length of maxillary palp 1.1 times height of head; length of eye in dorsal view 1.2 times temple (fig. 429); temples nearly subparallel-sided behind eyes (fig. 720); OOL:diameter of ocellus:POL = 6:3:3; face and vertex smooth; length of malar space 0.5 times basal width of mandible; head comparatively short (fig. 719), especially in lateral view, clypeus about at lower level of eyes.

Mesosoma.— Length of mesosoma 1.6 times its height; side of pronotum rather sparsely carinate; precoxal sulcus complete, rather narrow, crenulate; remainder of mesopleuron smooth, but dorsally rugose; pleural sulcus crenulate; metapleuron coarsely rugose; notauli complete, crenulate; mesoscutum rugose anteriorly and median carina fine, irregular; surface of propodeum largely smooth between carinae and median carina short.

Wings.— Fore wing: r 1.1 times width of pterostigma and emerging from basal 0.4 of pterostigma (fig. 716); r:3-SR:SR1 = 10:11:36; 1-CU1:2-CU1 = 3:11; m-cu subinterstitial; first subdiscal cell 4.2 times as long as wide; CU1b as long as 3-CU1; 2-SR:3-SR:r-m = 14:11:7. Hind wing: M+CU:1-M = 14:16; m-cu long, reclivous.

Legs.— Hind coxa smooth; length of femur, tibia and basitarsus of hind leg 4.2, 8.0 and 5.3 times their width, respectively; hind tibial spurs 0.2 and 0.3 times hind basitarsus; fore tarsus rather shortened and telotarsus enlarged (fig. 718).

Metasoma.— Length of first tergite 0.8 times its apical width, area between dorsal carinae only granulate; surface of three basal tergites coarsely longitudinally rugose-costate with finely transverse sculpture in between; third tergite robust, rather irregularly and partly more finely sculptured than second tergite, with wide, non-serrate lamella, which is distinctly emarginate medio-posteriorly, but present at deepest point (fig. 726); length of ovipositor sheath 0.16 times fore wing.

Colour.— Yellowish-brown; stemmaticum and metasoma dorsally, black; palpi and metasoma ventrally, whitish; tegulae and legs (but tarsi somewhat darker), pale yellowish; ovipositor sheath apically darkened; remainder of ovipositor sheath, pterostigma and veins, brown; anterior border of pterostigma slightly paler than remainder of pterostigma; antenna (except five basal segments) and metasoma laterally partly, dark brown; wing membrane subhyaline.

Variation.— Antennal segments 21(2); length of body 2.6-2.8 mm, of fore wing

2.2-2.4 mm; length of malar space 0.5-0.6 times basal width of mandible; first tergite black, dark brown or partly yellowish-brown; second and third tergites sometimes completely dark brown; median carina of propodeum sometimes absent.

Distribution.— Indonesia (Sumbawa).

Aulosaphoides brevitarsus spec. nov.
(figs 421-433)

Material.— Holotype, ♀ (RMNH), "Malaysia - SE Sabah, nr Danum Valley Field Centre, W12 [= trail number], c 240 m, Mal. trap 12, 24.ii-18.iii. 1987, C. v. Achterberg, RMNH'87".

Holotype, ♀, length of body 2.8 mm, of fore wing 2.5 mm.

Head.— Remaining antennal segments 19, third segment as long as fourth segment, length of third, and fourth segments 3.4 and 3.5 times their width, respectively (fig. 433); length of maxillary palp 1.3 times height of head; length of eye in dorsal view 2.5 times temple (fig. 429); temples directly roundly narrowed posteriorly (fig. 429); OOL:diameter of ocellus:POL = 14:5:5; face and vertex smooth; length of malar space 1.1 times basal width of mandible.

Mesosoma.— Length of mesosoma 1.4 times its height; side of pronotum rather sparsely carinate (fig. 433); only anterior half of precoxal sulcus impressed, wide, crenulate; remainder of mesopleuron (except dorsally) smooth; pleural sulcus crenulate; metapleuron coarsely reticulate-rugose; notauli complete, crenulate, but anteriorly smooth; mesoscutum rugulose anteriorly (fig. 425); surface of propodeum largely smooth between carinae and median carina short (fig. 425).

Wings.— Fore wing: r distinctly longer than width of pterostigma and emerging from basal 0.3 of pterostigma (fig. 421); r:3-SR:SR1 = 7:15:32; 1-CU1:2-CU1 = 2:15; cu-a distinct (fig. 421); first subdiscal cell about 3.5 times as long as wide; 2-SR:3-SR:r-m = 12:15:8. Hind wing: M+CU:1-M = 15:17; m-cu long (fig. 421).

Legs.— Hind coxa smooth; length of femur, tibia and basitarsus of hind leg 4.1, 7.8 and 5.5 times their width, respectively; hind tibial spurs 0.1 and 0.2 times hind basitarsus, respectively.

Metasoma.— Length of first tergite 0.8 times its apical width; surface of three basal tergites coarsely longitudinally rugose-costate with finely transverse sculpture in between (fig. 424); third tergite with wide, non-serrate lamella, which is distinctly emarginate medio-posteriorly (fig. 430); length of ovipositor sheath 0.18 times fore wing.

Colour.— Blackish; three basal segments of antenna, head and lamella of third tergite, yellowish-brown; ovipositor sheath, pterostigma, and veins, brown; wing membrane slightly infusate; pronotum ventrally, propleuron, mesopleuron anterodorsally, palpi, legs and metasoma ventrally, pale yellowish.

Distribution.— Malaysia (East Malaysia: Sabah).

Aulosaphoides fallax (Belokobylskij, 1990) comb. nov.

Aulosaphes fallax Belokobylskij, 1990: 133-134, figs 40-44.

Biology.— Unknown.

Distribution.— Vietnam.

Aulosaphoides lampas (Nixon, 1950) comb. nov.
(figs 727, 729-731)

Aulosaphes lampas Nixon, 1950: 470-474, fig. 19; Shenefelt, 1975: 1140; Belokobylskij, 1990: 134-135, 1994b: 64; Papp, 1991: 145.

Material.— 7 ♀♀ + 2 ♂♂ paratypes (BMNH, RMNH), “[India], Tithimatti, S. Coorg, F.R.I. Project, 1.xi.1942”, “[ex host in] *Cipadessa fructicosa*”, “*Aulosaphes lampas* n. sp., G.E.J. Nixon, det. 1950”.

Biology.— Gregarious parasite (Nixon, 1950) of the Tortricid *Homona coffearia* (Nietner).

Distribution.— India, Japan, Sri Lanka, Vietnam.

Aulosaphoides pugnatus (Papp, 1991) comb. nov.

Aulosaphes pugnatus Papp, 1991: 147-148, figs 7-11.

Biology.— Unknown.

Distribution.— Philippines (Mindanao).

Aulosaphoides robberti spec. nov.
(figs 722-726, 732)

Material.— Holotype, ♀ (RMNH), “Indonesia: Sumbawa, nr Pancasila, Gn. Tambora, Mal. trap 5, c. 1025 m, 22.ix-2.x.1993, C. van Achterberg, RMNH’93”. Paratypes (2 ♀♀; MZB, RMNH): topotypic, same date and trap.

Holotype, ♀, length of body 2.6 mm, of fore wing 2.2 mm.

Head.— Antennal segments 21, third segment 1.2 times fourth segment, length of third, fourth and penultimate segments 4.3, 3.5, and 3.0 times their width, respectively; length of maxillary palp 1.4 times height of head; length of eye in dorsal view 1.3 times temple (fig. 7259); temples slightly narrowed behind eyes, more strongly posteriorly; OOL:diameter of ocellus:POL = 7:3:3; face, frons and vertex smooth; length of malar space 1.2 times basal width of mandible; head of normal height (fig. 724); clypeus just below lower level of eyes.

Mesosoma.— Length of mesosoma 1.5 times its height; side of pronotum rather sparsely carinate, but medially largely smooth; only middle third of precoxal sulcus distinctly impressed, wide, crenulate; remainder of mesopleuron (except one oblique carina dorsally) smooth; pleural sulcus crenulate; metapleuron coarsely irregularly reticulate; notauli complete, crenulate; mesoscutum rugose anteriorly and median carina comparatively strong, regular; surface of propodeum largely smooth between carinae (except some very superficial granularity) and median carina short.

Wings.— Fore wing: r slightly longer than width of pterostigma and emerging from basal 0.4 of pterostigma (fig. 732); r:3-SR:SR1 = 10:13:43; 1-CU1:2-CU1 = 1:8; first subdiscal cell 4.0 times as long as wide; m-cu distinctly postfurcal; CU1b somewhat longer than 3-CU1; 2-SR:3-SR:r-m = 14:13:7. Hind wing: M+CU:1-M = 9:11; m-cu rather long, reclivous.

Legs.— Hind coxa smooth; length of femur, tibia and basitarsus of hind leg 4.2, 9.0 and 6.7 times their width, respectively; hind tibial spurs 0.1 and 0.2 times hind basitarsus, respectively; fore basitarsus comparatively slender (fig.722).

Metasoma.— Length of first tergite 0.9 times its apical width, area between dorsal carinae distinctly longitudinally costate and with fine transverse sculpture; surface of three basal tergites coarsely longitudinally rugose-costate with finely transverse sculpture in between; third tergite comparatively slender, its rugae strong and converging medio-posteriorly (fig. 726), with wide, non-serrate lamella, which is distinctly emarginate medio-posteriorly (fig. 726); length of ovipositor sheath 0.19 times fore wing.

Colour.— Yellowish-brown; stemmaticum and metasoma dorsally (except laterally and posteriorly narrowly), blackish; four basal antennal segments of antenna yellowish, following nine segments dark brown with apices yellowish, and remaining segments dark brown; palpi and metasoma ventrally, whitish; legs, tegulae, metasoma laterally and posteriorly, pale yellowish; tip of ovipositor sheath dark brown; remainder of ovipositor sheath, pterostigma, and veins, brown; anterior border of pterostigma slightly paler than middle of pterostigma; wing membrane subhyaline.

Variation.— Antennal segments 21(2) or 23(1); length of body 2.4-2.9 mm, and of fore wing 2.1-2.4 mm; length of malar space of ♀ 1.2-1.3 times basal width of mandible; length of ovipositor sheath 0.19-0.21 times fore wing; first tergite may be completely yellowish-brown.

Distribution.— Indonesia (Sumbawa).

Note.— It is real pleasure to name this species after Mr Robbert de Vries (RMNH), who made the specimens available in time by his excellent preparation of the Malaise trap catches.

Aulosaphoides topali (Papp, 1991) comb. nov.

Aulosaphes topali Papp, 1991: 148-149, figs 12-15.

Biology.— Unknown.

Distribution.— India (Assam, 1400 m).

Lysitermus Foerster, 1862
(figs 393-408)

Lysitermus Foerster, 1862: 236; Shenefelt, 1975: 1154-1155; van Achterberg, 1982: 125, 1991: 19-20 (key to Palaearctic spp.); Wharton, 1993: 142-143. Type species (by monotypy): *Lysitermus pallidus* Foerster, 1862 [examined].

Trissarthrum Ashmead, 1900a: 148; Shenefelt, 1975: 1155 (as synonym of *Lysitermus*); Wharton, 1993: 142. Type species (by original designation): *Trissarthrum maculipennis* Ashmead, 1900 [examined].

Rogadinaspis Boucek, 1956: 441; Shenefelt, 1975: 1155; Wharton, 1993: 142. Type species (by monotypy): *Rogadinaspis tritoma* Boucek, 1956 [examined].

Paracedria Hedqvist, 1957: 219; Shenefelt, 1975: 1155; Wharton, 1993: 142. Type species (by monotypy): *Paracedria suecicus* Hedqvist, 1957 [examined].

Prolysitermus Tobias, 1971: 205; Shenefelt, 1975: 1155; van Achterberg, 1982: 125 (synonym of *Lysitermus*); Wharton, 1993: 142. Type species (by monotypy): *Prolysitermus talitzkii* Tobias, 1971 [examined].

Diagnosis.— Antennal segments of ♀ 14-17; scapus oblique apically (fig. 395); antennal sockets not or hardly protruding (fig. 395); head gradually narrowed ventrally (figs 398, 403); malar suture absent (figs 398, 403); mesoscutum largely gla-

brous; metanotum not protruding dorsally (figs 395, 404); vein 2-SR of fore wing largely absent, at most developed as an unsclerotized trace (fig. 393), but may be complete in subgenus *Trissarthrum* Ashmead; first subdiscal cell of fore wing narrow and with vein CU1b present (figs 393, 402); parastigma hardly or not differentiated (figs 393, 402); vein M+CU of hind wing shorter than vein 1-M (figs 393, 402); first metasomal tergite movably joined to second tergite (figs 395, 406), its dorsal carinae joined to semi-circular carina subbasally (fig. 401), and without dorsope; third tergite truncate posteriorly (figs 401, 406), at most with a narrow lamella; fourth and fifth tergites smooth, weakly sclerotized, largely retracted and without lateral teeth (fig. 401).

Biology.— Parasites of Psychidae.

Distribution.— Holarctic, Neotropical.

Note.— The subgenus *Trissarthrum* differs from the typical subgenus by the serrate latero-apical rim of the third metasomal tergite (fig. 406). The presence of vein 2-SR of fore wing is of no value to recognize the subgenus because this vein may be present or absent in the same species (2 ♂♂ from Ecuador (CNC)).

***Tetratermus* Wharton, 1993**
(figs 381-392)

Tetratermus Wharton, 1993: 160-163, figs 56, 69-74, 91. Type species (by original designation): *Tetratermus huddlestoni* Wharton, 1993 [examined].

Diagnosis.— Antennal segments of ♀ more than 23; scapus slightly oblique apically, somewhat shorter ventrally than dorsally (fig. 382); antennal sockets somewhat protruding (fig. 390); head directly narrowed ventrally (fig. 391); malar suture absent; mesoscutum largely glabrous; metanotum not protruding dorsally; vein 2-SR of fore wing complete; first subdiscal cell of fore wing narrow and with vein CU1b only pigmented, shorter than 3-CU1 (figs 381, 383); vein M+CU of hind wing shorter than vein 1-M (fig. 381); parastigma differentiated (fig. 381); first metasomal tergite movably joined to second tergite (figs 382, 392), depressed postero-laterally, its dorsal carinae free subbasally (fig. 392) and with dorsope; second tergite with wide antero-lateraleal depressions (fig. 392); length of second tergite about 4 times length of third tergite behind second metasomal suture; second metasomal suture wide (fig. 392); third tergite truncate, simple posteriorly (fig. 392); fourth tergite exposed and finely sculptured, convex, with basal groove and with lateraleal crease (figs 385, 392); fifth tergite smooth, weakly sclerotized, and retracted.

Biology.— Unknown.

Distribution.— Australian (only the type species from Australia is known).

Note.— Very recently, Belokobylskij (1994a) published a monotypic genus (*Platyrmus* gen. nov.; type species: *Platyrmus maichau* Belokobylskij, 1994, from Vietnam) which has also the fourth metasomal tergite distinctly exposed and sclerotized. However, it has the body strongly flattened (face nearly as high as clypeus), the legs shortened and widened, with the telotarsus enlarged, vein m-cu of the fore wing just postfurcal, vein CUIIb of fore wing present, and the mandibles with a small ventral tubercle.

***Tritermus* van Achterberg, 1982**
(figs 357-367)

Tritermus van Achterberg, 1982: 127; Wharton, 1993: 168. Type species (by original designation):
Tritermus tobiasi van Achterberg, 1982 [examined].

Diagnosis.— Antennal segments of ♀ unknown, of ♂ about 19; scapus oblique apically (fig. 367); antennal sockets protruding (fig. 359); head slightly narrowed ventrally (fig. 358); malar suture absent; mesoscutum largely glabrous; metanotum not protruding dorsally; vein 2-SR of fore wing largely absent, at most developed as an unsclerotized trace (fig. 357); first subdiscal cell of fore wing narrow, widely open posteriorly, and vein CU1b absent (figs 357, 364); parastigma hardly or not differentiated (fig. 357); first metasomal tergite immovably joined to second tergite (figs 362, 367), and with dorsope (fig. 362); third tergite subtruncate posteriorly (fig. 366); fourth and fifth tergites smooth, weakly sclerotized, largely retracted (fig. 367).

Biology.— Unknown.

Distribution.— Palaearctic (only type species from Central Asia known).

Subfamily Masoninae nov.
(figs 1-32, 733-746, 751, 753)

Diagnosis.— Face strongly transverse (figs 7, 16, 23); hypoclypeal depression absent (figs 7, 23); clypeus wide (figs 7, 16); pronotum of ♀ comparatively long and posteriorly at same level as mesoscutum and scutellum (figs 3, 25); prepectal carina present; ♀ wingless and ♂ winged (♂ of *Mannokeraia* unknown), without sclerotized veins (fig. 12); fore spur 0.7-0.8 times fore basitarsus (figs 5, 22); dorsal carinae of first tergite, dorsope and laterope absent; second metasomal spiracle in its epipleuron (figs 3, 25); second metasomal suture absent; second and following tergites smooth, without lateral crease; hypopygium of ♀ small and apically truncate (figs 3, 25).

Biology.— Unknown. Mainly collected in flight interception traps, including wingless females, the latter possibly because of phoresy by males.

Distribution.— New World; Australian. According to the late Dr W.R. Mason (in litt.) also Afrotropical.

Tribe Mannokeraini nov.
(figs 1-11)

Diagnosis.— Antenna of ♀ strongly moniliform and medially widened (figs 3, 8); occipital carina complete, joining hypostomal carina far above base of mandible; ocelli of ♀ present (fig. 1); eyes normal; maxillary and labial palpi with 6 and 4 segments, respectively; gular sclerite absent; pronope present (fig. 2); posterior flange of propleuron medium-sized (fig. 3); fore tibia with long, curved pegs antero-subapically (fig. 5); fore leg shortened, but tarsi of ♀ slender (figs 5, 11); hind tarsal claws with lobe (fig. 10); basal half of first metasomal tergite tube-shaped, its sternite immovably joined to its tergite (figs 3, 6); ovipositor straight (fig. 3).

Distribution.— Australian: one genus.

Mannokeraia gen. nov.

(figs 1-11)

Type species: *Mannokeraia apterus* spec. nov.

Etymology.— From “mannos” (Greek for “necklace”) and “keraia” (Greek for “antenna”), because of the antenna is similar to a string of beads. Gender: feminine.

Diagnosis.— See diagnosis of tribe; ♀ wingless (♂ unknown).

Distribution.— Australian (one species).

Mannokeraia apterus spec. nov.

(figs 1-11)

Material.—Holotype, ♀ (ANIC), “[Australia], Barrengarry Mt., 24 km SW Mossvale, NSW, c 600 m, 9.i.29.viii.1982, S. & J. Peck, SBP 31”, “flight intercept. trap, rainforest”. Paratypes (5 ♀♀): 1 ♀ (ANIC), “35.22S.148.50E, ACT, 850 m, Blundells CK, 3 km E of Piccadilly Circus, i.1985, Lawrence, Weir, Johnson, flight intercept./window trough trap”; 1 ♀ (RMNH), “3 km N Batemans Bay, NSW, 50 m, 9.vi.30.viii.1982, S. & J. Peck, SBP 30”, “flight intercept. trap, sclerophyll forest”; 3 ♀♀ (CNC, RMNH), “Australia: NSW, Barrington Tops SE, 1000 m, 11.ii.1984, L. Masner, s.s., “*Nothofagus* forest, ferns, forest”.

Holotype, ♀, length of body 2.5 mm, fore wing absent.

Head.— Antennal segments 16, long setose, length of third segment 1.1 times fourth segment, length of third, fourth, and penultimate segments 1.1, 1.0 and 1.0 times their width, respectively (figs 3, 8); scapus small, concave apically (fig. 3); pedicellus comparatively large, similar to third antennal segment (fig. 3); length of maxillary palp 0.7 times height of head; length of eye in dorsal view 0.7 times temple (fig. 1); temples parallel-sided posteriorly (fig. 1); OOL:diameter of ocellus:POL = 19:3:11; face very short, with punctures laterally and some rugae dorsally; vertex smooth; length of malar space 0.8 times basal width of mandible.

Mesosoma.— Length of mesosoma 1.8 times its height; side of pronotum longitudinally striate (fig. 3); precoxal sulcus absent; remainder of mesopleuron dorsally coarsely punctate, rugose ventrally and anteriorly; pleural sulcus crenulate; metapleuron coarsely reticulate-rugose; notauli absent, except for a row of punctures (fig. 2); mesoscutum antero-medially with some punctures; surface of propodeum largely smooth and rather flat, but laterally and posteriorly rugose (fig. 2).

Wings.— Absent.

Legs.— Hind coxa rugose; length of femur, tibia and basitarsus of hind leg 3.3, 6.4 and 4.0 times their width, respectively; hind tibial spurs 0.35 and 0.50 times hind basitarsus.

Metasoma.— Length of first tergite 2.5 times its apical width, its surface largely smooth, posterior half partly striate (fig. 6); length of ovipositor sheath 0.4 times hind tibia; ovipositor strongly compressed, widened basally in lateral view (figs 3, 4).

Colour.— Brown; basal half of antenna, legs (except hind basitarsus and coxa), and metasoma behind third tergite, brownish-yellow; palpi and remainder of metasoma, pale yellowish; stemmaticum, streak behind eyes, scutellum, metanotum, metapleuron anteriorly, mesopleuron, part of tergite near base of ovipositor, hind coxae and apical half of antenna (but paler apically), dark brown.

Variation.— Length of body 2.0-3.5 mm; antennal segments of ♀ 16(4), length of

ovipositor sheath 0.37-0.45 times hind tibia; apex of antenna of paratypes pale yellowish or pale brown; stemmaticum and patch behind eyes sometimes yellowish; one paratype has hind basitarsus paler than that of holotype, and one paratype has head more narrowed posteriorly than figured.

Distribution.— Australia (New South Wales, A.C.T.).

Tribe Masonini nov.

(figs 12-32, 733-746, 751, 753; photos A, B)

Diagnosis.— Antenna of ♀ hardly or not moniliform and medially subparallel-sided (figs 14, 25, 32); occipital carina absent ventrally; ocelli of ♀ absent (fig. 17), of ♂ minute (fig. 15); maxillary and labial palpi with 4 and 1 segments, respectively; gular sclerite large (♀) to medium-sized (photos A, B)); eyes with few ommatidia; pronope absent (fig. 18); posterior flange of propleuron narrow (fig. 25); fore tibia without curved pegs antero-subapically (fig. 22); legs shortened, tarsi of ♀ widened and shortened (figs 21, 22, 28); hind tarsal claws simple (fig. 20); basal half of first tergite wide, open ventrally, its sternite movably joined to its tergite (fig. 25); ovipositor upcurved (fig. 25).

Biology.— Unknown.

Distribution.— Australian, New World, Afrotropical: one genus.

***Masona* gen. nov.**

(figs 12-32, 733-746, 751, 753; photos A, B)

Type species: *Masona prognatha* spec. nov.

Etymology.— Named after the late Dr W.R.M. Mason (1921-1991), the eminent specialist of Braconidae, who planned to describe this genus but his death made it impossible. Gender: feminine.

Diagnosis.— See diagnosis of tribe; ♀ wingless and ♂ winged.

Distribution.— Australian (Australia), Neotropical (U.S.A.: Key Islands), Nearctic (U.S.A.: Florida, Georgia), Afrotropical (Tanzania; Dr W.R.M. Mason, in litt.): small genus.

Note.— The late Dr Mason intended to publish this new genus in a new family because of the presence of the large gular sclerite (photos A, B), an autapomorphy within the superfamily Ichneumonoidea. As shown by the males, the development of the gular sclerite is strongly sex-dependant, and may be well an autapomorphy developed related to the aberrant head shape of the female. I include the genus in the Braconidae, because it shares its synapomorphies such as the united second and third metasomal tergites and the reduction of veins of fore wing. Most likely it is an archaic group because of its wide distribution and mainly derived character states. It seems to be distantly related to *Mannokeraia* gen. nov. *Mannokeraia* has pegs on its fore tibia, therefore, it is included as basal group of the Doryctinae/Braconinae lineage. It is not included in the Doryctinae (like the equally very aberrant *Ypsistocera*, which also lacks a distinct hypopycal depression) because the ovipositor is very slender apically (figs 3, 4, 25, 739).

Key to species of the genus *Masona* nov.

1. Head of ♀ strongly prognathous (figs 25, 733), length of eye of ♀ in dorsal view 0.3 times temple (figs 17, 735); first metasomal tergite flat (figs 19, 25), or slightly concave (figs 740, 746); scutellum of ♀ absent (figs 18, 736); length of body 0.7-1.2 mm; body of ♀ pale yellowish; trochanters various basally (figs 21, 22, 737, 743) ..
..... 2
- Head of ♀ less prognathous (fig. 26), length of eye of ♀ in dorsal view 0.6 times temple (fig. 30); first tergite distinctly concave medially (fig. 31); scutellum of ♀ present, deformed (fig. 27); length of body about 1.8 mm; body of ♀ brown; trochanters petiolate basally (fig. 28) *M. bulbofemoralis* spec. nov.
2. Length of third antennal segment of ♀ about 1.7 times its width; antenna as long as combined length of head and mesosoma (figs 24, 25); head of ♀ in dorsal view more robust, slightly narrowed posteriorly (fig. 17); occipital carina less developed (fig. 25); precoxal sulcus superficially impressed (fig. 25); male has pterostigma present, weakly defined (fig. 12); antenna of male less slender (fig. 14); SE U.S.A. *M. prognatha* spec. nov.
- Length of third antennal segment of ♀ about 2.5 times its width; antenna somewhat longer than combined length of head and mesosoma (figs 735, 736); head of ♀ in dorsal view less robust, narrowed posteriorly (figs 735, 741); occipital carina more developed (fig. 733); precoxal sulcus absent; male has pterostigma absent (male of *M. infuscata* unknown); antenna of male more slender (fig. 753); Australia 3
3. Antenna with 12-14 segments; metasoma completely pale yellowish; fore basitarsus in dorsal view more robust (fig. 734); head of ♀ in dorsal view slightly less narrowed posteriorly (fig. 735); length of body of ♀ 0.9-1.2 mm *M. similis* spec. nov.
- Antenna with 16 segments; metasoma (except first tergite) more or less dark brown; fore basitarsus in dorsal view less robust (fig. 742); head of ♀ in dorsal view slightly more narrowed posteriorly (fig. 741); length of body of ♀ about 1.7 mm *M. infuscata* spec. nov.

Masona bulbofemoralis spec. nov.
(figs 26-32)

Material.— Holotype, ♀ (AEI), "[U.S.A.], Ga., Decatur Co., 22.vi.[19]53, P.B. Kannooski".

Holotype, ♀, length of body 1.8 mm, fore wing absent.

Head.— Antennal segments 19, medial segments slightly widened (fig. 32), length of third segment 1.2 times fourth segment, length of third, fourth and penultimate segments 2.0, 1.8 and 1.1 times their width, respectively (fig. 32); scapus concave apically (fig. 32); length of maxillary palp 0.7 times height of head near level of eyes (fig. 32); head less prognathous than in other species (fig. 26); gular sclerite long, less sclerotised than occiput, and distinctly differentiated; length of eye in dorsal view 0.6 times temple; temples distinctly narrowed posteriorly (fig. 30); epistomal suture distinct; face and vertex smooth, convex; length of malar space equal to basal width of mandible (fig. 26).

Mesosoma.— Length of mesosoma 2.3 times its height; side of pronotum with some oblique striae; precoxal sulcus superficial, rugulose, complete; postpectal carina absent; metapleuron without flange, mainly rugulose, dorsally smooth, not differentiated from propodeum (fig. 29); distinct groove present between pronotum and mesoscutum; (deformed) scutellum and metanotum present, narrow (fig. 27); surface of propodeum smooth, with pair of distinct tubercles posteriorly (fig. 29).

Wings.— Absent.

Legs.— Hind coxa mainly smooth, angulate antero-dorsally (fig. 28); femora strongly swollen, setose; all tarsi similarly shortened (fig. 28), with enlarged telotarsi and especially fourth tarsal segment concave apically (fig. 28); tarsal claws robust, with spiny setae basally; trochanters petiolate (fig. 28); length of femur, tibia and basitarsus of hind leg 2.1, 5.4 and 2.0 times their width, respectively; hind tibial spurs 0.5 and 0.7 times hind basitarsus.

Metasoma.— Length of first tergite 0.9 times its apical width, its surface distinctly concave medially and densely and finely rugulose laterally (fig. 31); second and following tergites smooth; length of ovipositor sheath 0.08 times body, sheath narrow, parallel-sided and sparsely setose (narrower than in *M. prognatha*).

Colour.— Brown; palpi, trochanters, tarsi, antenna and main part of metasoma ventrally, pale yellowish.

Distribution.— U.S.A. (Georgia).

Masona infuscata spec. nov.
(figs 741-746)

Material.— Holotype, ♀ (ANIC), "[Australia], 11.41S 142.42E, QLD, 14 km ENE Heathlands, 21.x-12.xi.1993, flight intercept. trap, P. Zborowski & M. Horak".

Holotype, ♀, length of body 1.7 mm, wings absent. Very similar to *M. prognatha*, unless otherwise stated.

Head.— Antennal segments 16, length of third segment 1.1 times fourth segment, length of third, fourth, and penultimate segments 2.5, 2.3, and 1.5 times their width, respectively (fig. 741); length of maxillary palp 1.1 times height of head; occipital carina strong dorsally (fig. 741), absent on ventral half of head; length of eye in dorsal view 0.4 times temple; temples rather strongly narrowed posteriorly, and head in dorsal view comparatively narrow posteriorly (fig. 741); face and vertex smooth; length of malar space 1.2 times basal width of mandible.

Mesosoma.— Length of mesosoma 2.2 times its height; precoxal sulcus absent; surface of mesoscutum and propodeum smooth, and only separated by a groove.

Legs.— Length of femur, tibia and basitarsus of hind leg 1.8, 5.4 and 2.0 times their width, respectively; trochanters petiolate (figs 743, 744).

Metasoma.— Length of first tergite 0.8 times its apical width, its surface smooth and only basally slightly concave (fig. 746); length of ovipositor sheath 0.1 times body and 0.5 times hind tibia.

Colour.— Pale yellowish-brown; metasoma (except first tergite) largely dark brown.

Distribution.— Australia (Queensland).

Masona prognatha spec. nov.
(figs 12-25)

Material.— Holotype, ♀ (CNC), "Fla. [= U.S.A., Florida]: Monroe Co., Big Pine Key [Island], Watsons Hammock, S. & J. Peck, 3.v-3.viii.[19]85, Malais[e trap combined with] FIT [= flight interception trap], hardwood hammock". Paratypes (2 ♀♀ + 6 ♂♂): 1 ♂ (RMNH), topotypic, metasoma missing; 3 ♂♂ (CNC, RMNH), topotypic; 1 ♂ (CNC), id., but "S1, T67S, R 29F, v-vii.[19]75, cactus hammock, Malaise & FIT, forest"; 1 ♂ (CNC), "Fla: Munroe Co., H. Key Largo, 535, 4.v-4.viii.1985, J. Peck, Hammock forest"; 1 ♂ (CNC), "USA: Fl., Highlands Co., Archbold Biol. Station, 15.vii-1.ix.1987, D.B. Wahl!"; 1 ♀ (CNC), "Fla: Monroe Co., Sugar Loaf Key, Kitching's, NW1/4, SE 1/4, S25, R27E, T66S, v-vii.[19]85, S. & J. Peck, FIT [&] Malaise [trap]".

Holotype, ♀, length of body 1.2 mm, fore wing absent.

Head.— Antennal segments 14, length of third segment 1.2 times fourth segment, length of third, fourth, and penultimate segments 1.7, 1.4, and 1.3 times their width, respectively (figs 24, 25); scapus robust, truncate apically (fig. 24); pedicellus short (fig. 24); length of maxillary palp 0.6 times height of head near level of eyes (fig. 25); length of eye in dorsal view 0.3 times temple (fig. 17); temples subparallel-sided posteriorly (fig. 17); face and vertex smooth; length of malar space 0.6 times basal width of mandible.

Mesosoma.— Length of mesosoma 3.2 times its height; side of pronotum largely smooth; precoxal sulcus narrow, absent posteriorly (fig. 25), superficially crenulate; remainder of mesopleuron smooth; pleural sulcus largely smooth, with some micro-crenulae; metapleuron smooth, except for some rugae ventrally; notauli and scutellum absent (fig. 18); surface of propodeum smooth, no median carina (fig. 18), and

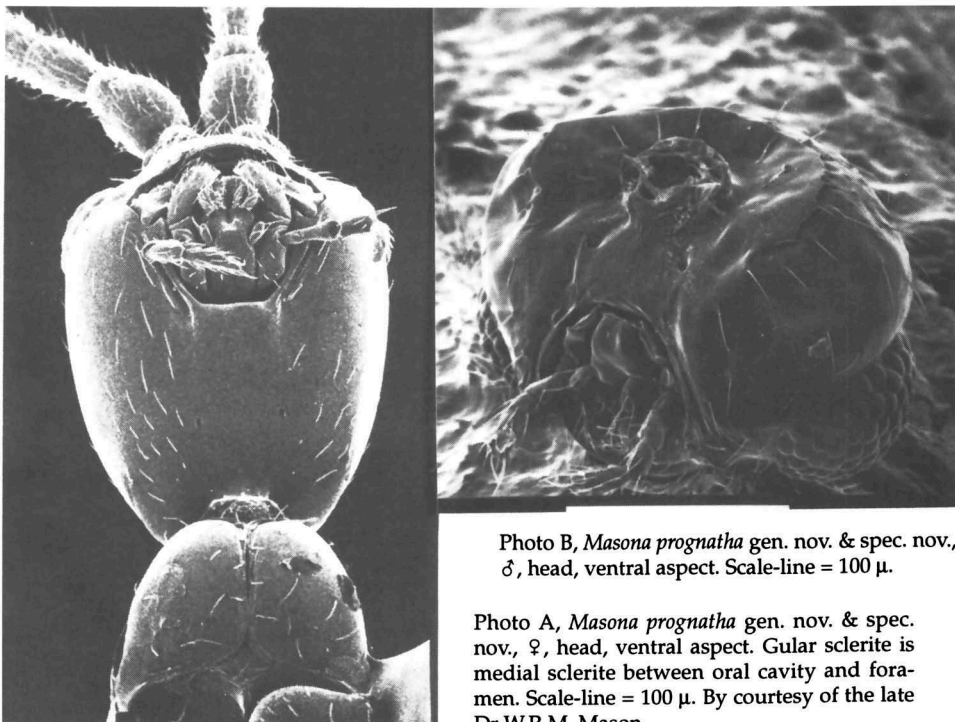


Photo B, *Masona prognatha* gen. nov. & spec. nov., ♂, head, ventral aspect. Scale-line = 100 μ .

Photo A, *Masona prognatha* gen. nov. & spec. nov., ♀, head, ventral aspect. Gular sclerite is medial sclerite between oral cavity and foramen. Scale-line = 100 μ . By courtesy of the late Dr W.R.M. Mason.

no distinct posterior tubercles, only angulate (fig. 25).

Wings.— Absent.

Legs.— Hind coxa smooth; length of femur, tibia and basitarsus of hind leg 2.0, 5.2 and 2.0 times their width, respectively; hind tibial spurs 0.4 and 0.9 times hind basitarsus, respectively.

Metasoma.— Length of first tergite 0.8 times its apical width, its surface smooth, flattened and medially slightly convex; length of ovipositor sheath 0.04 times body and 0.19 times hind tibia (figs 21, 25), only apically sparsely setose (fig. 25).

Colour.— Pale yellowish-brown; arolia infusate.

Variation.— Antennal segments of ♀ 14(2) or 15 (1), of ♂ 13(4) or 14(2); length of fore wing of ♂ 0.7-0.9 mm, body of ♂ 0.6-0.8 mm.

Males are winged, possess ocelli, have eye in dorsal view about as long as temple (fig. 15), and have a totally different shape of the head (figs 14-16), with scutellum (but not scutellar sulcus) and metanotum present (figs 12, 14, 18). The wings are veinless, the pterostigma is present, the hind wing has three hamuli and one basal bristle; body brown; first-third or second-third antennal segments yellowish; pterostigma narrow, brownish, not well defined (fig. 12); pigmentation of fore wing indicates some veins (fig. 12); pterostigma brown.

Distribution.— U.S.A. (Florida, Key Islands).

Masona similis spec. nov.
(figs 733-740, 751, 753)

Material.— Holotype, ♀ (ANIC), "[Australia], Qld, 12.40S 142.39E, Batavia Downs, 22.vi-23.viii.1992, flight intercept. trap, P. Zborowski & J. Cardale". Paratypes (9 ♀♀ + 4 ♂♂): 1 ♂ (ANIC), topotypic, same date; 1 ♂ (ANIC), "Qld, 11.39S 142.27E, Cockatoo Ck., 17 km NW Heathlands, 7.vi-25.vii.1992, P. Zborowski, E. Nielsen, Malaise [trap] # 5, open forest"; 3 ♀♀ (ANIC, RMNH), id., but 10.ix.-22.x.1993, P. Zborowski & D. Rentz; 1 ♀ (ANIC), id., but 22.x-12.xi.1993, P. Zborowski & M. Horak; 1 ♀ (ANIC), "15.11.S 143.52E, Hann River, QLD, 17.viii-15.ix.1993, Zborowski & Shattuck, flight intercept. trap"; 1 ♀ (ANIC), "11.45S 142.35E, Heathlands, QLD, 21.x-22.xi.1992, flight intercept. trap, P. Zborowski & A. Calder"; 1 ♂ (ANIC), id., but 20.x-21.xi.1992, #2 dump, open forest; 1 ♂ (RMNH), "12.39S 142.42E, QLD, 4 km NE Batavia Downs, 24.x-23.xi.1992, Malaise trap, P. Zborowski & A. Calder; 1 ♀ (RMNH), "12.40S 142.39E, QLD, 3 km W Batavia Downs, 16.ix-24.x.1992, flight intercept. trap, P. Zborowski & T. Weir"; 2 ♀♀ (ANIC, RMNH), "12.41S 142.41E, QLD, 5 km S Batavia Downs, 23.viii-15.ix.1992, flight intercept. trap, P. Zborowski & L. Miller".

Holotype, ♀, length of body 1.1 mm, wings absent. Very similar to *M. prognatha*, unless otherwise stated.

Head.— Antennal segments 14, length of third segment 1.1 times fourth segment, length of third, fourth, and penultimate segments 2.4, 2.2, and 1.5 times their width, respectively (figs 735); length of maxillary palp 1.2 times height of head; occipital carina comparatively strong dorsally (fig. 733); length of eye in dorsal view 0.45 times temple; temples distinctly narrowed posteriorly, and head in dorsal view comparatively slender (fig. 735); face and vertex smooth; length of malar space 0.6 times basal width of mandible.

Mesosoma.— Length of mesosoma 2.1 times its height; precoxal sulcus absent; only a groove between mesoscutum and propodeum, surfaces of both are smooth.

Legs.— Length of femur, tibia and basitarsus of hind leg 1.8, 3.8 and 1.7 times their width, respectively; trochanters petiolate (fig. 737).

Metasoma.— Length of first tergite 0.9 times its apical width, its surface smooth and only basally slightly concave; length of ovipositor sheath 0.1 times body.

Colour.— Pale yellowish-brown.

Variation.— Male: length of body 0.7-1.0 mm, of fore wing 0.6-0.9 mm; antenna with 12(1), 13(1) or 14(1) segments (fig. 753); length of eye in dorsal view 0.9-1.0 times temple; legs rather slender; scutellar sulcus shallowly impressed, indistinct; fore wing without any indication of pterostigma or veins; length of first metasomal tergite 0.8 times its apical width; brown, two basal and usually two or three apical segments of antenna (but apical segments may be brown), first tergite, second and third tergites medially, legs, tegulae, palpi, mesosoma laterally and ventrally, and metasoma ventrally, pale yellowish. Female has length of body 0.9-1.2 mm, and antenna with 14(10) segments; length of first tergite 0.8-0.9 times its apical width.

Distribution.— Australia (Queensland).

Subfamily Pambolinae Marshall, 1885

(figs 109-167, 747-750, 752, 754, 755)

Pambolides Marshall, 1885: 9, 64.

Pambolini; Belokobylskij, 1986b: 18, 1993a: 144.

Pambolinae; van Achterberg, 1993: 27.

Diagnosis.— Antenna with 11-14 segments, if more than 14 then labrum sculptured; hypoclypeal depression present; propodeum with pair of distinct, acute tubercles; if tubercles are absent than first tergite distinctly widened apically; first and second tergites with large, flap-like epipleura (Wharton, 1993).

Biology.— Idiobiont (and frequently gregarious) ectoparasites of larval Coleoptera and Lepidoptera.

Distribution.— Cosmopolitan.

Tribe Chremylini Hellén, 1957

(figs 120-167, 747-750, 752, 754, 755)

Chremylini Hellén, 1957: 35.

Diagnosis.— Antennal segments 11-14; prepectal carina runs to anterior margin of mesopleuron (fig. 167); propodeum with pair of minute tubercles (figs 110, 111, 133), but absent in *Cedria* which has antennal sockets closer to eyes than to each other (fig. 162).

Subtribe Cedriina Belokobylskij, 1993

(figs 153-167, 747-750, 752, 754, 755)

Cedriini Belokobylskij, 1993a: 154-155.

Chremyломorphini Belokobylskij, 1993a: 155. *Syn. nov.*

Diagnosis.— Antennal sockets distinctly removed from each other (figs 125, 139, 162); vein cu-a of hind wing and vein r-m of fore wing absent (figs 131, 153); vein 1-SR of fore wing absent or very short (figs 131, 142, 153); hind femur largely smooth; tarsal claws robust and distinctly widened subbasally (fig. 123).

Distribution.— Indo-Australian.

Note.— The closely related genera *Cedria* Wilkinson, and *Chremylomorpha* Belokobylskij have been included by Belokobylskij (1993) in two separate tribes: Cedriini and Chremylomorphini, respectively. The differences are limited, however, and concern mainly the sculpture, the anterior depressions of the second tergite, and the complete and protruding median carina of the metanotum, which do not seem sufficient grounds to recognise even a subtribal difference between the two genera. The taxonomical system conveys more information about the relationships of the genus *Cedria* if both tribes are united to one subtribe Cedriina.

Cedria Wilkinson, 1934
(figs 153-167)

Cedria Wilkinson, 1934: 80-81; Shenefelt, 1975: 1141-1142; Wharton, 1993: 134-135. Type species (by original designation): *Cedria paradoxa* Wilkinson, 1934 [examined].

Diagnosis.— Third antennal segment at least somewhat longer than fourth segment, and much longer than pedicellus (fig. 166); antennal sockets more than twice diameter of antennal socket in dorsal view removed from each other (fig. 164); head normal, not enlarged posteriorly (figs 164, 167); mesoscutum largely smooth dorsally (fig. 160); metanotum with median carina (figs 156, 157); vein 1-SR+M of fore wing present (fig. 153); vein 2-SR of fore wing longer than vein m-cu of fore wing (fig. 153); vein 1-CU1 of fore wing weakly or not oblique (fig. 153); first subdiscal cell of fore wing at most slightly narrowed basally; anteriorly vein 1-SR+M of fore wing distinctly removed from vein C+SC+R (fig. 153); first tergite gradually narrowed basally (fig. 155); second tergite striate, anteriorly distinctly depressed, and with sharp lateral crease (fig. 155).

Biology.— The type species is a parasite of Pyralidae and Tortricidae, and the female exhibits maternal care for its gregarious, ectoparasitic and idiobiont larvae.

Distribution.— Indo-Australian; Afrotropical (one undescribed species: Wharton, 1993).

Note.— Whitfield (1992) coded the Lysiterminae as gregarious ectoparasites; but, the only genus of the group about which we know more than its host is the genus *Cedria*, which was obviously included. However, I agree with Wharton (1993) that *Cedria* belongs in the Pambolinae near *Chremylomorpha* instead of belonging to the Lysiterminae; Wharton based this on the large flap-like epipleura of the first and second tergites (which are frequently hidden under the metasoma). Additional characters indicating that *Cedria* belongs in the Pambolinae are the position of the prepectal carina (reaching anterior margin of mesopleuron), the low number of antennal segments, the subbasally free dorsal carinae of the first tergite, the comparatively small pedicellus, the comparatively flat metasoma, the reduction of veins r-m of fore wing and cu-a of hind wing, and the shape of the first subdiscal cell of fore wing.

Key to species of the genus *Cedria* Wilkinson

1. Metasoma completely carinate, mingled with secondary sculpture 2
- Sculpture of third tergite different from sculpture of first tergite, transversely striate or largely smooth (figs 155, 167) 3

2. Frons and vertex with transverse and lateral carinae (fig. 46 in Belokobylskij, 1990); head constricted behind eyes (fig. 46, l.c.); pterostigma basally pale and remainder largely dark brown (as part of larger dark brown patch); vein CU1a of fore wing removed from vein CU1b (fig. 50, l.c.); metasoma without dark transverse band; Vietnam *C. galinae* Belokobylskij, 1990
- Frons and vertex without carinae; head evenly rounded behind eyes; pterostigma basally darkened; vein CU1a of fore wing near vein CU1b; metasoma with wide transverse dark band; Burma *C. anomala* Wilkinson, 1935
3. Part of third metasomal tergite with transverse striae (fig. 155); vein 3-CU1 of fore wing widened (fig. 158); median carina of propodeum short or absent (fig. 160); India, Sri Lanka, Burma, southern China, Vietnam *C. paradoxa* Wilkinson, 1934
- Third tergite without transverse striae; vein 3-CU1 of fore wing slender or absent; median carina of propodeum about 0.3 times length of propodeum; Australia *C. australiensis* Belokobylskij, 1988

***Chremyloides* gen. nov.**
(figs 142-152, 747-750, 752, 754, 755)

Type species: *Chremyloides cardaleae* spec. nov.

Etymology.— From “eides” (Greek for “like”) and the generic name *Chremylus* Haliday, because it is similar to *Chremylus*. Gender: masculine.

Diagnosis.— Third antennal segment at least somewhat longer than fourth segment, and much longer than pedicellus (fig. 144); distance between antennal sockets less than twice diameter of antennal socket in dorsal view (fig. 145); head normal, not enlarged posteriorly (fig. 145); mesoscutum granulate (fig. 147); metanotum without median carina (fig. 147); vein 1-SR+M of fore wing present (fig. 142); vein 2-SR of fore wing longer than vein m-cu of fore wing (fig. 142); vein 1-CU1 of fore wing weakly or not oblique (fig. 142); first subdiscal cell of fore wing at most slightly narrowed basally (fig. 142); anteriorly vein 1-SR+M of fore wing nearly touching vein C+SC+R (fig. 142); first tergite gradually narrowed basally (fig. 146); second metasomal tergite granulate, anteriorly not or narrowly depressed, and with epipleura folded under nota, without sharp crease, or crease intermediate or distinct (fig. 146).

Biology.— Unknown.

Distribution.— Australian (small genus).

Key to species of the genus *Chremyloides* nov.

1. Head smooth; area between antennal sockets without carina (fig. 150); head largely, mesoscutum and scutellum yellowish (orange-)brown; first and second tergites without rugae; precoxal sulcus smooth (fig. 144); mesopleuron largely smooth dorsally; antennal segments of ♀ 13-14, longer (fig. 144); vein CU1a of fore wing distinctly bent (fig. 142) or straight; scutellar sulcus wide (fig. 147); vein m-cu of fore wing 0.6-0.8 times vein 2-SR (fig. 142); vein 2-M of fore wing various 2
- Head completely coarsely granulate; area between antennal sockets with short median carina (fig. 752); head and mesosoma (completely) black; first tergite

- with coarse and second tergite with fine rugae; precoxal sulcus crenulate; mesopleuron distinctly sculptured dorsally; antennal segments of ♀ 11, comparatively short (fig. 748); vein CU1a of fore wing straight (fig. 747); scutellar sulcus rather narrow; vein m-cu of fore wing less than half as long as vein 2-SR; vein 2-M of fore wing curved (fig. 747) *C. naumanni* spec. nov.
2. Antennal segments of ♀ comparatively robust (fig. 755), and length of antenna about 0.7 times fore wing; fourth antennal segment dark brown; middle lobe of mesoscutum with distinct median groove, nearly reaching anterior border of lobe; scutellum and head dorsally and posteriorly dark brown, unicoloured; vein m-cu of fore wing about 0.6 times vein 2-SR (fig. 754); second and third tergites brown *C. abnormis* (Belokobylskij)
- Antennal segments of ♀ slender (figs 144, 152), and antenna nearly as long as fore wing or somewhat less; fourth antennal segment yellowish; median groove of mesoscutum short (fig. 147) or obsolescent, removed far from anterior border of lobe; scutellum and head dorsally orange-brown, contrasting with dark brown occiput; vein m-cu of fore wing about 0.8 times vein 2-SR (fig. 142); second and third tergites dark brown or blackish *C. cardaleae* spec. nov.

Chremyloides abnormis (Belokobylskij, 1988) comb. nov.
(figs 754, 755)

Cedria abnormis Belokobylskij, 1988: 1585-1586, figs 7-9.

Material.— Holotype, ♀ (ANIC), “[Australia], ACT, Condor Creek, 5.ii.1958, E.F. Riek”; “Holotypus *Cedria abnormis* Belokobylskij”.

Note.— Length of vein r of fore wing is 1.1 times width of pterostigma (not 1.3 times as figured by Belokobylskij, 1988) and vein CU1a of fore wing is distinctly curved basally (id.; fig. 754).

Distribution.— Only known from the holotype from Australia (ACT).

Chremyloides cardaleae spec. nov.
(figs 142-152)

Material.— Holotype, ♀ (ANIC), “[Australia], Corang R. via Nerriga, NSW, 25.x.1979, I.D. Naumann, J.C. Cardale”.

Holotype, ♀, length of body 1.8 mm, of fore wing 1.5 mm.

Head.— Antenna with 14 segments, nearly as long as fore wing (figs 142, 144), length of third segment 1.1 times fourth segment, length of third, fourth and penultimate segments 3.7, 3.2 and 2.2 times their width, respectively (figs 144, 152); scapus truncate apically (fig. 149); pedicellus medium-sized (fig. 149); length of maxillary palp 0.9 times height of head; length of eye in dorsal view 2.0 times temple; area between antennal sockets without median carina; temples directly narrowed posteriorly (fig. 145); OOL:diameter of ocellus:POL = 10:2:4; face moderately transverse, smooth (fig. 150); vertex smooth; length of malar space equal to basal width of mandible.

Mesosoma.— Length of mesosoma 1.6 times its height; side of pronotum largely

smooth, with rugulosity medio-ventrally (fig. 144); precoxal sulcus smooth, absent posteriorly (fig. 144); remainder of mesopleuron smooth; pleural sulcus smooth, and dorsal depression large (fig. 144); metapleuron reticulate; mesoscutum with short median groove (fig. 147), without rugae medio-posteriorly; notauli micro-sculptured, shallow (fig. 147); scutellar sulcus wide (fig. 147); surface of propodeum largely smooth between carinae and median carina absent, propodeal tubercles obsolescent, only carinae somewhat protruding (fig. 144).

Wings.— Fore wing: r about as long as width of pterostigma and emerging sub-medially from pterostigma (fig. 142); $r:3-SR+SR1:2-SR = 9:41:10$; $1-CU1:2-CU1 = 1:7$; cu-a short; CU1a distinctly bent basally (fig. 142); m-cu about 0.8 times 2-SR (fig. 142).

Legs.— Hind coxa smooth; length of femur, tibia and basitarsus of hind leg 4.6, 8.0 and 4.0 times their width, respectively; hind tibial spurs 0.2 and 0.3 times hind basitarsus, respectively; fore telotarsus slender (fig. 151).

Metasoma.— Length of first tergite 0.8 times its apical width, its surface densely and rather coarsely granulate, its dorsal and dorso-lateral carinae complete (fig. 146); second tergite largely and third tergite (except laterally) granulate; length of ovipositor sheath 0.20 times fore wing.

Colour.— Blackish or dark brown; head (except temple and occiput), three basal antennal segments, mesoscutum, scutellum, mesopleuron antero-dorsally, and legs, yellowish-(orange)brown; palpi and tegulae, pale yellowish; pterostigma, veins and parastigma, dark brown, but base of pterostigma pale yellowish; wing membrane subhyaline, but darker below near vein r (fig. 142).

Distribution.— Australia (New South Wales).

Notes.— This species is named after Mrs J.C. Cardale (Canberra) who collected many interesting Braconidae.

I have examined a second specimen (ANIC, ♀, "5 miles NW of Coffs Harb., N.S.W., 800 ft, 1.xi.1965, M.S. Upton") which is very similar, but it has the antenna 0.85 times as long as fore wing, the third antennal segment largely dark brown, the mesoscutum with rugae posteriorly and the length of vein m-cu of fore wing 0.7 times vein 2-SR.

Chremyloides naumanni spec. nov.
(figs 747-750, 752)

Material.— Holotype, ♀ (ANIC), "[Australia], 18 km NW by N Omeo, Vic., 28.ii.1980, I.D. Naumann, J.C. Cardale".

Holotype, ♀, length of body 2.2 mm, of fore wing 1.5 mm.

Head.— Antenna with 11 segments, slightly longer than half length of fore wing (fig. 748), length of third segment 1.3 times fourth segment, length of third, fourth, and penultimate segments 2.5, 2.0, and 2.3 times their width, respectively; length of maxillary palp 0.8 times height of head; length of eye in dorsal view 2.3 times temple (fig. 752); area between antennal sockets with short median carina (fig. 752); temples coarsely granulate, roundly narrowed posteriorly; OOL:diameter of ocellus:POL = 6:2:6; frons convex, coarsely granulate and sparsely setose; face coarsely granulate, but medially smooth; clypeus narrow; labrum flat and smooth, well visible; occipital

carina less developed than in *C. cardaleae*; vertex coarsely granulate; length of malar space 0.7 times basal width of mandible.

Mesosoma.— Length of mesosoma 1.7 times its height; similar to mesosoma of *C. cardaleae* but precoxal sulcus crenulate; mesopleuron distinctly crenulate dorsally; scutellar sulcus rather narrow; scutellum distinctly granulate; mesoscutum with long median groove, finely crenulate; notauli largely reduced on disc; surface of propodeum distinctly rugose between carinae, its propodeal tubercles distinct laterally.

Wings.— Fore wing: r shorter than width of pterostigma and emerging submedially from pterostigma (fig. 747); parastigma comparatively wide (fig. 747); r:3-SR+SR1:2-SR = 14:57:17; CU1a straight basally; m-cu about 0.3 times 2-SR (fig. 747).

Legs.— Length of femur, tibia and basitarsus of hind leg 3.0, 6.0 and 3.6 times their width, respectively; telotarsi not enlarged, but tarsi shortened, more than in *C. cardaleae*.

Metasoma.— Length of first tergite 0.6 times its apical width, its surface flattened, with distinct rugae and granulate, its dorsal carinae irregular and merging into sculpture; second and third tergites completely granulate, second tergite also with fine rugae; length of ovipositor sheath 0.17 times fore wing.

Colour.— Black; basal half of antenna, legs (but hind coxa and femur ventrally infuscate), fourth and following metasomal tergites yellowish-brown; second and third tergites dark reddish-brown; pterostigma and veins completely dark brown; tegulae brown; palpi pale yellowish; wing membrane subhyaline, except slightly infuscate area of discal and marginal cells of fore wing.

Distribution.— Australia (Victoria).

Note.— This species is named after Dr I. Naumann (Canberra), who has been very helpful with providing material and he is one of the collectors of the holotype.

Chremylomorpha Belokobylskij, 1986
(figs 131-141)

Chremylomorpha Belokobylskij, 1986c: 86, figs 1-7; 1992: 179-180; Wharton, 1993: 135. Type species (by original designation): *Chremylomorpha mirabilis* Belokobylskij, 1986.

Diagnosis.— Third antennal segment at least somewhat longer than fourth segment, and much longer than pedicellus (fig. 133); head normal, not enlarged posteriorly (fig. 133); vein 1-SR+M of fore wing absent (fig. 131); vein 2-SR of fore wing shorter than vein m-cu of fore wing (fig. 131); vein 1-CU1 of fore wing strongly oblique (fig. 131); first subdiscal cell of fore wing narrowed basally (fig. 131); first metasomal tergite angulate basally (fig. 140); second tergite without lateral crease.

Biology.— Unknown.

Distribution.— Australian (only the type species known).

Pseudochremylus gen. nov.
(figs 120-130)

Type species: *Pseudochremylus angulifer* spec. nov.

Etymology.— From "pseudes" (Greek for "false") and the generic name *Chremylus* Haliday, because it is only superficially similar to *Chremylus*. Gender: masculine.

Diagnosis.— Third antennal segment much shorter than fourth segment, about

as long as pedicellus (figs 122, 126); head very robust (fig. 121, 122); vein 1-SR+M of fore wing present (fig. 120); vein 2-SR of fore wing much longer than vein m-cu of fore wing (fig. 120); vein CU1 of fore wing horizontal (fig. 120); first subdiscal cell of fore wing parallel-sided (fig. 120); first metasomal tergite angulate basally (fig. 130); second tergite without lateral crease.

Biology.— Unknown.

Distribution.— Australian (only the type species known).

Pseudocremylus angulifer spec. nov.
(figs 120-130)

Material.— Holotype, ♀ (ANIC), "[Australia], 34.41S 117.52E, Porongorup N.P., 7.x.1981, W.A., I.D. Naumann, J.C. Cardale, ex ethanol".

Holotype, ♀, length of body 2.0 mm, of fore wing 1.4 mm.

Head.— Rather bethyloid prognathous (fig. 122); antennal segments 11, length of third segment 0.5 times fourth segment and about as long as second, length of third, fourth and penultimate segments 1.5, 2.0 and 2.2 times their width, respectively (figs 122, 126, 127); scapus slender, apically truncate (fig. 126); pedicellus medium-sized (fig. 126); length of maxillary palp 0.5 times height of head; length of eye in dorsal view 0.7 times temple (fig. 121); temples slightly widened posteriorly (fig. 121); OOL:diameter of ocellus:POL = 15:4:6; frons granulate; face strongly transverse and rugulose (fig. 125); vertex smooth; length of malar space 0.3 times basal width of mandible.

Mesosoma.— Length of mesosoma 2.2 times its height; side of pronotum crenulate medially and remainder largely rugulose (fig. 12); precoxal sulcus finely crenulate, narrow, absent posteriorly (fig. 122); remainder of mesopleuron smooth, distinctly convex; pleural sulcus finely crenulate; metapleuron rugose, but smooth antero-dorsally; notauli absent on disc, with a shallow and narrow median groove posteriorly (fig. 124); surface of propodeum largely granulate between carinae, median carina absent, and propodeal tubercles small (fig. 124).

Wings.— Fore wing: r distinctly oblique, somewhat shorter than width of pterostigma and emerging submedially from pterostigma (fig. 120); r:3-SR+SR1:2-SR = 7:39:14; cu-a interstitial, short; SR1 slightly curved (fig. 120); CU1a at level of vein 2-CU1.

Legs.— Hind coxa smooth; length of femur, tibia and basitarsus of hind leg 3.0, 9.8 and 3.5 times their width, respectively; hind tibial spurs both 0.2 times hind basitarsus; hind femur strongly compressed.

Metasoma.— Length of first tergite 0.7 times its apical width, its surface densely granulate, its dorsal carinae absent (fig. 130), flat; second tergite largely superficially granulate; third tergite smooth; length of ovipositor sheath 0.22 times fore wing.

Colour.— Black; three basal segments of antenna, tibiae, tarsi and palpi, pale yellowish; remainder of antenna and legs, head, metasoma (except first tergite), veins and pterostigma (but its base and apex paler) dark brown; wing membrane with weakly infusate patches (fig. 120), and remainder of wings subhyaline.

Distribution.— Australia (Western Australia).

Subtribe Chremylina Hellén, 1957
(figs 109-119)

Chremylini Hellén, 1957: 35.

Chremylina; Belokobylskij, 1993: 144, 146.

Diagnosis.— Antennal sockets nearly touching each other (figs 113, 114); vein cu-a of hind wing and vein r-m of fore wing present (fig. 109); vein 1-SR of fore wing medium-sized (fig. 109); hind femur densely sculptured (fig. 115); tarsal claws simple, comparatively slender (fig. 118); first metasomal tergite without dorsope; hypopygium of ♀ medium-sized (figs 122, 167).

Distribution.— Cosmopolitan: one genus.

Note.— Belokobylskij in his 1993 paper on the extended subfamily Exothecinae included in the subtribe Chremylina Hellén (of the tribe Pambolini sensu Belokobylskij) two genera: *Chremylus* Haliday, 1833, and *Pilichremylus* Belokobylskij, 1992. According to Belokobylskij (in litt.) he included *Pilichremylus* in the Chremylina because of the large second and third tergites, which are semi-soft and usually completely and finely granulate, and the absence of the postpectal carina. However, judging from its original description *Pilichremylus* does not fit in my diagnosis of the Chremylini (including the Chremylina, Cedriini and Chremylomorphini sensu Belokobylskij). *Pilichremylus* has the antenna 16-segmented, wings slender, second submarginal cell of fore wing present and slender, vein m-cu of fore wing far antefurcal, and vein cu-a of hind wing present. The antefurcal vein m-cu of fore wing (an apomorphy) makes it unlikely that it is a basal group of the Chremylini for which the diagnosis of the Chremylini should be enlarged (and consequently weakened). It seems more justifiable to include *Pilichremylus* in the tribe Pambolini, wherein it is separable from other Australian Pambolini by the elongate second submarginal cell of fore wing and its 16-segmented antenna.

***Chremylus* Haliday, 1833**
(figs 109-119)

Chremylus Haliday, 1833: 266; Shenefelt, 1975: 1156; Wharton, 1993: 135-136. Type species (by monotypy): *Chremylus elaphus* Haliday, 1833.

Diagnosis.— See subtribe diagnosis.

Biology.— Gregarious ectoparasite of case-bearing larvae of Tineidae, but also reported from coleopterous larvae in stored products.

Distribution.— Holarctic, but the type species, which attacks stored product pests, is now cosmopolitan. Small genus.

Subfamily Rhyssalinae Foerster, 1862
(figs 59-82, 368-380)

Rhyssaloidae Foerster, 1862: 241.

Rhyssalinae; Quicke & van Achterberg, 1990: 43; van Achterberg, 1993: 27; Quicke, 1994: 159-160.

Diagnosis.— Antennal segments with more than 14 segments; labrum smooth and more or less concave; propodeum without tubercles, if exceptionally tubercles

are present then they are obtuse; dorsope usually present; spiracle of second tergite situated in its epipleuron or near lateral fold, not surrounded by sculpture; fourth and following tergites usually largely exposed; ovipositor normal, without double nodus.

Biology.— Idiobiont ectoparasites of larval Coleoptera and Lepidoptera, and probably also of Diptera.

Distribution.— Cosmopolitan.

Anachyra gen. nov.
(figs 59-70)

Type species: *Anachyra setosipes* spec. nov.

Etymology.— From “anachyma” (Greek for “expanse”) and “chora” (Greek for “room, space”), because of the posteriorly expanded first discal cell of fore wing (fig. 59). Gender: feminine.

Diagnosis.— Head and legs with very long bristly setae (figs 62, 67); face long (fig. 60); hypoclypeal depression medium-sized, rather narrow (fig 60); vertex transversely striate (fig. 61); malar suture present (fig. 60); vein m-cu of fore wing strongly diverging from vein 1-M posteriorly, subvertical and postfurcal (fig. 59); vein 3-SR of fore wing longer than vein SR1 (fig. 59); vein cu-a of hind wing strongly reclivous (fig. 59); tarsal claws large (figs 67, 69); dorsope deep and large (fig. 66).

Biology.— Unknown.

Distribution.— Australian (only the type species known).

Anachyra setosipes spec. nov.
(figs 59-70)

Material.— Holotype, ♀ (ANIC), “[Australia], Mt. Lewis, N Qld, 29.x.1980, Favier, Storey, Strickland, Berleseate”. Paratype: 1 ♀ (BMNH), “Australia, N.S.W., Monga, 10.xi.1981, I. Gauld”.

Holotype, ♀, length of body 2.5 mm, of fore wing 2.4 mm.

Head.— Antennal segments 19, long setose, length of third segment 1.3 times fourth segment, length of third, fourth and penultimate segments 2.3, 1.8 and 1.2 times their width, respectively (figs 62, 64); scapus medium-sized, inserted on facial protuberance (figs 61, 62), truncate apically (fig. 62); pedicellus normal; length of maxillary palp 0.9 times height of head; length of eye in dorsal view equal to length of temple (fig. 61); frons largely smooth (fig. 61); temples subparallel-sided behind eyes (fig. 61); OOL:diameter of ocellus:POL = 28:6:11; face smooth; vertex coarsely transversely striate, with long setae (figs 61, 62); length of malar space 1.6 times basal width of mandible.

Mesosoma.— Length of mesosoma 1.6 times its height; antescutal depression present (fig. 62); side of pronotum rugose, but medially and dorsally largely smooth (fig. 62); precoxal sulcus shallow, sparsely crenulate, wide, and posteriorly absent (fig. 62); remainder of mesopleuron largely smooth; pleural sulcus sparsely crenulate; metapleuron reticulate, convex; notauli largely impressed and distinctly crenulate, absent near narrow medio-posterior groove (fig. 65); surface of propodeum largely transversely rugose, its median carina long (fig. 66).

Wings.— Fore wing: r much shorter than width of pterostigma and emerging

from basal 0.6 of pterostigma (fig. 59); r:3-SR:SR1 = 3:20:23; 1-CU1:2-CU1 = 3:7; cu-a short (fig. 59); first subdiscal cell slender, nearly closed apically, and with CU1b absent (fig. 59); 2-SR:3-SR:r-m = 16:20:4. Hind wing: M+CU:1-M = 30:19; m-cu and plical lobe absent.

Legs.— Hind coxa smooth; length of femur, tibia and basitarsus of hind leg 4.0, 9.4 and 4.2 times their width, respectively; hind tibial spurs 0.2 and 0.3 times hind basitarsus; fore basitarsus long and following segments short, fore telotarsus slightly enlarged (fig. 68); fore spur 0.8 times fore basitarsus.

Metasoma.— Length of first tergite 1.3 times its apical width, its surface with curved striae (fig. 66), its dorsal carinae up to basal 0.8; second tergite smooth; second suture absent; length of ovipositor sheath 0.60 times fore wing, subapically long setose (fig. 63).

Colour.— Dark brown; palpi, coxae, trochanters and trochantelli, pale yellowish; remainder of fore and middle legs, ovipositor sheath (but apex dark brown) and tegulae, brownish-yellow; pterostigma and veins rather dark brown, but veins of apical 0.45 of fore wing unpigmented, except veins r and 2-SR, and base of vein 3-SR which are brown; antenna, hind leg (except coxa, trochanter and trochantellus), metasoma (except first tergite), brown; wing membrane weakly infusate.

Variation.— Paratype has antenna more moniliform, medio-posterior depression of mesoscutum wider and rather carinate laterally, third-fifth hind tarsal segments yellowish, antenna with 19 segments, length of both fore wing and body 2.1 mm, length of first tergite equal to its apical width, and length of ovipositor sheath 0.51 times fore wing.

Distribution.— Australia (Queensland, New South Wales).

Doryctomorpha Ashmead, 1900
(figs 71-82)

Doryctomorpha Ashmead, 1900b: 629; Shenefelt & Marsh, 1976: 1295-1296. Type species (by original designation): *Doryctomorpha antipoda* Ashmead, 1900 [examined].

Diagnosis.— Face strongly transverse (fig. 73); head and legs (rather) short setose; hypoclypeal depression very wide (fig. 73); vein 3-M of fore wing largely sclerotized (fig. 71); second submarginal cell of fore wing large (fig. 71); vein 1r-m of hind wing long (fig. 71); vein m-cu of hind wing absent (fig. 71); anterior face of fore tibia with cluster of spiny setae (fig. 79).

Biology.— Unknown.

Distribution.— Australian (type species), ?Palaeartic, ?Neotropical; the latter two areas are included because of additional species reported from Japan and Argentina (Shenefelt & Marsh, 1976), respectively, but their congeneric status has to be proven.

Note.— According to Quicke et al. (1992) the type species possesses a normal ovipositor tip, also indicating that it does not belong to the subfamily Doryctinae as was supposed for a long time (Shenefelt & Marsh, 1976).

Doryctomorpha antipoda Ashmead, 1900
(figs 71-82)

Doryctomorpha antipoda Ashmead, 1900: 630; Shenefelt & Marsh, 1976: 1295.

Material.— Holotype, ♀ (Überseemuseum, Bremen), "Chatham Isld, Schaunslid", "*Doryctomorpha antipoda* Ashm., ♀, Type" (this label in Ashmead's handwriting); 1 ♀ (BMNH), "98-10, N. Zeal."; 2 ♀♀ (RMNH, BMNH), "New Zealand, SC, O., Charlotte Sd., Mistletoe Bay, 13-14.ii.1985, J.W. Early", "yellow pan trap in coastal forest"; 1 ♂ (CNC), "New Zealand, BR., 600 m, L. Rotoiti, 6.iii.1980".

Male has fore tarsus as female, fore spur 0.9 times fore basitarsus (holotype 1.0 times); notauli reduced posteriorly, only medio-posteriorly with pair of parallel carinae, no distinct groove; antennal segments 24 (in female 28-29); and propodeal carinae reduced anteriorly.

Distribution.— New Zealand and Chatham Islands.

Lysitermoides gen. nov.

(figs 368-380, 728)

Type species: *Lysitermoides huggerti* spec. nov.

Etymology.— From "eides" (Greek for "like") and the generic name *Lysitermus* Foerster, because it is similar to *Lysitermus*. Gender: masculine.

Diagnosis.— Antennal segments of ♀ 21-23; scapus somewhat oblique apically, and pedicellus nearly as long as scapus (fig. 373); antennal sockets not or hardly protruding (fig. 370); head gradually narrowed ventrally (fig. 369); occipital carina connected to hypostomal carina distinctly above mandibular base; malar suture absent; scutellum with some short fine crenulae medio-posteriorly; propodeum with medial areola, slender (fig. 372); vein 2-SR of fore wing complete; first subdiscal cell of fore wing robust and with vein CU1b present (fig. 368); parastigma distinct (fig. 368); vein m-cu of fore wing just postfurcal; vein CU1a of fore wing situated near level of vein 2-1A, below middle of first subdiscal cell (fig. 368); vein m-cu of hind wing present; first metasomal tergite movably joined to second tergite (figs 373, 380), and with dorsope (fig. 380); three basal segments of metasoma carapace-like, with sharp lateral crease, longitudinally striate and with interconnecting sculpture (fig. 380); spiracles of second and third tergites in their epipleura, distinctly below lateral crease (fig. 373); third tergite truncate posteriorly, without lamella or serration (figs 373, 380); fourth and fifth tergites smooth, weakly sclerotized, and largely retracted (fig. 373); ovipositor sheath slender and shorter than metasoma.

Biology.— Unknown.

Distribution.— Nearctic (two species).

Notes.— This genus resembles the genus *Lysitermus* Foerster, 1862 (especially in the sculpture of the metasoma) but *Lysitermus* has the second and third metasomal spiracles in the nota of the tergites (fig. 395), the subbasal connection between dorsal carinae of first tergite present, and the apex of the third tergite has a lamella or serrate rim (figs 401, 406). *Lysitermoides* is included in the Rhyssalinae because it is close to the genus *Oncophanes* Foerster, 1862; e.g. *Oncophanes (Epirhyssalus) californicus* (Ashmead, 1900) which has also the metasoma extensively sculptured. *Oncophanes* spp. lack the fine interconnecting sculpture between the longitudinal striae and the three basal segments of the metasoma are not carapace-like, with the fourth tergite well exposed (at least as much as third tergite) and similarly sclerotized as the third tergite. *Lysitermoides* seems to be a fine example of convergent evolution in the *Oncophanes*-group and the *Lysiterminae*.

Key to species of the genus *Lysitermoides* nov.

1. Medial length of third metasomal tergite 0.7-0.8 times length of second tergite (figs 373, 380); third tergite mainly longitudinally sculptured (except for fine interconnecting sculpture), at most finely transversely rugose basally; Canada (Ontario), U.S.A. (Maryland) *L. huggerti* spec. nov.
- Medial length of third tergite 0.6 times length of second tergite (fig. 728); third tergite with strong oblique (laterally) or transverse (medially) rugae (fig. 728); U.S.A. (Florida) *L. transversus* spec. nov.

Lysitermoides huggerti spec. nov.
(figs 368-380)

Material.— Holotype, ♀ (RMNH), "Canada, (Ont.), Walpole Isl., 25.viii.1982, L. Huggert & M. Sharkey, RMNH". Paratypes (4 ♀♀): 1 ♀ (CNC), "Canada: On[tario], Warsaw, 9.vi.1975, I.M. Smith, swept at seepage nr Indian R."; 3 ♀♀ (CNC, RMNH), "[U.S.A.], MD., Laurel, Pauxtent Res. Centre, 31.v.1981, L. Masner".

Holotype, ♀, length of body 2.3 mm, of fore wing 2.1 mm.

Head.— Antennal segments 23, length of third segment 1.5 times fourth segment, length of third, fourth and penultimate segments 5.0, 3.3 and 2.4 times their width, respectively (figs 373, 375); scapus ovoid (fig. 374); pedicellus comparatively large, somewhat shorter than scapus (fig. 374); length of maxillary palp 1.1 times height of head; length of eye in dorsal view 1.4 times temple; temples subparallel behind eyes (fig. 370); OOL:diameter of ocellus:POL = 6:3:6; face and vertex smooth; length of malar space equal to basal width of mandible.

Mesosoma.— Length of mesosoma 1.7 times its height; side of pronotum coarsely crenulate-rugose (fig. 373); precoxal sulcus deep, strongly crenulate, absent posteriorly (fig. 373); remainder of mesopleuron smooth; pleural sulcus sparsely crenulate; metapleuron coarsely rugose; mesoscutum largely setose; notauli complete, sparsely crenulate, narrow (fig. 372); surface of propodeum rugose (but smooth anteriorly) and also having a narrow median areola, median carina absent (fig. 372).

Wings.— Fore wing: r about as long as width of pterostigma and emerging sub-medially from pterostigma (fig. 368); r:3-SR:SR1 = 8:14:33; 1-CU1:2-CU1 = 1:4; 2-SR:3-SR:r-m = 31:29:17. Hind wing: M+CU:1-M = 21:17.

Legs.— Hind coxa smooth; length of femur, tibia and basitarsus of hind leg 4.2, 8.4 and 6.5 times their width, respectively; hind tibial spurs both 0.3 times hind basitarsus; telotarsi normal (figs 377, 378).

Metasoma.— Length of first tergite 0.8 times its apical width, dorsope rather small (fig. 380); surface of three basal tergites longitudinally rugose with finely transverse sculpture in between; median length of third tergite 0.8 times second tergite; length of ovipositor sheath 0.24 times fore wing.

Colour.— Dark brown(-blackish); scapus, pedicellus, palpi, legs, fourth and following tergites, metasoma ventrally and tegula, brownish-yellow; pronotum, propleuron and mesopleuron antero-dorsally, yellowish-brown; humeral plate, third antennal segment, veins and pterostigma, brown; remainder of antenna dark brown; wing membrane slightly infusate.

Variation.— Antennal segments of ♀ 23(3); length of fore wing 2.1-2.3 mm;

clypeus may be brown instead of blackish; length of ovipositor sheath 0.22-0.24 times fore wing.

Distribution.— Canada (Ontario), U.S.A. (Maryland).

Lysitermoides transversus spec. nov.
(fig. 728)

Material.— Holotype, ♀ (CNC), “[U.S.A.], FL[orida]: Alachua Co., 852 m, Felasco Hamock S.P., 4.v.1987, FIT [= flight interception trap], hardwood forest, BRC Hym. team”. Paratypes: 2 ♂♂ (CNC, RMNH), topotypic and same date.

Holotype, ♀, length of body 2.3 mm, of fore wing 2.2 mm.

Head.— Antennal segments 22, length of third segment 1.2 times fourth segment, length of third, fourth, and penultimate segments 4.0, 3.3, and 2.3 times their width, respectively; length of maxillary palp 1.1 times height of head; length of eye in dorsal view 1.6 times temple; length of malar space 0.8 times basal width of mandible.

Mesosoma.— Similar to *L. huggerti*; precoxal sulcus indistinct anteriorly and somewhat wider medially.

Wings.— Fore wing: r:3-SR:SR1 = 5:12:26; m-cu interstitial; 2-SR:3-SR:r-m = 11:12:8. Hind wing: M+CU:1-M = 20:13.

Legs.— Length of femur, tibia and basitarsus of hind leg 3.8, 9.2 and 5.2 times their width, respectively; hind femur and tibia long setose.

Metasoma.— Length of first tergite 0.8 times its apical width; surface of first and second tergites finely longitudinally striate with interconnecting sculpture; second suture obsolescent; median length of third tergite 0.6 times second tergite (fig. 728); length of ovipositor sheath 0.25 times fore wing.

Colour.— Dark brown (but propleuron, apex of pronotum dorso-posteriorly and subalar prominence partly paler); scapus, pedicellus, palpi, tegula, and legs, pale yellowish-brown; metasoma (except three basal tergites), pterostigma and veins, yellowish-brown; humeral plate largely brown; wing membrane subhyaline.

Variation.— Length of fore wing 1.7-2.2 mm; antennal segments 21(1♂) or 22(1♀); males are very similar to females.

Note.— I have seen an additional male (CNC, “USA, FL, Alachua Co., Gainesville, AEI, 30.iv.1987, L. Masner”), which is very similar but has the pedicellus dark brown and the third metasomal tergite with a row of coarse punctures posteriorly.

Subfamily Rogadinae Foerster, 1862
(figs 345-356, 535-554, 605-636, 756-857)

Rogadoidae Foerster, 1862: 228, 240.

Rogadinae; van Achterberg, 1976: 45-46, 1990: 6, 1991: 5, 1993: 25; Edson & Vinson, 1979: 1015; Tobias, 1986: 72-85; Maetô, 1987: 35; Quicke & van Achterberg, 1990: 43-44; Quicke, 1994: 159-160.

Diagnosis.— Inner side of eyes more or less emarginate; hypoclypeal depression large to small, but always distinct (figs 543, 547, 606, 621); vein 3-M of fore wing largely unsclerotized; median carina of propodeum usually at least half as long as propodeum (figs 536, 553, 607); dorsal carinae of first tergite distinct and if united then enclosing an arched basal area (figs. 537, 554), but transverse or semicircular in Stiropiini (figs 609, 619, 636); second metasomal tergite usually sculptured, and fre-

quently with median carina and/or triangular antero-medial area (figs 537, 554, 619, 636), and its spiracle above lateral fold in notum (figs 537, 548, 608), exceptionally at fold or below it; host larva is mummified.

Biology.— Koinobiont endoparasites of larval Lepidoptera.

Distribution.— Cosmopolitan.

Tribe Rogadini Foerster, 1862

(figs 345-356, 535-545, 761-763, 765, 766, 857)

Rogadini; van Achterberg, 1991: 23, 1993: 25.

Diagnosis.— Antennal segments 23-104; inner sides of eyes frequently more or less emarginate (fig. 543); hypoclypeal depression present (figs 543, 547); median carina of propodeum at least half as long as propodeum; propodeal spiracle in front of middle of propodeum and round, exceptionally elliptical; propodeal areola usually reduced or absent (fig. 355), if exceptionally present then small (fig. 536); precoxal sulcus absent or present as a smooth or sculptured shallow depression (figs 538, 548); vein CU1b of fore wing shorter than vein 3-CU1 (figs 345, 535) or nearly absent; vein 1-SR of fore wing usually (sub)continuous with vein 1-M (figs 345, 535), exceptionally angled with vein 1-M; vein m-cu of hind wing absent, exceptionally present (e.g. *Rhinoprotoma* and *Bulborogas*); vein M+CU of hind wing longer than vein 1-M (fig. 345) or about of equal length, exceptionally shorter than vein 1-M (fig. 535); tarsal claws with or without lobe (fig. 540); first metasomal tergite usually movably joined to second tergite (figs 347, 538), but may be immovable in subtribe Spinariina van Achterberg, 1988; second tergite with distinctly differentiated, usually triangular or hemicircular, area medio-basally, often minute (fig. 537), but absent in some genera (e.g. *Rhinoprotoma*, fig. 349); second metasomal spiracle in notum of tergite (fig. 537); fourth-sixth tergites exposed (figs 347), exceptionally largely or completely retracted; ovipositor sheath hardly or not protruding beyond apex of metasoma (figs 347, 538), exceptionally moderately long, and sometimes widened (fig. 347).

Distribution.— Cosmopolitan (the Afrotropical and West Palaearctic genera are keyed by van Achterberg, 1991).

***Bulborogas* gen. nov.**

(figs 535-545, 761-763, 765, 766, 857)

Type species: *Bulborogas compressifemur* spec. nov.

Etymology.— From “bulbosus” (Latin for “swollen”) and the generic name *Rogas*, because it belongs in the Rogadini and it has an aberrantly swollen face and femora. Gender: masculine.

Diagnosis.— Length of fore wing 2.1-2.4 mm; antennal segments 28-36, third segment slightly longer than fourth segment, and with distinct apical spine (fig. 545); occipital carina absent (figs 538, 542); frons flat, partly aciculate; face strongly convex (figs 538, 542); eyes glabrous, slightly emarginate (fig. 543); vertex short setose; head rather short, distinctly narrowed ventrally (fig. 543); hypoclypeal depression present, very shallow (fig. 543); labrum flat, shallow; clypeus nearly flat, its ventral margin concave, thin (fig. 543); occipital flange and malar suture absent (fig. 538); mandible

small, twisted; prosternum flat, triangular, rugulose; no pronope; precoxal sulcus absent (fig. 538); anterior subalar depression with carina (fig. 538); notauli obsolescent, shallow and hardly impressed (fig. 536); scutellar sulcus medium-sized (fig. 536); metanotum with median carina anteriorly, not protruding; transverse suture of mesonotum present (fig. 536); mesopleuron angulate posteriorly (fig. 538); mesosternal sulcus narrow, smooth; metapleural flange medium-sized, thin, obtuse (fig. 538); propodeum finely and densely sculptured, and with nearly complete median carina (fig. 536); vein r-m of fore wing present (fig. 535); vein 1-SR+M of fore wing distinctly curved (fig. 535) or straight (fig. 857); vein m-cu of fore wing antefurcal (fig. 535); parastigma minute (fig. 535) or small (fig. 857); vein M+CU1 of fore wing straight; subbasal cell of hind wing small (fig. 535); vein m-cu of hind wing present, long; fore tibial spur about 0.8 times basitarsus (fig. 539); fore tarsus distinctly shortened and telotarsus wider than fourth tarsal segment (fig. 539); all femora short and distinctly compressed (figs 539, 541, 544); tarsal claws robust, simple (fig. 540); apex of inner side of hind tibia with setal comb; hind tarsus rather robust, with wide lamella ventrally (fig. 544); dorsal carinae of first tegite united and enclosing a triangular area (fig. 537); dorsope large, deep; second metasomal tergite striate, with medium-sized medio-basal area (fig. 537); fourth-seventh tergites exposed (fig. 538); second metasomal tergite with lateral crease (fig. 538); ovipositor straight, without notch or teeth; ovipositor sheath narrow (fig. 538), only its apical half setose; length of ovipositor sheath about 0.1 times fore wing.

Biology.— Unknown.

Distribution.— Neotropical (two species).

Key to species of the genus *Bulborogas* nov.

1. Vein r of fore wing distinctly shorter than vein 3-SR (figs 535, 761); vein 1-SR+M of fore wing distinctly curved (figs 535, 761); scutellum yellowish-brown medially; antennal segments 27-36 2
- Vein r of fore wing about as long as vein 3-SR (fig. 857); vein 1-SR+M of fore wing (nearly) straight (fig. 857); scutellum dark brown medially; antennal segments 33-36 *B. breviradialis* spec. nov.
2. Stemmaticum, propodeum, second and third tergites dark brown; vein m-cu of hind wing straight (fig. 535); temples very short, length of eye in dorsal view 10-20 times temple (fig. 542); ocelli small (fig. 542); antenna of ♀ with 28-29 segments; mesopleuron smooth, at most with some punctures ventrally; dorsal face of propodeum largely granulate; second submarginal cell of fore wing comparatively slender (fig. 535); basal half of flagellum brownish *B. compressifemur* spec. nov.
- Stemmaticum, propodeum, second and third tergites brownish-yellow; vein m-cu of hind wing curved (fig. 761); temples longer, length of eye in dorsal view 4-5 times temple (fig. 766); ocelli rather large (fig. 766); antenna of ♀ with 33-36 segments; mesopleuron sparsely punctate; dorsal face of propodeum rugose; second submarginal cell of fore wing comparatively robust (fig. 761); basal half of flagellum dark brown *B. luteosoma* spec. nov.

Bulborogas breviradialis spec. nov.
(fig. 857)

Material.— Holotype, ♀ (RMNH), "Museum Leiden, M. Panama, Level III, Barro Colorado Island, 9°9'30"N-79°51'W, 21-27.ix.1977, H. Wolda, at light". Paratype: 1 ♂ (RMNH), topotypic and same level, but 14-20.ix.1977.

Holotype, ♀, length of body 3.7 mm, and of fore wing 2.7 mm.

Head.— Antennal segments 36, length of third segment 1.1 times fourth segment, length of third, fourth and penultimate segments 1.4, 1.3 and 1.5 times their width, respectively; length of maxillary palp 0.7 times height of head; length of eye in dorsal view 4.7 times temple; OOL:diameter of ocellus:POL = 10:5:5; face densely transversely rugulose, near mandibles mainly punctate; clypeus mat coriaceous; length of malar space 1.4 times basal width of mandible.

Mesosoma.— Length of mesosoma 1.6 times its height; side of pronotum smooth, except some crenulae posteriorly and anteriorly partly granulate or crenulate; epicnemial area rugulose-granulate dorsally; mesopleuron distinctly punctate ventrally and dorsally, smooth medially; metapleuron smooth and rather flat; mesoscutum evenly rather long setose; lobes of mesoscutum granulate, somewhat shiny; scutellum coriaceous, flat; propodeum sparsely rugulose anteriorly, its posterior half distinctly rugose.

Wings.— Fore wing: r:3-SR:SR1 = 9:10:37; r distinctly oblique (fig. 857); 1-CU1:2-CU1 = 2:5; 2-SR:3-SR:r-m = 11:10:8; 1-SR+M nearly straight (fig. 857). Hind wing: M+CU:1-M = 5:8; m-cu straight (fig. 857).

Legs.— Hind coxa largely smooth dorsally, partly coriaceous laterally and ventrally; length of femur, tibia and basitarsus of hind leg 2.4, 5.3 and 5.2 times their width, respectively; length of hind tibial spurs 0.4 and 0.5 times hind basitarsus.

Metasoma.— Length of first tergite 1.2 times its apical width, its surface largely granulate, with many rugulae; second tergite completely rugulose, rugulae diverging posteriorly; second suture narrow, distinct; third tergite largely superficially transversely striate-coriaceous, its apex and following tergites smooth; length of ovipositor 0.07 times fore wing.

Colour.— Brownish-yellow; antenna (but scapus largely yellowish), stemmaticum, pronotum largely, mesoscutum medio-posteriorly, scutellum, metanotum medially, metapleuron dorso-posteriorly, propodeum, five basal tergites and ovipositor sheath, dark brown; palpi, tegulae and metasoma ventrally, pale yellowish; legs largely yellow, but apex of hind tibia and hind tarsus slightly infuscate; veins pale brown; pterostigma dark brown; wing membrane hyaline and conspicuous setose.

Variation.— Paratype (very similar to holotype): length of fore wing 2.5 mm, of body 3.3 mm; antennal segments of ♂ 33; length of eye in dorsal view 5.3 times temple; malar space as long as basal width of mandible; length of first tergite 1.3 times its apical width; basal half of antenna, mesoscutum medio-posteriorly, and apex of fourth tergite and following tergites, yellowish.

Distribution.— Panama.

Bulborogas compressifemur spec. nov.
(figs 535-545)

Material.— Holotype, ♀ (RMNH), "Museum Leiden, M. Panama, Level III, Barro Colorado Island, 9°9'30"N-79°51'W, 24-30.viii.1977, H. Wolda, at light". Paratypes (22 ♀♀ + 4 ♂♂): 14 ♀♀ + 1 ♂ (RMNH, BMNH), topotypic and same level, but 8-14.vi.1977 (2 ♀♀), 11-17.vii.1978 (2 ♀♀), 14-

20.ix.1977 (1 ♀), 19-25.x.1977 (1 ♀), 6-12.vi.1978 (2 ♀♀), 23-29.v.1978 (1 ♀), 16-22.v.1978 (2 ♀♀), 25-31.vii.1978 (2 ♀♀), 29.viii-4.ix.1978 (1 ♀), or 25-31.vii.1978 (1 ♂); id., but level I (4 ♀♀ + 3 ♂♂; RMNH), 25-31.v.1977 (1 ♀), 2-8.xi.1977 (1 ♀), 9-15.xi.1977 (1 ♂), 6-12.vi.1978 (2 ♀♀), or 27.vi-3.vii.1978 (2 ♂♂); id., but level II, 27.vi-3.vii.1978 (1 ♀; RMNH); 1 ♀ (BMNH), "Brazil, Bahia, 1978, F. Benton"; 1 ♀ (CNC), "Panama: CZ, Barro Colorado Is., vii.1982, H. Wolda"; 1 ♀ (CNC), "Peru: Loreto, Iquitos, Barillal, 10.ii.1984, L. Huggert".

Holotype, ♀, length of body 2.9 mm, and of fore wing 2.1 mm.

Head.— Antennal segments 28, length of third segment 1.1 times fourth segment, length of third, fourth and penultimate segments 1.5, 1.3 and 2.7 times their width, respectively (figs 538, 545); length of maxillary palp 0.7 times height of head; length of eye in dorsal view 18 times temple (fig. 542); OOL:diameter of ocellus:POL = 7:6:5; face transversely rugose, ventrally mainly punctate (fig. 543); clypeus shiny coriaceous; length of malar space 1.2 times basal width of mandible (fig. 538).

Mesosoma.— Length of mesosoma 2.0 times its height; side of pronotum smooth, except some micro-sculpture posteriorly; epicnemial area finely striate dorsally; mesopleuron smooth; metapleuron smooth and rather flat; mesoscutum evenly setose; lobes of mesoscutum granulate-coriaceous, shiny; scutellum smooth, flat; propodeum granulate.

Wings.— Fore wing: r:3-SR:SR1 = 7:17:24; 1-SR+M distinctly curved; r slightly oblique (fig. 535); 1-CU1:2-CU1 = 1:3; 2-SR:3-SR:r-m = 6:17:7. Hind wing: M+CU:1-M = 6:9; m-cu straight.

Legs.— Hind coxa largely smooth, apico-dorsally partly coriaceous; length of femur, tibia and basitarsus of hind leg 2.2, 5.5 and 3.4 times their width, respectively; length of hind tibial spurs 0.4 and 0.5 times hind basitarsus.

Metasoma.— Length of first tergite 1.5 times its apical width, its surface largely granulate laterally and posteriorly with some rugulae; second tergite largely rugulose in front of shallow transverse depression near apical third of tergite, and remainder of metasoma smooth (fig. 537); second suture obsolete; length of ovipositor 0.06 times fore wing.

Colour.— Brownish-yellow; stemmaticum, scutellum posteriorly, metanotum, metapleuron, propodeum, first (and to lesser degree) second and third tergites and ovipositor sheath, dark brown; palpi, tegulae and metasoma ventrally, whitish; legs largely pale, less so than palpi; veins pale brown; pterostigma dark brown, but apically pale; hind tibia slightly infusate apically; wing membrane hyaline and conspicuously setose.

Variation.— Length of fore wing 2.1-2.4 mm; antennal segments of ♀ 27(1), 28 (6), 29(3), or 31(5), of ♂ 30(2) or 32(2); length of eye in dorsal view 10-20 times temple; length of malar space 1.0-1.2 times basal width of mandible; length of first tergite 1.3-1.5 times its apical width; second and following tergites sometimes less infusate than in holotype, and fourth-sixth tergites sometimes completely yellowish or nearly whole metasoma dark brown dorsally; whole second tergite sometimes sculptured, and base of third tergite superficially so; second metasomal suture sometimes distinct but narrow; mesopleuron sometimes sparsely punctate ventrally; apical half of flagellum brown or dark brown, its basal half yellowish-brown or brown; tarsi of male less shortened than of female. One male from Panama (CNC: Las Cumbras, Canal Zone, viii.1982, H. Wolda) is excluded from the type series, but is probably a bleached specimen. It has the third metasomal tergite transversely sculptured and antenna with 30 segments.

Distribution.— Brazil, Panama, Peru.

Bulborogas luteosoma spec. nov.
(figs 761-763, 765, 766)

Material.— Holotype, ♀ (CNC), "Ecuador, Napo, Limoncocha, 250 m, 15-28.vi.1976, S. & J. Peck". Paratype: 1 ♀ (RMNH), "Ecuador, Napo, 10 km NE Tna, 400 m, 19-20.ii.1983, L. Masner".

Holotype, ♀, length of body 4.0 mm, and of fore wing 3.1 mm.

Head.— Antennal segments 36, length of third segment 1.2 times fourth segment, length of third, fourth and penultimate segments 1.4, 1.2 and 2.0 times their width, respectively (fig. 765); length of maxillary palp 0.8 times height of head; length of eye in dorsal view 5.1 times temple (fig. 766); OOL:diameter of ocellus:POL = 8:4:3; face transversely rugose, near malar space mainly punctate; clypeus dull, coriaceous; length of malar space 1.4 times basal width of mandible (fig. 762).

Mesosoma.— Length of mesosoma 1.9 times its height; side of pronotum smooth, except some rugosity ventro-posteriorly; epicnemial area rugose dorsally; mesopleuron sparsely punctate; metapleuron largely smooth and rather flat; mesoscutum evenly setose; lobes of mesoscutum finely granulate-coriaceous, rather shiny; scutellum largely smooth, flat, with some punctures; propodeum coarsely rugose, but anteriorly weakly developed.

Wings.— Fore wing: r:3-SR:SR1 = 8:14:30; 1-SR+M distinctly curved; r distinctly oblique (fig. 761); 1-CU1:2-CU1 = 3:8; 2-SR:3-SR:r-m = 9:14:8. Hind wing: M+CU:1-M = 13:21; m-cu strongly curved (fig. 761).

Legs.— Hind coxa rather sparsely punctate; length of femur, tibia and basitarsus of hind leg 2.1, 5.6 and 4.4 times their width, respectively; length of hind tibial spurs 0.45 and 0.55 times hind basitarsus.

Metasoma.— Length of first tergite equal to its apical width, its surface largely rugose; second tergite largely rugose; third tergite with superficial micro-sculpture; remainder of metasoma smooth (fig. 763); second suture shallow, narrow; length of ovipositor 0.10 times fore wing.

Colour.— Brownish-yellow; scapus (except basally) and pedicellus brown; flagellum, veins and pterostigma, and apical half of ovipositor sheath, dark brown; palpi, tegulae and metasoma ventrally, whitish; legs largely pale; hind tibia apically and part of hind tarsus infuscate; fourth and fifth tergites rather pale; sixth and seventh tergites slightly infuscate; wing membrane subhyaline and conspicuous setose.

Variation.— Paratype has fore wing 3.0 mm, antenna with 33 segments, length of eye in dorsal view 4.5 times temple; length of first tergite 1.3 times its apical width; length of ovipositor sheath 0.08 times fore wing; paratype is similarly coloured as holotype except first-third tergites (except apex of third tergite) pale yellowish, apex of third, and fourth-sixth tergites largely brown, and border of pterostigma pale brown.

Distribution.— Ecuador.

Rhinoprotoma gen. nov.
(figs 345-356)

Type species: *Rhinoprotoma masneri* spec. nov.

Etymology.— From "rhinos" (Greek for "nose") and "protome" (Greek for "face of an animal"), because of the nose-like protruding face. Gender: feminine.

Diagnosis.— Length of fore wing 2.5-3.1 mm; antennal segments 22-26, third segment distinctly longer than fourth segment (fig. 347), and with minute apical spine (fig. 348); occipital carina incomplete, absent ventrally and medio-dorsally, and not meeting occipital carina; frons nearly flat, rugulose-granulate; face protruding nose-like (figs 346, 347); eyes glabrous, not emarginate; vertex short setose (fig. 347); head comparatively long, slightly narrowed ventrally (fig. 346); hypoclypeal depression medium-sized (fig. 346); labrum distinctly concave, glabrous; clypeus convex, and its dorsal margin strongly arched (fig. 346), its ventral margin slightly concave (fig. 346); occipital flange indistinct (fig. 347); malar suture absent (fig. 346); mandible distinctly twisted, both teeth acute and distinct; prosternum inconspicuous; precoxal sulcus shallowly impressed, finely rugose (fig. 347); anterior subalar area normal, its depression deep and crenulate (fig. 347); notauli absent posteriorly, anteriorly distinct, without crenulation (fig. 355); scutellar sulcus wide, deep (fig. 355); scutellum without continuous subposterior depression; metanotum with short median carina, not protruding (fig. 355); transverse suture of mesonotum present (fig. 355); mesosternal sulcus deep and finely crenulate; metapleural flange small, robust (fig. 347); propodeum coarsely and densely sculptured, and without median carina or areola (fig. 355); vein r-m of fore wing present (fig. 345); vein r emitted near middle of pterostigma; vein 2-M of fore wing straight; base of vein CU1a of fore wing close to level of vein 2-1A (fig. 345); vein 3-M of fore wing largely unsclerotized; parastigma small (fig. 345); first subdiscal cell of fore wing medium-sized (fig. 345); vein M+CU1 of fore wing straight; subbasal cell of hind wing large (fig. 345); vein m-cu of hind wing short; fore spur about 0.4 times basitarsus (fig. 352); fore tarsus moderately slender and telotarsus wider than fourth tarsal segment (fig. 352); tarsal claws robust, without lobe, simple (figs 352, 353, 356); hind tibia with distinct comb of setae at inner apex; hind tarsus slender (fig. 356); dorsope small (fig. 349); second metasomal tergite largely sculptured, without medio-basal area; fourth-seventh tergites exposed (fig. 347); ovipositor straight, without notch or teeth, slender apically (fig. 347); length of ovipositor sheath about 0.1 times fore wing, sheath widened (fig. 347).

Biology.— Unknown.

Distribution.— Australian (one species).

Note.— An aberrant member of the Rogadini, included provisionally in the Rogadini because of the united dorsal carinae of the first metasomal tergite, enclosing an acutely arched area (fig. 349), the rather large eyes and the widened ovipositor sheaths.

Rhinoprotoma masneri spec. nov.
(figs 345-356)

Material.— Holotype, ♀ (RMNH), "New Zealand: South Isl., L. Rotoiti, Nlson Lakes N.P., 20.xii.1983, L. Masner, RMNH'84". Paratypes (5 ♀♀): 3 ♀♀ (RMNH), topotypic and same date; 1 ♀ (CNC), "N. Zealand, WD, Westland N.P., Franz Josef Glacier, 2.i.1984, L. Masner, s.s."; 1 ♀ (CNC), "N. Zealand, MC, Arthurs Pass, 900 m, 31.xii.1983, L. Masner, s.s.".

Holotype, ♀, length of body 2.3 mm, and of fore wing 2.5 mm.

Head.— Antennal segments 23, segments of basal half of antenna robust (fig. 347), length of third segment 1.5 times fourth segment, length of third, fourth and penultimate segments 1.7, 1.2 and 1.3 times their width, respectively (figs 347, 348);

length of maxillary palp 0.9 times height of head; occipital carina distinct laterally, absent ventrally and medio-dorsally; length of eye in dorsal view 3.4 times temple (fig. 354); OOL:diameter of ocellus:POL = 6:2:5; face and clypeus largely smooth, face punctulate laterally; length of malar space 1.5 times basal width of mandible (fig. 347).

Mesosoma.— Length of mesosoma 1.8 times its height; side of pronotum largely finely rugose, but largely smooth ventrally; epicnemial area granulate, with some rugae; precoxal sulcus only medially impressed and finely rugose; remainder of mesopleuron granulate (except for smooth speculum; fig. 347); metapleuron rugose ventrally, largely smooth medially; mesoscutum densely setose, granulate; scutellum granulate, medio-apically with some punctures; propodeum coarsely granulate-rugulose, no areola.

Wings.— Fore wing: r:3-SR:SR1 = 5:15:31; 1-SR+M slightly curved; r oblique; 1-CU1:2-CU1 = 4:15; 3-CU1 oblique (fig. 345); 2-SR:3-SR:r-m = 8:15:6; m-cu far antefurcal, and parallel with 1-M (fig. 345). Hind wing: M+CU:1-M = 10:7.

Legs.— Hind coxa rugulose dorsally, granulate laterally; length of femur, tibia and basitarsus of hind leg 3.4, 6.2 and 3.8 times their width, respectively; length of hind tibial spurs 0.3 and 0.4 times hind basitarsus.

Metasoma.— Length of first tergite 1.1 times its apical width, its surface densely and finely granulate-reticulate, with some rugae, its dorsal carinae united subbasally, arched (fig. 349); second tergite granulate-reticulate, but latero-posteriorly smooth; remainder of metasoma largely smooth; second suture indistinctly impressed; second tergite with weak lateral crease; length of ovipositor 0.08 times fore wing.

Colour.— Dark brown or blackish; palpi whitish; malar space pale yellowish; head (except stemmaticum, malar space, frons medially and occiput), mesonotum dorsally, mesopleuron antero-dorsally, mesosternum, small patch on propodeum, and metasoma ventrally, yellowish-brown; legs and tegulae brownish-yellow, but coxae largely, trochanters and trochantelli, pale yellowish; metasoma laterally, and dorsally (except blackish notum of first tergite and its yellowish apex), basal quarter of antenna, pterostigma and veins, brown; wing membrane slightly infusate.

Distribution.— New Zealand.

Tribe Stiropiini van Achterberg, 1993
(figs 546-554, 605-636, 756-760, 764, 767-856)

Stiropiini van Achterberg, 1993: 25.

Diagnosis.— Occipital carina largely present, not curved to hypostomal carina and absent near base of mandible (figs 548, 551); mandibles medium-sized to large, sickle-shaped, especially of *S. striatellus* spec. nov. ; fig. 822); mesopleuron rounded posteriorly (fig. 548); tarsal claws reduced, not surpassing arolium (figs 611, 612, 622, 625, 634, 635); hind basitarsus without wide ventral row of setae (fig. 552); vein 1-SR+M of fore wing straight or slightly sinuate (fig. 546); dorsal carinae of first tergite enclosing a semi-circular area (fig. 554); second tergite without a triangular area medio-basally (fig. 554), at most with a median carina, and granulate or coriaceous (fig. 554); fourth tergite more or less exposed (figs 618, 628), except in *Choreborogas* (fig. 608); ovipositor sheath glabrous, except apically (fig. 618).

Biology.— Endoparasites of (leafmining) larvae of Lyonetiidae and Gracillariidae; the mummified host larva or prepupa is used as shelter during pupation. Emergence is from near the head end of the host (Whitfield, 1988).

Distribution.— New World.

Choreborogas Whitfield, 1990
(figs 605-614, 756-760, 767-795)

Choreborogas Whitfield, 1990: 39-40; van Achterberg, 1991: 14; Whitfield & Wagner, 1991: 741. Type species (by original designation): *Choreborogas birostratus* Whitfield, 1990.

Diagnosis.— Malar suture distinct (fig. 606); costulae of propodeum absent or short (fig. 607); vein r-m of fore wing absent and no quadrangular second submarginal cell present (fig. 605); vein r of fore wing issued near basal third of pterostigma (fig. 605); vein CU1b of fore wing absent (fig. 605); no ventral tooth on hind femur (fig. 612); hind femur more or less swollen (fig. 614); fore telotarsus comparatively wide (fig. 612); second and third tergites distinctly widened posteriorly (fig. 609); hypopygium of ♀ medium-sized and apically truncate (fig. 608).

Biology.— Solitary endoparasites of Lyonetiidae s.l. (Whitfield & Wagner, 1991).

Distribution.— New World (mainly Neotropical). Medium-sized genus.

Key to species of the genus *Choreborogas* Whitfield

1. Vein r of fore wing issued near basal third of pterostigma (fig. 605); vein 2-R1 frequently developed (fig. 605); metasoma yellowish, usually at most third and fourth tergites dark brown; length of fore wing 1.3-3.1 mm 2
- Vein r of fore wing issued near basal 0.4-0.5 of pterostigma (figs 760, 767, 778, 787, 788); vein 2-R1 absent or obsolescent (figs 760, 778); metasoma often partly dark brown; length of fore wing 1.8-2.2 mm 4
2. Median length of second tergite about twice its basal width; third tergite smooth; length of fore wing about 1.3 times length of body; vein SR1 of fore wing comparatively strongly and evenly curved (fig. 10 in Whitfield, 1990); length of fore wing 2.7-3.1 mm; Colombia, Peru *C. andeanus* Whitfield, 1990
- Median length of second tergite 1.1-1.3 its basal width (fig. 609); third tergite granulate; length of fore wing 1.0-1.1 times length of body; vein SR1 of fore wing less distinctly curved (fig. 605); length of fore wing 1.4-2.4 mm 3
3. Lower half of face of ♀ without depression, but clypeus largely depressed, resulting in a narrow protruding rim dorsally, without projections (figs 606); length of vein r of fore wing distinctly less than distance along posterior margin of pterostigma between insertion of vein r and base of pterostigma, and much less than length of vein 2-SR (fig. 605); basal 0.6 of hind tibia whitish and apical 0.4 dark brown; hind femur of ♀ simple and moderately slender (fig. 614); length of fore wing 1.3-1.4 mm; Panama *C. minutus* spec. nov.

Note. I have examined several other undescribed species (RMNH, CNC) similar to *C. minutus* from Central America. Diagnostic for *C. minutus* is the normal shape of the lower half of the face, combined with the very narrow convex part of the clypeus and the dark apex of the hind tibia.

- Lower half of face of ♀ with depression, embedding clypeus, with pair of minute flattened projections dorsally; length of vein r of fore wing about equal to distance along posterior margin of pterostigma between insertion of vein r and base of pterostigma, and nearly as long as vein 2-SR; complete hind tibia brownish-yellow; hind femur of ♀ with ventral tooth and more robust; length of fore wing 1.6-2.4 mm; Mexico *C. birostratus* Whitfield, 1990
 Note. I have examined another species from Mexico (CNC) with hind tibia brown apically, tarsi yellowish and propodeal areola angulate antero-laterally.
- 4. Hind femur of ♀ normal, at most somewhat swollen (figs 759, 769); median carina of propodeum short, 0.3-0.4 times length of propodeum in lateral view (figs 758, 771; because of curvature of surface of propodeum less pronounced in figures); pterostigma and usually vein C+SC+R of fore wing (except near parastigma) pale yellowish; hind of ♀ tibia normal (figs 759, 769); first tergite rugulose or mainly granulate; length of fore wing 1.8-2.0 mm 5
 Note. If first tergite is ivory, pterostigma dark brown and second tergite largely dark brown, cf. *Stiropius* spp. with reduced vein r-m of fore wing, exceptionally no trace of this vein is left.
- Hind femur of ♀ distinctly swollen (figs 774, 781, 792); median carina of propodeum usually more than 0.4 times length of propodeum (figs 776, 786); pterostigma and vein C+SC+R of fore wing usually at least partly brownish; inner side of hind tibia of ♀ somewhat curved subbasally (figs 774, 781, 792); first tergite distinctly rugose; length of fore wing 1.9-2.7 mm 6
- 5. Median carina of second tergite strong (fig. 757), tergite medially mainly granulate; median carina of propodeum 0.3 times length of propodeum in lateral view; vertex flattened; second tergite without pit antero-laterally; third antennal segment yellowish; vein r of fore wing comparatively short (fig. 760); Panama
 *C. brevicarinatus* spec. nov.
- Median carina of second tergite obsolescent (fig. 770), tergite medially with distinct longitudinal rugulae and granulate; median carina of propodeum 0.4 times length of propodeum in lateral view; vertex convex; second tergite with shallow pit antero-laterally (fig. 768) or with curved carina; third antennal segment (rather dark) brown; vein r of fore wing comparatively long (fig. 767); Panama
 *C. puteolus* spec. nov.
- 6. Vein C+SC+R of fore wing pale yellowish, distinctly contrasting with brown pterostigma; vertex strongly flattened (fig. 779); hind femur of ♀ usually more strongly inflated (fig. 774), orange-brown, but exceptionally yellowish and less inflated; length of mesosoma about 1.4 times its height; second and third tergites largely dark brown; second tergite without round depression or curved carina antero-laterally; third and fourth antennal segments yellowish-brown; apex of hind tibia narrowly infuscate; Panama *C. bulbofemoralis* spec. nov.
- Apical half or third of vein C+SC+R of fore wing coloured as pterostigma, pale brown; vertex less flattened and narrowed (figs 784, 790); hind femur of ♀ somewhat less inflated (figs 781, 792), yellowish-brown; length of mesosoma 1.5-1.7 times its height; second and third tergites with yellowish pattern; second tergite with a round depression antero-laterally or curved carina (fig. 785); third and fourth antennal segments frequently largely dark brown or blackish; apex of hind tibia yellowish 7

7. First tergite coarsely vermiculate-rugose, black; second tergite with narrow depression anteriorly, and antero-laterally with curved carina and no round depression (fig. 785), rather strongly longitudinal strigose and dark brown-blackish (except laterally); propodeal areola distinctly angulate antero-laterally, and median carina comparatively long (fig. 786); vein 1-R1 of fore wing distinctly longer than pterostigma (fig. 787); Panama *C. striosoma* spec. nov.
- First tergite rugose, largely dark brown; second tergite with medium-sized depression anteriorly, and antero-laterally with shallow round depression (cf. fig. 768), rather weakly longitudinal strigose and with pair of dark brown patches and anteriorly yellowish; propodeal areola distinctly arched antero-laterally, and median carina shorter (fig. 789); vein 1-R1 of fore wing about as long pterostigma (fig. 788); Panama *C. vittifer* spec. nov.

Choreborogas brevicarinatus spec. nov.
(figs 756-760)

Material.— Holotype, ♀ (RMNH), "Museum Leiden, M Panama, Barro Colorado Island, 9°9'30"N-79°51'W, 1-7.vi.1977, H. Wolda, level III, at light". Paratypes (4 ♀ + 4 ♂, RMNH, topotypic): 1 ♀, 8-14.vi.1977, level I; 1 ♀, head missing, 4-10.v.1977, level III; 1 ♂, 29.vi-5.vii.1977, level I; 1 ♂, 11-17.iv.1978, level I; 1 ♀, 25-31.viii.1978, level III; 1 ♀, 20.v-5.vi.1978, level ?; 1 ♂, 27.vi-3.vii.1978, level II; 1 ♂, 28.ii-6.iii.1978, level I.

Holotype, ♀, length of body and of fore wing both 1.8 mm. If not mentioned then same as figured for *C. minutus*.

Head.— Antennal segments 14, length of third segment 1.1 times fourth segment, length of third, fourth and penultimate segments 5.5, 4.5 and 3.5 times their width, respectively; length of maxillary palp 0.9 times height of head; length of eye in dorsal view 4.5 times temple; temples directly narrowed posteriorly; OOL:diameter of ocellus:POL = 2:2:3; face superficially granulate, shiny; ventral margin of clypeus at lower level of eyes; clypeus flattened and largely smooth; vertex distinctly granulate, rather mat; malar suture deep; length of malar space equal to basal width of mandible.

Mesosoma.— Length of mesosoma 1.4 times its height; antescutal depression narrow and deep; side of pronotum smooth, with some indistinct granulation; mesopleuron largely superficially granulate, shiny; metapleuron granulate, rather mat; notauli absent on disc; mesoscutum distinctly granulate; anterior half of propodeum distinctly granulate, posteriorly largely smooth, areola robust and angulate antero-laterally, and median carina much shorter than length of areola, 0.3 times length of propodeum in lateral view (fig. 758).

Wings.— Fore wing: r shorter than width of pterostigma and emerging near middle of pterostigma (fig. 760); 2-R1 weakly developed (fig. 760); r:3-SR+SR1:2-SR = 5:41:12; 1-CU1:2-CU1 = 1:6; first subdiscal cell open apico-posteriorly and widened distally. Hind wing: M+CU:1-M = 11:18.

Legs.— Hind coxa superficially granulate; length of femur, tibia and basitarsus of hind leg 3.1, 6.2 and 4.3 times their width, respectively; hind femur comparatively slender (fig. 759), shiny and superficially granulate; hind tibia normal; hind tibial spurs 0.25 and 0.40 times hind basitarsus; fore telotarsus hardly enlarged.

Metasoma.— Length of first tergite 0.7 times its apical width, its surface distinct-

ly granulate, rather mat, with distinct median carina behind subbasal ring of dorsal carinae; second and third tergites distinctly granulate and only second tergite with median carina; second tergite with some faint longitudinal rugae, narrowly depressed anteriorly, without round depression antero-laterally; third tergite superficially sculptured apically; fourth tergite narrowly exposed; hypopygium medium-sized, apically truncate, long setose; ovipositor sheath retracted.

Colour.— Yellowish-brown; antenna (except basal quarter), second tergite narrowly apically, third tergite (except posteriorly and laterally) and ovipositor sheath, dark brown; legs, palpi and tegulae, pale yellowish; parastigma, apex of vein C+SC+R of fore wing, rather dark brown; pterostigma and most veins pale yellowish or subhyaline; wing membrane subhyaline.

Variation.— Antennal segments of ♀ 14(3), and of ♂ 13(3); length of fore wing 1.8-2.0 mm, of body 1.8-2.1 mm; length of first tergite 0.7-0.9 times its apical width; second tergite posteriorly and third tergite anteriorly yellowish, both tergites completely yellowish, or only third tergite mainly dark brown.

Distribution.— Panama.

Choreborogas bulbofemoralis spec. nov.
(figs 773-780)

Material.— Holotype, ♀ (RMNH), "Museum Leiden, M Panama, Barro Colorado Island, 9°9'30"N-79°51'W, 11-17.v.1977, H. Wolda, level I, at light". Paratypes (47 ♀♀ + 15 ♂♂): 22 ♀♀ + 3 ♂♂, RMNH, topotypic: 1 ♀, 4-10.v.1977, level III; 5 ♀♀, (one ♀ has head missing), 18-24.v.1976, level III(4) or I(1); 1 ♂, 29.vi-5.vii.1977, level I; 2 ♂♂, 10-16.vii.1977, level III; 3 ♀♀, 8-14.vi.1977, level I(1) or III(2); 4 ♀♀, 15-21.vi.1977, level I; 1 ♀, 22-28.vi.1977, level III; 4 ♀♀, 29.vi-5.vii.1977, level I; 2 ♀♀, 6-12.vii.1977, level III; 1 ♀, 20-26.vii.1977, level I (head missing); 1 ♀, 31.viii-6.ix.1977, level III; 5 ♀♀, 28.ii-6.iii.1978, level I; 2 ♀♀ + 1 ♂, 28.iii-3.iv.1978, level I, 1 ♀, id., level III; 1 ♀ + 1 ♂, 7-13.ix.1977, level III; 1 ♀ + 1 ♂, 16-22.v.1978, level ?; 2 ♀♀, 11-17.i.1978, level III; 1 ♀, 7-13.iii.1978, level III; 1 ♀, 4-10.i.1978, level I; 1 ♀, 19-25.ix.1977, level III; 1 ♀, 14-20.xii.1977, level III; 1 ♀, 18-24.iv.1978, level I; 2 ♀♀, 6-12.vi.1978, level III; 1 ♀, 26.x-1.xi.1977, level I; 1 ♀, 16-22.xi.1977, level III; 1 ♂, 16-20.ix.1977, level I; 1 ♂, 19-25.x.1977, level III; 1 ♂, 5-11.x.1977, level III; 1 ♂, 23-29.v.1978, level ?; 1 ♂, 30.xi-6.xii.1977, level I; 1 ♂, 11-17.iv.1978, level I; 1 ♂, 30.v-5.vi.1977, level ?; 1 ♂ (RMNH), "Museum Leiden, N Panama, Boquete, Alto Lino, 1300 m, 8°48'N-82°26'W, 11-17.i.1979, H. Wolda, at light"; 1 ♀ + 1 ♂ (CNC), "Panama: Las Cumbres, Canal Zone, iii (1 ♀) or v. (1 ♂) 1983, H. Wolda"; 3 ♀♀ (CNC), "Panama: CZ, Barro Colorado Is., xi.1982, x.1982 or iv.1983, H. Wolda".

Holotype, ♀, length of body and of fore wing both 2.2 mm. If not mentioned then same as in *C. minutus*.

Head.— Antennal segments 14, length of third segment 1.1 times fourth segment, length of third, fourth and penultimate segments 4.3, 4.0 and 2.8 times their width, respectively; length of maxillary palp equal to height of head; length of eye in dorsal view 2.8 times temple; temples roundly narrowed posteriorly (fig. 780); OOL: diameter of ocellus:POL = 3:2:3; face superficially granulate, shiny; ventral margin of clypeus just above lower level of eyes; clypeus rather flattened, medium-sized and largely smooth; vertex granulate, with some punctures, strongly flattened and wide (fig. 779), rather mat; malar suture deep; length of malar space equal to basal width of mandible.

Mesosoma.— Length of mesosoma 1.4 times its height; antescutal depression narrow and shallow; side of pronotum largely smooth, with some indistinct granulation; mesopleuron granulate ventrally and dorsally, medially smooth; metapleuron

granulate, rather mat; notauli absent on disc; scutellar sulcus comparatively narrow (fig. 775); mesoscutum distinctly granulate; anterior half of propodeum distinctly granulate, posteriorly largely smooth, areola medium-sized and arched antero-laterally, and median carina rather long, 0.45 times length of propodeum in lateral view (fig. 776).

Wings.— Fore wing: r shorter than width of pterostigma and emerging near middle of pterostigma (fig. 778); 2-R1 distinct; $r:3-SR+SR1:2-SR = 8:50:17$; $1-CU1:2-CU1 = 1:4$; first subdiscal cell open apico-posteriorly. Hind wing: $M+CU:1-M = 16:27$.

Legs.— Hind coxa superficially granulate; length of femur, tibia and basitarsus of hind leg 2.0, 7.0 and 4.0 times their width, respectively; hind femur strongly inflated (fig. 774), shiny and superficially granulate; hind tibia somewhat curved subbasally (fig. 774); hind tibial spurs 0.35 and 0.45 times hind basitarsus; fore telotarsus hardly or not enlarged.

Metasoma.— Length of first tergite 0.7 times its apical width, its surface distinctly rugose and granulate, rather mat, with distinct median carina behind subbasal ring of dorsal carinae; second and third tergites coarsely granulate and no median carina; second tergite rather flat, with some longitudinal rugulae, hardly depressed anteriorly (in depression a short carina), without round depression antero-laterally (cf. fig. 768); hypopygium medium-sized, apically truncate, long setose; ovipositor sheath retracted.

Colour.— Rather dark orange-brown; apical half of antenna, occiput, mesoscutum medio-anteriorly, scutellar sulcus, side of scutellum, propleuron dorsally, mesopleuron dorsally, mesosternum largely, propodeum, and parastigma, dark brown; apex of hind tibia narrowly and hind basitarsus rather infuscate; submedial segments of antenna partly infuscate; vein C+SC+R of fore wing and its setae yellowish, distinctly contrasting with brown pterostigma and veins in apical 0.7 of fore wing; remainder of veins yellowish; apical 0.7 of fore wing slightly infuscate, remainder subhyaline.

Variation.— Antennal segments of ♀ 14(18), and of ♂ 13(3); length of fore wing 1.8-2.2 mm, of body 1.9-2.2 mm; length of first tergite 0.7-0.9 times its apical width; hind femur of ♂ usually much more slender than of ♀ (figs 773, 774); length of hind femur of ♀ 2.0-2.5 times its maximum width; scutellar sulcus sometimes somewhat wider than in holotype; apex of hind tibia sometimes distinctly dark brown or infuscate, or hind leg largely dark brown; head medio-dorsally and partly posteriorly, first tergite, mesopleuron, and mesosternum sometimes completely dark brown; propodeal areola sometimes somewhat angulate antero-laterally.

Distribution.— Panama.

Choreborogas minutus spec. nov.
(figs 605-614)

Material.— Holotype, ♀ (RMNH), "Museum Leiden, N Panama, Boquete, Alto Lino, 1300 m, 8°48'N-82°26'W, 11-17.i.1979, H. Wolda, at light". Paratypes (12 ♀♀ + 6 ♂♂): 6 ♀♀ + 2 ♂♂ (RMNH), topotypic 6 ♀♀ + 2 ♂♂, same date; 1 ♀, 18-24.iv.1978, level I; 1 ♀, 16-22.v.1978, level ?; 1 ♀, 28xi.1977-3.i.1978, level I; 1 ♂, 14-20.ix.1977, level III; 2 ♂♂, 11-17.viii.1978, level III; 2 ♀♀ (RMNH), "Museum Leiden, N Panama, Boquete, Alto Lino, 1300 m, 8°48'N-82°26'W, 11-17.i.1979, H. Wolda, at light"; 3 ♀♀ + 2 ♂♂ (CNC, RMNH), "Panama: Las Cumbres, Canal Zone, iii.1983, H. Wolda" (1 ♀, xi.1982 (1 ♀), xii.1982 (1 ♂ + 1 ♂), iv.1982 (1 ♂); 1 ♀ (CNC), "Panama: CZ, Barro Colorado Is., ix.1982, H. Wolda".

Holotype, ♀, length of body 1.1 mm, of fore wing 1.3 mm.

Head.— Antennal segments 14, length of third segment 1.2 times fourth segment, length of third, fourth and penultimate segments 3.8, 3.3 and 4.0 times their width, respectively (fig. 610); scapus ovoid; pedicellus comparatively large (fig. 610); length of maxillary palp 0.8 times height of head; length of eye in dorsal view 4.0 times temple; temples directly narrowed posteriorly (fig. 613); OOL:diameter of ocellus:POL = 3:2:3; face superficially granulate; vertex nearly smooth, with some micro-sculpture; length of malar space 1.2 times basal width of mandible.

Mesosoma.— Length of mesosoma 1.5 times its height; side of pronotum smooth, with some indistinct granulation; precoxal sulcus absent, except for a shallow depression; remainder of mesopleuron largely smooth; pleural sulcus smooth; metapleuron smooth, with some rugulae ventrally; notauli absent, except for a pair of indistinct depressions (fig. 607); surface of propodeum superficially granulate between carinae, areola robust and angulate antero-laterally, and median carina medium-sized (fig. 607).

Wings.— Fore wing: r distinctly shorter than width of pterostigma and emerging near basal third of pterostigma (fig. 605); r:3-SR+SR1:2-SR = 4:37:9; 1-CU1:2-CU1 = 1:9; cu-a short; first subdiscal cell open apico-posteriorly. Hind wing: M+CU:1-M = 11:15.

Legs.— Hind coxa superficially granulate; length of femur, tibia and basitarsus of hind leg 3.6, 9.5 and 3.5 times their width, respectively; hind tibial spurs 0.15 and 0.25 times hind basitarsus; fore telotarsus enlarged (fig. 612); hind femur gradually narrowed basally, its maximum width near its middle; inner side of hind trochantellus without protuberance.

Metasoma.— Length of first tergite 0.9 times its apical width, its surface distinctly granulate, rather mat, with median carina behind subbasal ring of dorsal carinae (fig. 609); second and third tergites distinctly granulate and no median carina; second tergite distinctly depressed anteriorly and with short carina (fig. 609); hypopygium medium-sized (fig. 608); length of ovipositor sheath 0.05 times fore wing, just surpassing apex of hypopygium.

Colour.— Yellowish-brown; antenna (except partly its basal quarter), telotarsi completely, third (except anteriorly) and fourth-fifth tergites, apical half of hind tibia and ovipositor sheath, dark brown; remainder of hind tibia whitish; remainder of legs, palpi and tegulae, pale yellowish; parastigma, apex of pterostigma and most veins, dark brown; remainder of pterostigma whitish; wing membrane subhyaline.

Variation.— Antennal segments of ♀ 14(3), and of ♂ 14(1); length of fore wing 1.3-1.4 mm, of body 1.1-1.3 mm; length of first tergite 0.9-1.1 times its apical width; telotarsi completely or only apically dark brown; apical 0.4-0.5 of hind tibia dark brown; infuscation of hind femur may be largely absent.

Distribution.— Panama.

Choreborogas puteolus spec. nov.
(figs 767-772)

Material.— Holotype, ♀ (RMNH), "Museum Leiden, M Panama, Barro Colorado Island, 9°9'30"N-79°51'W, 8-14.vi.1977, H. Wolda, level III, at light". Paratype, ♀ (RMNH), topotypic, 18-24.iv.1978, level ?.

Holotype, ♀, length of body 2.1 mm, of fore wing 2.0 mm. If not mentioned then similar *C. brevicarinatus*.

Head.— Antennal segments 14, length of third segment 1.2 times fourth segment, length of third, fourth and penultimate segments 4.8, 4.2 and 3.4 times their width, respectively; length of maxillary palp 0.9 times height of head; length of eye in dorsal view 3.6 times temple; OOL:diameter of ocellus:POL = 4:2:3; clypeus rather flat, superficially granulate; vertex flat, not above upper level of eyes, distinctly granulate; length of malar space 0.8 times basal width of mandible.

Mesosoma.— Length of mesosoma 1.7 times its height; side of pronotum superficially granulate; propodeum distinctly granulate, areola wide and angulate anterolaterally (fig. 771), and median carina 0.4 times length of propodeum in lateral view.

Wings.— Fore wing: r slightly shorter than width of pterostigma and emerging near middle of pterostigma (fig. 767); 2-R1 absent; r:3-SR+SR1:2-SR = 10:50:16; 1-CU1:2-CU1 = 3:13. Hind wing: M+CU:1-M = 15:23.

Legs.— Hind femur somewhat swollen (fig. 769); hind tibia normal; length of femur, tibia and basitarsus of hind leg 3.0, 8.0 and 5.0 times their width, respectively; hind tibial spurs 0.15 and 0.25 times hind basitarsus; fore telotarsus somewhat widened.

Metasoma.— Length of first tergite 0.9 times its apical width, its surface distinctly rugulose; second tergite without distinct median carina, obsolescent (except short carina in anterior depression), and submedially with some rugulae, and antero-laterally with medium-sized round depression (fig. 768); length of ovipositor sheath 0.03 times fore wing, hardly protruding beyond apex of hypopygium.

Colour.— Brownish-yellow; stemmaticum black; ovipositor sheath and flagellum more or less dark brown; apical half of vein C+SC+R of fore wing infusate and its setae dark brown; pterostigma and veins pale brownish or yellowish.

Distribution.— Panama.

Note.— Paratype has pedicellus dark brown and antero-lateral depression of second tergite obsolescent, but anterior curved carina distinct.

Choreborogas striosoma spec. nov.
(figs 781-787)

Material.— Holotype, ♀ (RMNH), "Museum Leiden, M Panama, Barro Colorado Island, 9°9'30"N-79°51'W, 20-26.vii.1977, H. Wolda, level I, at light".

Holotype, ♀, length of body 3.1 mm, of fore wing both 2.7 mm. If not mentioned then similar to *C. vittifer*.

Head.— Antennal segments 14, length of third segment 1.1 times fourth segment, length of third, fourth and penultimate segments 5.3, 4.7 and 4.3 times their width, respectively; length of maxillary palp 0.9 times height of head; length of eye in dorsal view 3.6 times temple (fig. 782); OOL:diameter of ocellus:POL = 7:8:5; face superficially granulate, shiny; clypeus slightly convex, largely smooth, with two punctures; malar suture rather shallow; length of malar space 0.8 times basal width of mandible; baso-ventral lamella of mandible wide.

Mesosoma.— Length of mesosoma 1.5 times its height; scutellar sulcus normal (fig. 783); propodeum granulate anteriorly, posteriorly largely smooth between cari-

nae, areola wide and angulate antero-laterally, and median carina rather long, 0.5 times length of propodeum in lateral view (fig. 786).

Wings.— Fore wing: r about as long as width of pterostigma and emerging near middle of pterostigma (fig. 787); 1-R1 longer than pterostigma (fig. 787); 2-R1 absent; r:3-SR+SR1:2-SR = 5:30:10; 1-CU1:2-CU1 = 1:6. Hind wing: M+CU:1-M = 15:23.

Legs.— Hind femur distinctly swollen (fig. 781), rather shiny, superficially granulate; hind tibia somewhat curved subbasally; length of femur, tibia and basitarsus of hind leg 2.5, 7.9 and 4.0 times their width, respectively; hind tibial spurs 0.35 and 0.45 times hind basitarsus; fore telotarsus somewhat enlarged.

Metasoma.— Length of first tergite 0.9 times its apical width, its surface very coarsely vermiculate-rugose; second tergite with narrow anterior depression, antero-laterally with curved carina, but no depression (fig. 785), its surface rather strongly longitudinally strigose, without distinct median carina; ovipositor sheath retracted.

Colour.— Yellowish-brown; flagellum, stemmaticum, pair of lateral patches on mesoscutum, scutellar sulcus medially, sides of scutellum, metanotum, propodeum, first, second (except laterally) and third tergite (except laterally and narrowly posteriorly), and ovipositor sheath, black or nearly so; pair of faint patches on mesoscutum medio-anteriorly, apical third of vein C+SC+R of fore wing, parastigma, scapus and pedicellus largely, dark brown; pterostigma and most veins, pale brown; palpi, tegulae, and metasoma ventrally, pale yellowish; hind tarsus somewhat infuscate; wing membrane subhyaline.

Distribution.— Panama.

Choreborogas vittifer spec. nov.
(figs)

Material.— Holotype, ♀ (RMNH), "Museum Leiden, M Panama, Barro Colorado Island, 9°9'30"N-79°51'W, 13-19.vii.1977, H. Wolda, level III, at light". Paratypes (18 ♀♀ + 20 ♂♂): 9 ♀♀ + 9 ♂♂, RMNH, topotypic: 2 ♀♀ + 1 ♂, 15-21.vi.1977, level III; 1 ♀, 13-19.vii.1976, level III; 1 ♀, 11-17.v.1977, level III; 1 ♀ + 2 ♂♂, 10-16.viii.1977, level III(♀♂) or I(♂); 1 ♂, 20-26.vii.1977, level I; 1 ♂, 29.vi-5.vii.1977, level I; 2 ♂♂, 31.vii-6.ix.1977, level I(1) or III(1); 2 ♀♀, 4-10.vii.1978, level III; 1 ♀, 9-15.xi.1977, level III; 1 ♀, 19-25.ix.1977, level III; 1 ♂, 30.xi-6.xii.1977, level I; 1 ♂, 14-20.ix.1977, level III; 5 ♀♀ + 2 ♂♂ (CNC), "Panama: CZ, Barro Colorado Is., ii.1983, H. Wolda" (1 ♀), iii.1983 (1 ♀ + 1 ♂), iv.1983 (1 ♀), x.1982 (2 ♀♀), ix.1982 (1 ♂); 4 ♀♀ + 1 ♂ (CNC), "Panama: Las Cumbres, Canal Zone, ii.1983, H. Wolda" (1 ♂), iii.1982 (3 ♂♂), viii.1982 (1 ♂).

Holotype, ♀, length of body 2.9 mm, of fore wing 2.6 mm.

Head.— Antennal segments 14, third segment nearly as long as fourth segment, length of third, fourth and penultimate segments 4.5, 4.3 and 4.0 times their width, respectively; length of maxillary palp of ♀-paratype equal to height of head (incomplete in holotype); length of eye in dorsal view 2.5 times temple; temples directly narrowed posteriorly (fig. 795); OOL:diameter of ocellus:POL = 4:3:3; face distinctly granulate; ventral margin of clypeus at lower level of eyes; clypeus rather convex and largely smooth; vertex superficially granulate, normal (fig. 790), slightly convex; malar suture medium-sized; length of malar space 0.7 times basal width of mandible.

Mesosoma.— Length of mesosoma 1.7 times its height; side of pronotum largely smooth, with some indistinct granulation posteriorly and some crenulation posteriorly; mesopleuron largely smooth, superficially granulate dorsally; metapleuron finely granulate; notauli absent on disc; mesoscutum superficially granulate; scutel-

lar sulcus medium-sized, somewhat narrowed medially (fig. 794); anterior half of propodeum distinctly granulate, posteriorly transversely rugose posteriorly, areola rather long and slender, arched antero-laterally, and median carina medium-sized (fig. 789).

Wings.— Fore wing: r slightly shorter than width of pterostigma and emerging near middle of pterostigma (fig. 788); 2-R1 absent; r:3-SR+SR1:2-SR = 10:59:20; 1-CU1:2-CU1 = 2:11; first subdiscal cell open apico-posteriorly. Hind wing: M+CU:1-M = 13:19.

Legs.— Hind coxa superficially granulate; length of femur, tibia and basitarsus of hind leg 2.3, 7.8 and 5.2 times their width, respectively; hind femur inflated, and superficially granulate; inner side of hind tibia somewhat curved (fig. 792); hind tibial spurs 0.2 and 0.3 times hind basitarsus; fore telotarsus hardly or not enlarged.

Metasoma.— Length of first tergite 0.9 times its apical width, its surface rather coarsely rugose and between rugae granulate, rather shiny, with distinct median carina behind subbasal ring of dorsal carinae; second and third tergites coarsely granulate and no median carina; second tergite comparatively widely depressed anteriorly, (and in depression a short carina; fig. 793), with round depression antero-laterally, and medially densely and finely longitudinally strigose; hypopygium medium-sized, apically truncate, long setose; length of ovipositor sheath 0.03 times fore wing, hardly surpassing hypopygium.

Colour.— Yellowish-brown; antenna (except segments basally and inner side of scapus), mesoscutum laterally and two faint stripes antero-medially, scutellar sulcus, side of scutellum, propodeum and first tergite largely, two basal patches on second tergite (separated by a narrow brown stripe), pair of faint patches on third tergite, and parastigma, dark brown; stemmaticum black; hind basitarsus infuscate; tarsi slightly darker than tibiae; apical half of vein C+SC+R of fore wing, pterostigma, and veins (except basal half of vein C+SC+R), pale brownish; palpi, tegulae, fourth and following tergites, and metasoma ventrally, pale yellowish; wing membrane subhyaline.

Variation.— Antennal segments of ♀ 14(5), and of ♂ 14(4); length of fore wing 2.0-2.7 mm, of body 2.3-2.9 mm; length of first tergite 0.8-1.0 times its apical width; hind femur of ♀ 2.3-3.1 times its maximum width, of ♂ slightly widened (fig. 791); rugae of propodeum may be weak or largely absent; head and mesosoma may be largely orange-brown instead of yellowish-brown; patches on third tergite may be dark brown; median brown stripe of second tergite may be largely absent (especially in males), resulting in a large dark patch; mesoscutum yellowish, infuscate or dark brown laterally.

Distribution.— Panama.

Note.— Close to *C. puteolus* spec. nov. because of the round depression of the second tergite antero-laterally, the rugose first tergite and the rugulae of the third tergite, but *C. vittifer* differs by its colour (much darker), the first tergite rugose instead of rugulose and the hind femur of ♀ is inflated.

***Polystenidea* Viereck, 1911**
(figs 546-554, 764)

Polystenidea Viereck, 1911: 186; Shenefelt, 1975: 1211; van Achterberg, 1991: 14; Whitfield & Wagner, 1991: 740. Type species (by original designation): *Polystenidea parksi* Viereck, 1911 [examined].

Diagnosis.— Occipital carina absent medio-dorsally (fig. 551); malar suture usually absent or obsolescent (fig. 547); vein r-m of fore wing absent, and no second submarginal cell (fig. 546); vein SR1 of fore wing curved (fig. 546); vein 1-R1 of fore wing at most about 0.7 times as long as pterostigma (fig. 546); vein r issued near middle of pterostigma (fig. 546); fore telotarsus moderately wide; hind femur normal (fig. 552); second and third tergites (sub)parallel-sided posteriorly (fig. 554); basal width of third tergite 1.3 times basal width of second tergite or less.

Biology.— Solitary endoparasites of Lyonetiidae s.l. (Whitfield & Wagner, 1991).

Distribution.— New World; sporadic in the Neotropical region (Whitfield & Wagner, 1991). Small genus.

Stiropius Cameron, 1911
(figs 615-636, 796-856)

Stiropius Cameron, 1911: 329; Whitfield, 1988: 375 (references), 1990: 39; van Achterberg, 1991: 14; Whitfield & Wagner, 1991: 741. Type species (by original designation): *Stiropius carinatus* Cameron, 1911 [examined].

Bucculatriplex Viereck, 1912: 577; Shenefelt, 1975: 1186; Whitfield, 1988: 375 (synonym of *Stiropius*; references); van Achterberg, 1991: 14. Type species (by original designation): *Bracon bucculatricis* Ashmead, 1889 [examined by Whitfield].

Viridipyge Whitfield, 1988: 382, 1990: 39; van Achterberg, 1991: 14; Whitfield & Wagner, 1991: 741. **Syn. nov.** Type species (by original designation): *Viridipyge prunicola* Whitfield, 1988.

Diagnosis.— Occipital carina complete dorsally or nearly so (figs 617, 632); malar suture absent, obsolescent or deep (figs 621, 630); vein SR1 of fore wing straight or nearly so (figs 615, 626); vein 1-R1 of fore wing about as long as pterostigma (figs 615, 626); vein r issued between basal third and middle of pterostigma (figs 615, 626); vein r-m of fore wing present and a (sub)triangular, rectangular or small quadrangular second submarginal cell present (figs 615, 626); hind femur slender to distinctly swollen (figs 624, 633), and ♀ of *S. prunicola* has a ventral tooth on femur; fore telotarsus moderately wide (figs 622, 634); second and third tergites more or less widened posteriorly (figs 619, 636); hypopygium of ♀ medium-sized or rather large and apically acute to truncate (figs 618, 631, 799, 803, 823).

Biology.— Solitary endoparasites of Lyonetiidae s.l.

Distribution.— Neotropical (most species), South Nearctic. Medium-sized genus.

Note.— After having examined several Neotropical spp. of *Stiropius* I was unable to separate *Viridipyge* from *Stiropius*. All characters mentioned by Whitfield (1988) proved to be insufficient for separation of both genera, e.g. the sclerotization of sternites (should be more even in *Viridipyge*), the position of vein r on pterostigma, the relative length of veins 2-SR, 3-SR and r of fore wing (3-SR of fore wing shortened, but in "*Viridipyge*" *letifer* (Mann, 1872) already of intermediate length), the size and shape of hypopygium of ♀ (variable and a sex-related character, which makes it problematic to identify males to genus), the length of ovipositor sheath (usually retracted) and the "semicircular subbasal groove of tergite IV" of Whitfield (1990). Also the latter character is variable; it may be faintly developed in *Choreborogas* and in *Stiropius* it is very variable. Often the groove is only the border between the flat part of the tergite normally hidden under the third tergite and the convex exposed part.

It remains to be investigated if the only remaining character to separate the genera *Polystenidea* and *Choreborogas* from *Stiropius* (the absence of vein r-m of fore wing)

is a reliable one on which to base monophyletic genera in the Stiropiini. I have examined one specimen (CNC) belonging to an undescribed species lacking vein r-m of fore wing completely.

Key to Central and North American species of the genus *Stiropius* Cameron

1. Malar suture absent (figs 621, 798, 805, 808); at least part of body dark brown; ventral margin of clypeus distinctly below lower level of eyes (figs 621, 798, 805, 808); length of malar space 1.1-2.1 times basal width of mandible; temples comparatively wide (fig. 618); second metasomal tergite with median carina (fig. 619) 2
- Malar suture present, deep (figs 630, 813, 818, 822), rarely shallowly impressed or, if absent then body completely brownish-yellow; ventral margin of clypeus close to lower level of eyes or above it (figs 813, 818), rarely below it (figs 630, 822); length of malar space 0.6-1.2 times basal width of mandible; temples frequently distinctly narrower (fig. 628); median carina of second tergite various 6
2. Pterostigma bicoloured, dark brown with its base more or less yellowish; first tergite dark brown, similar in colour to third tergite; anterior depression of second tergite narrow 3
- Pterostigma unicoloured; first tergite usually pale yellowish, contrasting with third tergite; anterior depression of second tergite medium-sized to rather wide 4
3. Propodeal areola wide and angulate antero-laterally (fig. 800); notauli distinct on disc anteriorly; hind femur rather robust (fig. 797); length of malar space about 1.2 times basal width of mandible; Neotropical (Panama) *S. bicoloratus* spec. nov.
- Propodeal areola gradually narrowed antero-laterally and arched anteriorly (cf. fig. 804); notauli largely absent on disc anteriorly; hind femur slender; length of malar space 1.9-2.1 times basal width of mandible; Nearctic *S. californicus* Whitfield, 1988
4. Propodeal areola elongate triangular, and anteriorly narrow, slightly longer than median carina (fig. 804); mesoscutum orange-brown; notauli complete posteriorly; third tergite with median carina; Panama *S. notaulicus* spec. nov.
- Propodeal areola quadrangulate, and anteriorly wide, about as long as median carina or shorter (figs 616, 810); mesoscutum largely dark brown; notauli absent posteriorly (fig. 616) or weakly impressed; third tergite without median carina . 5
5. Hind femur slender (fig. 624); vein r issued near basal 0.4 of pterostigma and pterostigma less robust (fig. 615); first subdiscal cell of fore wing parallel-sided; Ecuador *S. huggerti* spec. nov.
 Note. In Panama occurs a related species with vein 3-SR of fore wing medium-sized, distinctly longer than of *S. huggerti*, first tergite blackish and fourth tergite hardly convex.
- Hind femur robust (fig. 809); vein r issued near middle of pterostigma and pterostigma more robust (fig. 806); first subdiscal cell of fore wing distinctly widened distally (fig. 806); Panama *S. robustifemur* spec. nov.
6. First tergite and base of second tergite pale yellowish, contrasting with third tergite, but sometimes largely darkened; pterostigma brown, with its apex somewhat paler; fourth tergite flat; Panama *S. eburis* spec. nov.
- First and second tergites similar in colour to third tergite; pterostigma evenly pale yellowish or dark brown; fourth tergite various 7

7. Pterostigma dark brown, similarly coloured as parastigma **and** third antennal segment of ♀ yellowish; second tergite robust; vein CU1b of fore wing present; Panama *S. infuscatus* spec. nov.
- Pterostigma pale yellowish or brownish; parastigma usually darker and contrasting with pterostigma; if pterostigma is dark brown then third antennal segment dark brown; vein CU1b of fore wing various; fourth tergite less robust (figs 827, 834, 839, 841) 8
8. Hypoclypeal depression comparatively wide (fig. 822); vein m-cu of fore wing comparatively far antefurcal (fig. 824); second tergite distinctly striate (and granulate), and rather slender (fig. 827); vein CU1b of fore wing absent (fig. 824); Panama *S. striatellus* spec. nov.
- Hypoclypeal depression small (figs 630, 831, 842, 848); vein m-cu of fore wing moderately antefurcal or subinterstitial (figs 626, 832, 835, 845); second tergite without distinct striae medially, rarely some laterally, or medially strigose, and usually less slender (figs 636, 834, 839, 841); vein CU1b of fore wing various (figs 626, 832, 835, 845) 9
9. Vein 2-SR of fore wing nearly as long as vein 3-SR or vein r-m of fore wing (fig. 3 in Whitfield, 1988); propodeal areola distinctly shorter than median carina of propodeum; apex of hypopygium of ♀ truncate (fig. 7, l.c.); hind femur slender; Nearctic *S. wagneri* Whitfield, 1988
- Vein 2-SR of fore wing distinctly longer than vein 3-SR or vein r-m of fore wing (figs 626, 832, 835); propodeal areola usually about as long as median carina of propodeum or nearly so (figs 830, 846), but sometimes shorter (fig. 843); apex of hypopygium of ♀ and hind femur various 10
10. Vein 3-SR of fore wing much shorter than vein r (fig. 626); hind femur strongly swollen (fig. 633); mesosoma and metasoma yellowish; propodeal areola comparatively robust (fig. 627); length of eye in dorsal view 2.9-3.8 times temple (fig. 632) 11
- Vein 3-SR of fore wing about as long as vein r or somewhat shorter (figs 832, 835, 845, 851); hind femur at most moderately swollen (fig. 828) or, if strongly swollen (fig. 844) then mesosoma and metasoma black; propodeal areola various (figs 830, 836, 843, 846, 853); length of eye in dorsal view 4.5-5.5 times temple (fig. 833), if about 3 times then body largely black 12
11. Second tergite of ♀ only granulate apart from median carina, in ♂ some striae may be present; length of fore wing less than 2.0 mm; ovipositor sheath hardly protruding beyond apex of hypopygium; second submarginal cell of fore wing wider; Neotropical *S. letifer* (Mann, 1872)
- Second tergite of ♀ ♂ aciculate-rugose and granulate; length of fore wing 2.0-2.6 mm; ovipositor sheath distinctly protruding beyond apex of hypopygium if extended (fig. 631); second submarginal cell of fore wing narrow (fig. 626); Nearctic *S. prunicola* (Whitfield, 1988)
12. Propodeal areola arched antero-laterally, slender (fig. 836); fourth tergite and pterostigma pale yellowish; fourth tergite of ♀ flat or nearly so (figs 829, 840); second and third tergites brownish-yellow 13
- Propodeal areola angulate antero-laterally, more robust (figs 843, 846, 853); fourth tergite brown or blackish; pterostigma pale brownish; fourth tergite of ♀ frequently rather convex (fig. 856); second and third tergites black, dark brown or partly infuscate 14

13. Hind basitarsus robust (fig. 828); anterior half of third tergite without median carina (fig. 834); vein CU1b of fore wing nearly always present (fig. 832); side of pronotum without anterior longitudinal carina or obsolescent; hind femur robust (fig. 828); Panama *S. woldai* spec. nov.
- Hind basitarsus slender (fig. 837); anterior half of third tergite usually with median carina (fig. 839); vein CU1b of fore wing absent (fig. 835); side of pronotum usually with distinct anterior longitudinal carina; hind femur slender (fig. 837); Panama *S. longicarinatus* spec. nov.
- Note. In Panama occurs a similar species without malar suture, malar space rather long, propodeal areola angulate antero-laterally, clypeus comparatively high and second tergite more slender. If with arched and narrow propodeal areola, but third metasomal tergite without median carina, second and third tergites dark brown, ruga on side of pronotum indistinct, hind basitarsus less slender, vein 3-SR of fore wing (compared to 2-SR) longer, and sternites conspicuously long setose, cf. *S. carinatus* Cameron, 1911, from Guyana.
14. Hind femur slender or somewhat swollen (figs 849, 854), unicoloured; vein CU1b of fore wing absent or nearly so (figs 851, 852); first tergite slightly protruding medio-posteriorly (fig. 847); face distinctly narrower (fig. 855); apical segments of antenna as dark brown as medial segments; mesoscutum yellowish or brownish .
..... 15
- Hind femur strongly swollen (fig. 844), somewhat darkened apically; vein CU1b of fore wing distinct (fig. 845); first tergite distinctly protruding medio-posteriorly (fig. 841); face comparatively wide (fig. 842); two apical segments of antenna whitish, contrasting with dark brown medial segments of antenna; mesoscutum black; Panama *S. nigrisoma* spec. nov.
15. Pterostigma pale yellowish, contrasting with dark brown parastigma or parastigma largely yellowish; third antennal segment slender, 4-5 times as long as its width; hind basitarsus yellowish or brownish; length of malar space about 1.2 times basal width of mandible; Neotropical 16
- Pterostigma dark brown, similar in colour to parastigma; third antennal segment robust, about 3 times as long as its width; hind basitarsus dark brown; length of malar space about equal to basal width of mandible; Nearctic
..... *S. bucculatricis* (Ashmead, 1889)
16. Vein r of fore wing about as long as vein 3-SR (fig. 851); second and third tergites only with a patch dark brown, and second tergite yellowish anteriorly; face slightly longer (fig. 848); second metasomal suture somewhat narrower (fig. 847); fourth tergite nearly flat (fig. 850); parastigma distinctly darker than pterostigma; Panama *S. facialis* spec. nov.
- Vein r of fore wing distinctly longer than vein 3-SR (fig. 852); second and third tergites completely dark brown or black dorsally; face somewhat smaller (fig. 855); second metasomal suture wide; fourth tergite rather convex (fig. 856); parastigma similar in colour to pterostigma; Panama *S. femoralis* spec. nov.
- Note. Go to couplet 13 if pterostigma is pale yellowish and metasoma completely yellowish (specimens with aberrant, rather angled propodeal areola).

Stiropius bicoloratus spec. nov.
(figs 796-800)

Material.— Holotype, ♀ (RMNH), "Museum Leiden, M. Panama, Barro Colorado Island, 9°9'30"N-79°51'W, level I, 11-17.v.1977, H. Wolda, at light". Paratype, 1 ♀ (CNC), "Panama: CZ, Barro Colorado Is., viii.1982, H. Wolda".

Holotype, ♀, length of both body and of fore wing 1.9 mm.

Head.— Antennal segments 14, length of third segment 1.1 times fourth segment, length of third, fourth and penultimate segments 4.3, 4.0 and 3.2 times their width, respectively; length of maxillary palp 0.7 times height of head; length of eye in dorsal view 2.2 times temple; temples subparallel behind eyes, narrowed posteriorly; OOL:diameter of ocellus:POL = 3:3:4; face and vertex superficially granulate; malar suture absent (fig. 798); clypeus small, its ventral margin distinctly below lower level of eyes; length of malar space 1.2 times basal width of mandible.

Mesosoma.— Length of mesosoma 1.6 times its height; side of pronotum superficially granulate, with some crenulae posteriorly and antero-medially; precoxal sulcus shallowly impressed; mesopleuron distinctly granulate; pleural sulcus finely crenulate; metapleuron granulate; basal 0.7 of notauli impressed, narrow, smooth; mesoscutum completely granulate, rather shiny; surface of propodeum distinctly granulate anteriorly, largely smooth posteriorly, areola wide and antero-laterally angulate (fig. 810) and median carina 0.4 times length of propodeum in lateral view.

Wings.— Fore wing: r about as long as width of pterostigma and emerging sub-medially from pterostigma (fig. 796); r:3-SR:SR1 = 8:5:33; 1-CU1:2-CU1 = 3:14; m-cu comparatively far antefurcal (fig. 796); first subdiscal cell open apically, CU1b largely absent (fig. 796); 2-SR:3-SR:r-m = 13:5:9. Hind wing: M+CU:1-M = 16:23.

Legs.— Length of femur, tibia and basitarsus of hind leg 3.4, 8.7 and 4.5 times their width, respectively; hind femur moderately robust (fig. 797); fore telotarsus slightly enlarged; hind tibial spurs 0.2 and 0.3 times hind basitarsus.

Metasoma.— Length of first tergite 0.7 times its apical width, its surface granulate behind dorsal carina, and its median carina complete; second and third tergites distinctly granulate; second tergite narrowly depressed anteriorly, and with nearly complete median carina, which is absent on third tergite; second metasomal suture wide; fourth tergite flat basally and remainder distinctly convex (fig. 799), smooth; ovipositor sheath retracted, not protruding beyond hypopygium; hypopygium medium-sized, apically truncate (fig. 799).

Colour.— Orange-brown; flagellum largely dark brown, most segments yellowish basally; basal half of vein C+SC+R of fore wing and basal third of pterostigma, yellowish; mesoscutum latero-posteriorly, remainder of veins and of pterostigma, parastigma, and setae of vein C+SC+R, dark brown; hind tarsus infusate; palpi, tegulae and remainder of legs, brownish-yellow; mesopleuron (except antero-dorsally), mesosternum, metanotum, metapleuron, propodeum, and metasoma (but third-fifth tergites brownish basally), dark brown or blackish; wing membrane subhyaline.

Distribution.— Panama.

Stiropius eburis spec. nov.
(figs 811-815)

Material.— Holotype, ♀ (RMNH), "Museum Leiden, M. Panama, Barro Colorado Island, 9°9'30"N-79°51'W, level I, 15-21.vi.1977, H. Wolda, at light". Paratypes (6 ♀♀ + 20 ♂♂, RMNH, topotypic): 1 ♂, 16-22.ii.1977, level I; 1 ♂, 18-24.v.1977, level I; 1 ♂, 13-19.iv.1977, level III; 1 ♂, 22-29.v.1978, level ?; 1 ♀, 11-17.i.1978, level III; 1 ♀, 5-11.x.1977, level I; 2 ♀♀ + 4 ♂♂, 18-24.iv.1978, level III; 1 ♀ + 2 ♂♂, 30.v-5.vi.1978, level ?; 1 ♀, 7-13.iii.1977, level I; 1 ♂, 21-27.ix.1977, level III; 1 ♂, id., level I; 2 ♂♂, 6-12.vi.1977, level I; 1 ♂, 28.ii-6.iii.1978, level I; 1 ♂, 23-29.v.1978, level ?; 1 ♂, 28.iii-3.iv.1978, level I; 2 ♂♂, 16-22.v.1978, level ?.

Holotype, ♀, length of both body and of fore wing 2.0 mm.

Head.— Antennal segments 14, length of third segment 1.1 times fourth segment, length of third, fourth and penultimate segments 4.6, 4.3 and 4.7 times their width, respectively; length of maxillary palp 0.8 times height of head; length of eye in dorsal view 6.7 times temple; temples directly narrowed posteriorly; OOL:diameter of ocellus:POL = 5:6:8; face and vertex superficially granulate; malar suture deep (fig. 813); clypeus rather small, its ventral margin at lower level of eyes; length of malar space 0.7 times basal width of mandible.

Mesosoma.— Length of mesosoma 1.5 times its height; side of pronotum largely smooth, with some crenulae posteriorly and antero-medially; precoxal sulcus shallowly impressed; mesopleuron largely distinctly granulate; pleural sulcus finely crenulate; metapleuron granulate; basal 0.7 of notauli impressed, narrow, smooth; mesoscutum superficially granulate, rather shiny; surface of propodeum distinctly granulate anteriorly, largely smooth posteriorly, areola rather wide and antero-laterally angulate (fig. 814) and median carina 0.4 times length of propodeum in lateral view.

Wings.— Fore wing: r about as long as width of pterostigma and emerging sub-medially from pterostigma (fig. 811); r:3-SR:SR1 = 10:8:43; 1-CU1:2-CU1 = 1:11; first subdiscal cell closed apically, subparallel-sided, CU1b short (fig. 811); 2-SR:3-SR:r-m = 12:8:8. Hind wing: M+CU:1-M = 14:25.

Legs.— Length of femur, tibia and basitarsus of hind leg 4.1, 9.4 and 5.7 times their width, respectively; hind femur slender (fig. 812); fore telotarsus slightly enlarged; hind tibial spurs 0.20 and 0.25 times hind basitarsus.

Metasoma.— Length of first tergite 0.7 times its apical width, its surface granulate behind dorsal carina, and its median carina complete; second and third tergites distinctly granulate; second tergite with some indistinct longitudinal rugulae, moderately depressed anteriorly, and with nearly complete median carina, which is absent on third tergite; second metasomal suture wide; fourth tergite flat (fig. 815), and largely smooth; ovipositor sheath retracted, not protruding beyond hypopygium; hypopygium medium-sized, apically truncate and long setose (fig. 815).

Colour.— Dark brown; head (except dark occiput), prothorax, mesoscutum and fourth tergite (except dark brown base), brownish-yellow; palpi, tegulae and legs (but hind tarsus slightly darker), first tergite, base of second tergite, fifth tergite, and metasoma ventrally, pale yellowish; stemmaticum and remainder of second tergite and third tergite (except posteriorly), black; third tergite posteriorly and fourth tergite basally, dark brown; basal third of fore wing subhyaline, its veins and setae yellowish; only apex of vein C+SC+R of fore wing and its setae, pterostigma and veins, rather dark brown; remainder of fore wing slightly infusate; apex of pterostigma slightly paler than medially.

Variation.— Antennal segments of ♂ 13(2); ♂ has pedicellus rather swollen; length of body 2.1-2.3 mm, of fore wing 1.9-2.0 mm; fourth tergite completely dark brown; males are very similar to holotype-female; third antennal segment and first tergite are sometimes largely dark brown.

Distribution.— Panama.

Stiropius facialis spec. nov.
(figs 846-851)

Material.— Holotype, ♀ (RMNH), "Museum Leiden, M. Panama, Barro Colorado Island, 9°9'30"N-79°51'W, level III, 11-17.vii.1978, H. Wolda, at light".

Holotype, ♀, length of both body and of fore wing 1.9 mm.

Head.— Antennal segments 14, length of third segment 1.1 times fourth segment, length of third, fourth and penultimate segments 5.0, 4.7 and 3.3 times their width, respectively; length of maxillary palp 0.9 times height of head; length of eye in dorsal view 4.5 times temple; temples roundly narrowed posteriorly; OOL:diameter of ocellus:POL = 4:4:5; face and vertex superficially granulate; face somewhat wider than in *S. femoralis*; malar suture present (fig. 848); clypeus small, moderately convex its ventral margin just below lower level of eyes; length of malar space 1.2 times basal width of mandible.

Mesosoma.— Length of mesosoma 1.5 times its height; side of pronotum largely smooth, with some crenulae medially; precoxal sulcus absent; mesopleuron superficially granulate; pleural sulcus largely smooth; metapleuron granulate; basal 0.6 of notauli impressed, deep, rather wide, smooth; mesoscutum superficially granulate, rather shiny; surface of propodeum distinctly granulate anteriorly, largely smooth posteriorly, areola wide and antero-laterally angulate (fig. 846) and median carina 0.45 times length of propodeum in lateral view.

Wings.— Fore wing: r about as long as width of pterostigma and emerging sub-medially from pterostigma (fig. 851); 1-R1 and SR1 reduced apically; r:3-SR:SR1 = 16:15:81; 1-CU1:2-CU1 = 1:10; first subdiscal cell parallel-sided, open apically, CU1b absent (fig. 851); 2-SR:3-SR:r-m = 28:15:18. Hind wing: M+CU:1-M = 12:17.

Legs.— Length of femur, tibia and basitarsus of hind leg 3.7, 9.9 and 6.7 times their width, respectively; hind femur moderately slender (fig. 849); fore telotarsus slightly enlarged; hind tibial spurs 0.20 and 0.25 times hind basitarsus.

Metasoma.— Length of first tergite 0.8 times its apical width, somewhat protruding medio-posteriorly, its surface granulate behind dorsal carina, and its median carina complete; second and third tergites distinctly granulate; second tergite rather robust, moderately depressed anteriorly (fig. 847), and with complete median carina, which is also present on basal half of third tergite; second metasomal suture deep, moderately wide and distinctly crenulate; fourth tergite nearly flat (fig. 850), smooth; length of ovipositor sheath 0.02 times fore wing (largely retracted), somewhat protruding beyond hypopygium (fig. 850); hypopygium large, apically roundly protruding (fig. 850).

Colour.— Yellowish-brown; palpi, tegulae, legs (but tarsi somewhat darker), pterostigma, veins, and metasoma ventrally, pale yellowish; setae on vein C+SC+R of fore wing brown; flagellum, parastigma, second tergite posteriorly, second metasomal suture, large patch on third tergite and ovipositor sheath, rather dark brown; stemmaticum blackish; wing membrane subhyaline.

Distribution.— Panama.

Stiropius femoralis spec. nov.
(figs 852-856)

Material.— Holotype, ♀ (RMNH), "Museum Leiden, M. Panama, Barro Colorado Island, 9°9'30"N-79°51'W, level I, 18-24.v.1977, H. Wolda, at light".

Holotype, ♀, length of both body and of fore wing 1.8 mm.

Head.— Antennal segments 14, length of third segment 1.1 times fourth segment, length of third, fourth and penultimate segments 4.3, 4.0 and 3.5 times their width,

respectively; length of maxillary palp 0.9 times height of head; length of eye in dorsal view 5.0 times temple; temples directly narrowed posteriorly; OOL:diameter of ocellus:POL = 3:3:3; face and vertex superficially granulate; malar suture shallow; clypeus small (fig. 855), its ventral margin just below lower level of eyes; length of malar space 1.2 times basal width of mandible.

Mesosoma.— Length of mesosoma 1.5 times its height; side of pronotum largely smooth, anterior ruga short, with some crenulae posteriorly and antero-medially; precoxal sulcus largely absent; mesopleuron largely superficially granulate; pleural sulcus smooth; metapleuron granulate; notauli nearly completely impressed, narrow, smooth; mesoscutum completely distinctly granulate, long setose, rather shiny; surface of propodeum distinctly granulate anteriorly, largely smooth posteriorly, areola rather slender, and antero-laterally angulate (fig. 853) and median carina 0.45 times length of propodeum in lateral view.

Wings.— Fore wing: r about as long as width of pterostigma and emerging sub-medially from pterostigma (fig. 852); r:3-SR:SR1 = 9:5:41; 1-CU1:2-CU1 = 2:13; first subdiscal cell hardly widened distally, open apically, CU1b absent (fig. 852); 2-SR:3-SR:r-m = 14:5:9. Hind wing: M+CU:1-M = 4:7.

Legs.— Length of femur, tibia and basitarsus of hind leg 4.5, 9.5 and 6.0 times their width, respectively; hind femur slender, long setose (fig. 854); fore telotarsus not enlarged; hind tibial spurs 0.2 and 0.3 times hind basitarsus.

Metasoma.— Length of first tergite 0.9 times its apical width, hardly protruding medio-posteriorly, its surface granulate behind dorsal carina, and its median carina complete; second and third tergites distinctly granulate; second tergite rather slender, with few short indistinct rugulae, distinctly depressed anteriorly, and with complete median carina, which is absent on third tergite; second metasomal suture wide, crenulate; fourth tergite flat basally and remainder rather convex (fig. 856), granulate medially, remainder smooth; length of ovipositor sheath 0.03 times fore wing, not protruding beyond hypopygium; hypopygium medium-sized, apically truncate and long setose (fig. 856).

Colour.— Orange-brown; stemmaticum, flagellum, posterior half of propodeum, second tergite (except laterally), blackish(-brown); scutellar sulcus, scutellum partly, metanotum, metapleuron, remainder of propodeum, third and fourth tergites, and ovipositor sheath, dark brown; tegula brownish-yellow; middle lobe of mesoscutum infusate; palpi, legs, metasoma ventrally, and sixth tergite, pale yellowish; setae of vein C+SC+R of fore wing, parastigma largely, pterostigma and veins, brown; wing membrane subhyaline.

Distribution.— Panama.

Stiropius huggerti spec. nov.
(figs 615-625)

Material.— Holotype, ♀ (RMNH), "Ecuador: Pichincha, Rio Palenque Res. Stat., 40 km S Sto Domingo, 4.ii.1983, L. Huggert, RMNH".

Holotype, ♀, length of both body and of fore wing 1.8 mm.

Head.— Antennal segments 14, length of third segment 1.1 times fourth segment, length of third, fourth and penultimate segments 4.3, 4.0 and 3.5 times their width, respectively (figs 620, 623); scapus ovoid; pedicellus comparatively long (fig. 620);

length of maxillary palp equal to height of head; length of eye in dorsal view 2.1 times temple; temples roundly narrowed posteriorly (fig. 617); OOL:diameter of ocellus:POL = 6:3:5; face and vertex superficially granulate; malar suture absent (fig. 621); length of malar space 1.3 times basal width of mandible.

Mesosoma.— Length of mesosoma 1.5 times its height; side of pronotum superficially granulate, with some rugae posteriorly; precoxal sulcus absent; remainder of mesopleuron superficially granulate; pleural sulcus finely crenulate; metapleuron granulate; basal 0.8 of notauli impressed, smooth; surface of propodeum distinctly granulate anteriorly, largely smooth posteriorly, areola robust and anteriorly angulate (fig. 616) and median carina rather long.

Wings.— Fore wing: r about as long as width of pterostigma and emerging from basal 0.4 of pterostigma (fig. 615); r:3-SR:SR1 = 12:5:68; 1-CU1:2-CU1 = 1:11; cu-a medium-sized; first subdiscal cell open apically, CU1b absent (fig. 615); 2-SR:3-SR:r-m = 20:5:12. Hind wing: M+CU:1-M = 10:18.

Legs.— Hind coxa smooth; length of femur, tibia and basitarsus of hind leg 3.3, 9.2 and 6.0 times their width, respectively; hind tibial spurs 0.2 and 0.3 times hind basitarsus.

Metasoma.— Length of first tergite 0.7 times its apical width, its surface granulate behind dorsal carina, and its median carina complete (fig. 619); second and third tergites distinctly granulate, but third tergite largely smooth apically; second tergite depressed anteriorly (fig. 619), and with nearly complete median carina, which is absent on third tergite (fig. 619); fourth tergite flat basally and remainder distinctly convex, smooth (fig. 618); length of ovipositor sheath 0.06 times fore wing, protruding beyond hypopygium; hypopygium medium-sized (fig. 618).

Colour.— Dark brown; scapus, pedicellus, third antennal segment, legs, first, fifth and following tergites, (pale) brownish-yellow or ivory; palpi and membranous parts of metasoma whitish; tegulae, face, temple ventrally, malar space, prothorax largely, third tergite posteriorly and fourth tergite largely, brown; pterostigma and most veins, dark brown; wing membrane subhyaline.

Note.— The new species is similar to *S. bucculatricis* (Ashmead), but is easily separable by its ivory first tergite (dorsally brown in *S. bucculatricis*), the yellowish third antennal segment (dark brown), the more widened second tergite and the strong median carina of the second tergite.

Stiropius infuscatus spec. nov.
(figs 816-820)

Material.— Holotype, ♀ (RMNH), "Museum Leiden, M. Panama, Barro Colorado Island, 9°9'30"N-79°51'W, level III, 11-17.vii.1978, H. Wolda, at light".

Holotype, ♀, length of body 1.8 mm, of fore wing 2.2 mm.

Head.— Antennal segments 14, length of third segment equal to fourth segment, length of third, fourth and penultimate segments 4.5, 4.5 and 5.0 times their width, respectively; maxillary palp partly missing; length of eye in dorsal view 4.8 times temple; temples directly narrowed posteriorly; OOL:diameter of ocellus:POL = 3:3:3; face and vertex superficially granulate; malar suture deep (fig. 817); clypeus rather small, its ventral margin at lower level of eyes; length of malar space 0.7 times basal width of mandible.

Mesosoma.— Length of mesosoma 1.4 times its height; side of pronotum dorsally largely smooth, ventrally superficially granulate, with some crenulae posteriorly and antero-medially; precoxal sulcus shallowly impressed; mesopleuron largely superficially granulate; pleural sulcus finely crenulate; metapleuron granulate; basal 0.9 of notauli impressed, narrow, smooth; mesoscutum completely granulate; surface of propodeum distinctly granulate anteriorly, largely smooth posteriorly, areola wide and antero-laterally angulate (fig. 819) and median carina 0.4 times length of propodeum in lateral view.

Wings.— Fore wing: r slightly longer than width of pterostigma and emerging submedially from pterostigma (fig. 816); r:3-SR:SR1 = 10:7:46; 1-CU1:2-CU1 = 1:9; first subdiscal cell somewhat widened distally, closed apically, CU1b distinct (fig. 816); 2-SR:3-SR:r-m = 15:7:8. Hind wing: M+CU:1-M = 15:29.

Legs.— Length of femur, tibia and basitarsus of hind leg 3.8, 8.8 and 4.7 times their width, respectively; hind femur moderately robust (fig. 820); fore telotarsus not enlarged; hind tibial spurs 0.20 and 0.25 times hind basitarsus.

Metasoma.— Length of first tergite 0.8 times its apical width, its surface granulate behind dorsal carina, and its median carina complete; second and third tergites distinctly granulate; second tergite rather coarsely rugose laterally and with a curved ruga latero-anteriorly, distinctly depressed anteriorly, and with nearly complete median carina, which is absent on third tergite; second metasomal suture narrow, deep; fourth tergite nearly flat (fig. 817), with some micro-sculpture, largely smooth; length of ovipositor sheath 0.05 times fore wing, somewhat protruding beyond hypopygium; hypopygium medium-sized, apically truncate and long setose (fig. 817).

Colour.— Black or nearly so; four basal segments of antenna and tegulae, brownish-yellow; head (but vertex infuscate and occiput dark brown), prothorax, lateral lobes of mesoscutum, mesosternum largely, apex of first tergite, and second tergite antero-laterally, orange-brown; palpi, legs, and metasoma ventrally, pale yellowish; setae of vein C+SC+R of fore wing dark brown; remainder of antenna, parastigma, pterostigma, veins of fore wing (but M+CU1, 1A and R1 yellow), dark brown; wing membrane subhyaline.

Distribution.— Panama.

Note.— Closely related to *S. eburis* spec. nov., but *S. infuscatus* differs by the dark base of second tergite and first tergite, the dark brown setae of C+SC+R of fore wing, the shorter vein 2-SR of fore wing, the slightly wider propodeal areola (fig. 819) and the more robust hind basitarsus..

Stiropius longicarinatus spec. nov.
(figs 835-840)

Material.— Holotype, ♀ (RMNH), "Museum Leiden, M. Panama, Barro Colorado Island, 9°9'30"N-79°51'W, level III, 11-17.vii.1978, H. Wolda, at light". Paratypes (15 ♀♀ + 11 ♂♂): 15 ♀♀ + 10 ♂♂, RMNH, topotypic: 1 ♀, 11-17.v.1977, level I; 1 ♀, 15-25.vi.1977, level III; 1 ♂, id., level I; 1 ♀, 11-17.i.1978, level III; 1 ♀, 26.x-1.xi.1977, level I; 1 ♀, 30.v-5.vii.1978, level ?; 2 ♀♀ + 1 ♂, 25-31.viii.1978, level III; 2 ♀♀ + 1 ♂, 6-12.vi.1978, level III; 2 ♀♀ + 1 ♂, 16-22.v.1978, level ?; 1 ♀, 28.iii-3.iv.1978, level III; 1 ♀, 28.xi.1977-3.i.1978, level I; 2 ♀♀, 21-27.ix.1977, level III; 1 ♀, 18-24.iv.1978, level III; 1 ♂, 11-17.i.1978, level III; 3 ♂♂, 7-13.iii.1978, level III; 1 ♂, 11-17.vii.1978, level III; 1 ♂, 27.vi-3.vii.1978, level II; 1 ♂, 14-20.ix.1977, level III; 1 ♂ (RMNH), "Museum Leiden, N Panama, Boquete, Alto Lino, 1300 m, 8°48'N-82°26'W, 11-17.i.1979, H. Wolda, at light".

Holotype, ♀, length of both body and of fore wing 2.0 mm.

Head.— Antennal segments 14, length of third segment about as long as fourth segment, length of third, fourth and penultimate segments 5.6, 5.5 and 5.0 times their width, respectively; length of maxillary palp 0.9 times height of head; length of eye in dorsal view 4.9 times temple; temples directly narrowed posteriorly; OOL:diameter of ocellus:POL = 3:3:3; face and vertex superficially granulate; malar suture moderately deep, narrow; clypeus small, its ventral margin just below lower level of eyes (fig. 838); length of malar space equal to basal width of mandible.

Mesosoma.— Length of mesosoma 1.7 times its height; side of pronotum largely smooth, with long ruga anteriorly; precoxal sulcus largely absent; mesopleuron superficially granulate; pleural sulcus largely smooth; metapleuron granulate; basal 0.4 of notauli impressed, narrow, smooth; mesoscutum superficially granulate; surface of propodeum distinctly granulate anteriorly, largely smooth posteriorly, areola slender and antero-laterally arched (fig. 836) and median carina 0.6 times length of propodeum in lateral view.

Wings.— Fore wing: r slightly shorter than width of pterostigma and emerging medially from pterostigma (fig. 835); r:3-SR:SR1 = 7:6:34; 1-CU1:2-CU1 = 1:14; first subdiscal cell somewhat widened distally, open apically, CU1b absent (fig. 835); 2-SR:3-SR:r-m = 13:6:8. Hind wing: M+CU:1-M = 12:25.

Legs.— Length of femur, tibia and basitarsus of hind leg 3.7, 10.4 and 7.4 times their width, respectively; hind femur and basitarsus slender (fig. 837); fore telotarsus not enlarged; hind tibial spurs 0.20 and 0.25 times hind basitarsus.

Metasoma.— Length of first tergite 1.1 times its apical width, its surface granulate behind dorsal carina, and its median carina complete; second and third tergites distinctly granulate; second tergite rather slender, rather narrowly depressed anteriorly (fig. 839), and with complete median carina, which is present on anterior half of third tergite; second metasomal suture rather narrow, deep; fourth tergite flat, smooth (fig. 840); length of ovipositor sheath 0.03 times fore wing, rather wide, apically truncate, somewhat protruding beyond hypopygium; hypopygium rather large, apically subtruncate (fig. 840).

Colour.— Yellowish-brown; stemmaticum black; parastigma, flagellum largely, and ovipositor sheath dark brown; palpi, tegulae, metasoma ventrally, veins, pterostigma and setae of fore wing, pale yellowish; legs brownish-yellow; hind tarsus slightly darkened; wing membrane subhyaline.

Variation.— Antennal segments of ♀ 14(3), and of ♂ 13(1); pedicellus of ♂ distinctly inflated; length of both body and of fore wing 1.8-2.0 mm; anterior ruga of side of pronotum long and distinctly developed or rather short and weak; hind femur superficially granulate or smooth; medial carina of third tergite present on basal 0.2-0.7 of tergite.

Distribution.— Panama.

Stiropius nigrisoma spec. nov.
(figs 841-845)

Material.— Holotype, ♂ (RMNH), "Museum Leiden, North Panama, Fortuna, Chiriqui, 8°46'N: 82°15'W, 1050 m, 14-20.ix.1977, H. Wolda, at light".

Holotype, ♂, length of body 2.9 mm, and of fore wing 2.6 mm.

Head.— Antennal segments 13, length of third segment as long as fourth segment, length of third, fourth and penultimate segments 4.7, 4.7 and 5.2 times their width, respectively; pedicellus normal, slender; length of maxillary palp 0.8 times height of head; length of eye in dorsal view 2.7 times temple; temples roundly narrowed posteriorly; OOL:diameter of ocellus:POL = 5:3:4; face and vertex superficially granulate, face comparatively wide (fig. 842); malar suture moderately deep; clypeus rather small (fig. 842), distinctly convex, smooth, its ventral margin just below lower level of eyes; length of malar space equal to basal width of mandible.

Mesosoma.— Length of mesosoma 1.5 times its height; antescutal depression indistinct; side of pronotum superficially granulate, crenulate anteriorly and posteriorly; precoxal sulcus largely absent; mesopleuron superficially granulate, but medially largely smooth; pleural sulcus largely smooth dorsally, and distinctly crenulate ventrally; metapleuron granulate; basal 0.5 of notauli impressed, narrow, microsculptured; mesoscutum distinctly granulate; surface of propodeum distinctly granulate anteriorly, largely smooth posteriorly, areola wide and antero-laterally somewhat angulate (fig. 843) and median carina 0.55 times length of propodeum in lateral view.

Wings.— Fore wing: r about as long as width of pterostigma and emerging medially from pterostigma (fig. 845); r:3-SR:SR1 = 10:11:60; 1-CU1:2-CU1 = 1:6; first subdiscal cell rather widened distally (left wing, in right wing subparallel-sided), closed apically, CU1b present, distinct (fig. 845); 2-SR:3-SR:r-m = 20:11:9. Hind wing: M+CU: 1-M = 17:26.

Legs.— Length of femur, tibia and basitarsus of hind leg 2.9, 9.6 and 5.0 times their width, respectively; hind femur strongly swollen (fig. 844); fore telotarsus rather enlarged; hind tibial spurs 0.25 and 0.30 times hind basitarsus.

Metasoma.— Length of first tergite equal to its apical width, strongly convex subbasally, medio-posteriorly distinctly protruding, its surface granulate behind dorsal carina, and its median carina complete; second and third tergites distinctly granulate; second tergite slender, antero-laterally with shallow round depression (only *Stiropius* spp. examined with such a depression, cf. fig. 768), not depressed anteriorly, and with complete median carina, which is absent on third tergite; second metasomal suture rather narrow, moderately deep, distinctly crenulate; fourth tergite rather convex, granulate basally and smooth posteriorly; hypopygium rather small; fifth and sixth tergites exposed.

Colour.— Black; face, clypeus, orbits largely, tegula, and prothorax, dark orange-brown; scapus, pedicellus and 11th antennal segment, largely brown; two apical antennal segments whitish; remainder of antenna, fourth tergite apically, fifth and sixth tergites, parastigma, and setae on vein C+SC+R of fore wing, dark brown; humeral plate, palpi, metasoma ventrally, fore and middle legs (except tarsi), hind coxa, trochanter and trochantellus, hind femur (except apically) and basal half of hind tibia, pale yellowish; remainder of legs rather infusate; pterostigma and most veins, brown; wing membrane subhyaline.

Distribution.— Panama.

Stiropius notaulicus spec. nov.
(figs 801-805)

Material.— Holotype, ♀ (RMNH), "Museum Leiden, M. Panama, Barro Colorado Island, 9°9'30"N-79°51'W, level III, 29.vi-5.vii.1977, H. Wolda, at light".

Holotype, ♀, length of body 1.9 mm, and of fore wing 1.7 mm.

Head.— Remaining antennal segments 4, length of third segment 1.2 times fourth segment, length of third and fourth segments 3.5 and 3.0 times their width, respectively; length of maxillary palp 0.8 times height of head; length of eye in dorsal view 2.4 times temple; temples directly narrowed posteriorly; OOL:diameter of ocellus:POL = 5:4:6; face and vertex superficially granulate; malar suture absent; clypeus rather small (fig. 805), its ventral margin distinctly below lower level of eyes; length of malar space 1.1 times basal width of mandible.

Mesosoma.— Length of mesosoma 1.5 times its height; side of pronotum superficially granulate, with crenulae posteriorly and medially; precoxal sulcus shallowly impressed; mesopleuron superficially granulate; pleural sulcus smooth; metapleuron granulate; notauli complete, narrow, bordered by rugae posteriorly; mesoscutum superficially granulate; surface of propodeum distinctly granulate anteriorly, largely smooth and with some rugae posteriorly, areola elongate and antero-laterally arched (fig. 804) and median carina 0.4 times length of propodeum in lateral view.

Wings.— Fore wing: r shorter than width of pterostigma and emerging from basal 0.45 of pterostigma (fig. 801); r:3-SR:SR1 = 7:6:36; 1-CU1:2-CU1 = 1:6; first subdiscal cell somewhat widened distally, open apically, CU1b absent (fig. 801); 2-SR:3-SR:r-m = 13:6:8. Hind wing: M+CU:1-M = 15:24.

Legs.— Length of femur, tibia and basitarsus of hind leg 3.2, 8.9 and 7.5 times their width, respectively; hind femur moderately robust (fig. 802); fore telotarsus not enlarged; hind tibial spurs 0.20 and 0.35 times hind basitarsus.

Metasoma.— Length of first tergite 0.8 times its apical width, its surface granulate behind dorsal carina, and its median carina complete; second and third tergites distinctly granulate and both with median carina; second tergite with fine longitudinal rugae, rather widely depressed anteriorly; second metasomal suture medium-sized, deep; fourth tergite flat basally and remainder distinctly convex (fig. 803), largely smooth; length of ovipositor sheath 0.04 times fore wing, somewhat protruding beyond hypopygium; hypopygium medium-sized, apically truncate and long setose (fig. 803).

Colour.— Orange-brown; (four) basal segments of antenna, legs and fifth tergite, yellowish-brown; vein C+SC+R of fore wing (except apically) and its setae, yellowish; pterostigma and remainder of veins, brown; palpi, tegulae and first tergite, pale yellowish; stigmaticum black; parastigma, and second-fourth metasomal tergites (except partly laterally), dark brown; wing membrane subhyaline.

Distribution.— Panama.

Stiropius robustifemur spec. nov.
(figs 806-810)

Material.— Holotype, ♀ (RMNH), "Museum Leiden, M. Panama, Barro Colorado Island, 9°9'30"N-79°51'W, level I, 20-26.iv.1977, H. Wolda, at light". Paratypes (1 ♀ + 2 ♂♂, RMNH): 1 ♀ + 1 ♂, topotypic: 1 ♂, 8-14.vi.1977, level III; 1 ♀, 28.ii-6.iii.1978, level I; 1 ♂ (RMNH), "Museum Leiden, N Panama, Boquete, Alto Lino, 1300 m, 8°48'N-82°26'W, 11-17.i.1979, H. Wolda, at light".

Holotype, ♀, length of body 1.6 mm, and of fore wing 1.7 mm.

Head.— Antennal segments 14, length of third segment 1.1 times fourth segment, length of third, fourth and penultimate segments 4.8, 4.0 and 3.5 times their width, respectively; length of maxillary palp 0.8 times height of head; length of eye in dorsal view 2.9 times temple; temples subparallel-sided behind eyes, roundly narrowed posteriorly; OOL:diameter of ocellus:POL = 4:3:4; face and vertex superficially granulate; malar suture absent; clypeus small (fig. 808), its ventral margin distinctly below lower level of eyes; length of malar space 1.1 times basal width of mandible.

Mesosoma.— Length of mesosoma 1.4 times its height; side of pronotum smooth medially, remainder superficially granulate, with some crenulae posteriorly and medially; precoxal sulcus shallowly impressed; mesopleuron superficially granulate; pleural sulcus finely crenulate; metapleuron granulate; basal 0.6 of notauli, narrow, bordered by rugae posteriorly; mesoscutum superficially granulate; surface of propodeum distinctly granulate anteriorly, largely smooth and with some rugae posteriorly, areola wide and antero-laterally angulate (fig. 810) and median carina 0.45 times length of propodeum in lateral view.

Wings.— Fore wing: r somewhat shorter than width of pterostigma and emerging submedially from pterostigma (fig. 806); r:3-SR:SR1 = 8:4:41; 1-CU1:2-CU1 = 2:9; first subdiscal cell distinctly widened distally, open apically, CU1b absent (fig. 806); 2-SR:3-SR:r-m = 14:4:8. Hind wing: M+CU:1-M = 10:19.

Legs.— Length of femur, tibia and basitarsus of hind leg 3.2, 9.7 and 5.7 times their width, respectively; hind femur robust (fig. 809); fore telotarsus not enlarged; hind tibial spurs 0.2 and 0.3 times hind basitarsus.

Metasoma.— Length of first tergite 0.7 times its apical width, its surface granulate behind dorsal carina, and its median carina complete; second and third tergites coarsely granulate (but third tergite weakly posteriorly); second tergite widely depressed anteriorly, and with complete median carina, which is absent on third tergite; second metasomal suture narrow, deep; fourth tergite flat basally and remainder distinctly convex (fig. 807), largely smooth; length of ovipositor sheath 0.05 times fore wing, somewhat protruding beyond hypopygium; hypopygium medium-sized, apically truncate and long setose (fig. 807).

Colour.— Dark brown; three basal segments of antenna, head (but stemmaticum black) and prothorax, orange-brown; palpi, tegulae, legs (but hind tarsus yellowish-brown), veins of basal half of fore wing (but apex of vein C+SC+R dark brown), its setae, first tergite and metasoma ventrally largely, pale brownish; remainder of veins, parastigma and pterostigma, dark brown; apical half of fore wing slightly infuscate, remainder subhyaline.

Variation.— The topotypic male-paratype has a short remnant of vein CU1b, the hind femur more swollen than of holotype, its length 2.5 times its maximum width, the pronotum largely dark brown, length of body 2.1 mm, and of fore wing 1.9 mm, and the antenna consists of 14 segments.

Distribution.— Panama.

Stiropius striatellus spec. nov.
(figs 821-827)

Material.— Holotype, ♀ (RMNH), "Museum Leiden, M. Panama, Barro Colorado Island, 9°9'30"N-79°51'W, level III, 15-21.vi.1977, H. Wolda, at light". Paratypes (5 ♀♀, RMNH): 4 ♀♀, topotypic and same level, 1 ♀, 11-17.v.1977; 2 ♀♀, 27.vi-3.vii.1978; 1 ♀, 6-12.vi.1978; 1 ♀, id., but level I.

Holotype, ♀, length of body 2.2 mm, and of fore wing 1.8 mm.

Head.— Antennal segments 14, length of third segment 1.1 times fourth segment, length of third, fourth and penultimate segments 4.3, 4.0 and 4.2 times their width, respectively; length of maxillary palp 0.7 times height of head; length of eye in dorsal view 2.8 times temple; temples gradually narrowed posteriorly; OOL:diameter of ocellus:POL = 4:3:3; face and vertex superficially granulate; malar suture deep; clypeus wide (fig. 822), near lower level of eyes; length of malar space 0.6 times basal width of mandible.

Mesosoma.— Length of mesosoma 1.5 times its height; side of pronotum smooth dorsally, anteriorly with short ruga, ventrally striate, with some crenulae posteriorly; precoxal sulcus shallowly impressed; mesopleuron distinctly granulate; pleural sulcus shallow dorsally, largely smooth; metapleuron granulate; basal 0.6 of notauli present, narrow; mesoscutum distinctly granulate; surface of propodeum distinctly granulate anteriorly and medially, largely smooth and with some rugae posteriorly, areola wide and short, and antero-laterally angulate (fig. 825) and median carina 0.55 times length of propodeum in lateral view.

Wings.— Fore wing: r somewhat shorter than width of pterostigma and emerging submedially from pterostigma (fig. 824); r:3-SR:SR1 = 7:9:38; 1-CU1:2-CU1 = 3:13; first subdiscal cell parallel-sided, open apically, CU1b absent (fig. 824); 2-SR:3-SR:r-m = 11:9:8. Hind wing: M+CU:1-M = 2:3.

Legs.— Length of femur, tibia and basitarsus of hind leg 3.5, 8.6 and 6.3 times their width, respectively; hind femur moderately robust (fig. 826); fore telotarsus somewhat enlarged and fore tarsus shortened (fig. 821); hind tibial spurs 0.2 and 0.3 times hind basitarsus, respectively.

Metasoma.— Length of first tergite 0.9 times its apical width, its surface granulate and distinctly longitudinally striate, as strong as its complete median carina; second and third tergites distinctly longitudinally striate and granulate, but third tergite weakly sculptured anteriorly and largely smooth posteriorly; second tergite slender, rather narrowly depressed anteriorly, and with nearly complete median carina, which is absent on third tergite (fig. 827); second metasomal suture medium-sized and curved; fourth tergite flat (fig. 823), largely smooth; length of ovipositor sheath 0.02 times fore wing, somewhat protruding beyond hypopygium; hypopygium medium-sized, apically truncate and long setose (fig. 823).

Colour.— Dark brown; scapus and pedicellus largely, head, mesosoma (but propodeum somewhat infuscate) and prothorax, yellowish; third tergite apically, and fourth tergite basally, orange-brown; four apical antennal segments pale brown; palpi, tegulae and metasoma, brownish-yellow; setae of vein C+SC+R of fore wing (except basally) dark brown; hind tarsus yellowish-brown; remainder of legs and of metasoma, brownish-yellow; pterostigma and veins, yellowish-brown; parastigma dark brown; wing membrane subhyaline.

Variation.— Antennal segments of ♀ 14(2), length of body 2.2-2.3 mm, and of fore wing 1.8-2.0 mm; ovipositor sheath of paratype completely retracted; scutellar sulcus of paratype somewhat narrower than in holotype; propodeum sometimes completely dark brown; paratypes have apical antennal segment brown and in four paratypes the four subapical segments are ivory; areola of propodeum sometimes rather angulate antero-laterally.

Distribution.— Panama.

Stiropius woldai spec. nov.
(figs 828-834)

Material.— Holotype, ♀ (RMNH), "Museum Leiden, M. Panama, Barro Colorado Island, 9°9'30"N-79°51'W, level I, 20-26.vii.1977, H. Wolda, at light". Paratypes (15 ♀♀ + 5 ♂♂, RMNH, topotypic): 1 ♀, 11-17.vii.1978, level III; 1 ♂, 23-29.v.1978; 2 ♀♀ + 1 ♂, 28.ii-6.iii.1978, level I; 1 ♀, 11-17.iv.1978, level III; 1 ♂, id., but level I; 2 ♀♀, 18-24.iv.1978, level I; 1 ♂, id., but level III; 1 ♀, 2-8.xi.1977, level I; 1 ♀, 6-12.vi.1978, level III; 1 ♀, 25-31.vii.1978, level I; 1 ♀, 28.iii-3.iv.1978, level III; 1 ♀, 27.vi-3.vii.1978, level II; 2 ♀♀, 7-13.iii.1978, level I; 1 ♂, 14-20.ix.1977, level III; 1 ♀, 7-13.iii.1978, level III; 1 ♀, 30.xi-7, level I.

Holotype, ♀, length of both body, and of fore wing 2.0 mm.

Head.— Antennal segments 14, length of third segment 1.1 times fourth segment, length of third, fourth and penultimate segments 3.7, 3.5 and 4.2 times their width, respectively; length of maxillary palp 0.9 times height of head; length of eye in dorsal view 5.5 times temple; temples directly narrowed posteriorly (fig. 833); OOL:diameter of ocellus:POL = 3:3:2; face and vertex superficially granulate; malar suture rather deep; clypeus medium-sized, just above lower level of eyes (fig. 831); length of malar space 0.7 times basal width of mandible.

Mesosoma.— Length of mesosoma 1.4 times its height; side of pronotum largely smooth, except some superficial micro-sculpture; precoxal sulcus complete, shallowly impressed; mesopleuron largely superficially granulate; pleural sulcus smooth; metapleuron granulate; notauli absent on disc, except for a shallow depression; mesoscutum finely granulate; surface of propodeum largely superficially granulate, rather shiny, areola slender, and antero-laterally arched (fig. 830) and median carina 0.5 times length of propodeum in lateral view.

Wings.— Fore wing: r about as long as width of pterostigma and emerging medially from pterostigma (fig. 832); r:3-SR:SR1 = 8:8:47; 1-CU1:2-CU1 = 2:17; first subdiscal cell somewhat widened, closed apically, CU1b present (fig. 832); 2-SR:3-SR:r-m = 15:8:8. Hind wing: M+CU:1-M = 5:7.

Legs.— Length of femur, tibia and basitarsus of hind leg 3.2, 8.4 and 4.3 times their width, respectively; hind femur moderately robust (fig. 828); fore telotarsus rather enlarged; hind tibial spurs 0.25 and 0.35 times hind basitarsus.

Metasoma.— Length of first tergite 0.9 times its apical width, its surface granulate; second and third tergites distinctly granulate, but third tergite largely smooth posteriorly; second tergite distinctly depressed anteriorly, antero-laterally with curved crest and with nearly complete median carina, which is absent on third tergite (fig. 834); second metasomal suture medium-sized, somewhat curved and largely smooth; fourth tergite flat (fig. 829), largely smooth; length of ovipositor sheath 0.08 times fore wing, distinctly protruding beyond hypopygium; hypopygium rather large, apically acute (fig. 829).

Colour.— Brownish-yellow; flagellum largely, parastigma, and apical 0.6 of ovipositor sheath, dark brown; palpi, tegulae, legs (except tarsi), and metasoma ventrally, pale yellowish; pterostigma, veins and its setae, pale yellowish or nearly subhyaline; wing membrane subhyaline.

Variation.— Antennal segments of ♀ 14(8), and of ♂ 13(1), length of body 1.7-2.0 mm, and of fore wing 1.5-2.0 mm; female-paratypes have also fifth and sixth tergites exposed; male has sometimes second tergite laterally and third tergite medially somewhat infusate; length of hind femur 3.1-3.2 times their width, respectively;

median carina of second tergite sometimes reduced.

Distribution.— Panama.

Notes.— I am pleased to name this species after Dr H. Wolda, who made an extensive and very valuable collection of Hymenoptera in Panama.

Some topotypic males with strongly swollen hind femora may belong to this species, but are excluded from the type series.

Tribe Yeliconini van Achterberg, 1991
(figs 321-344)

Yeliconini van Achterberg, 1991: 7, 1993: 16, 25.

***Yelicones* Cameron, 1887**
(figs 321-344)

Yelicones Cameron, 1887: 387; Shenefelt, 1975: 1261-1262; Togashi, 1980: 517; Papp, 1985: 360-364, 1989: 53, 1991: 156 (key to Old World spp.), 1992: 149; van Achterberg, 1991: 7; Belokobylskij, 1993b: 44 (key to Vietnamese spp.), 1993c: 92-95 (key to Palaeartic spp.). Type species (designated by Viereck, 1914): *Yelicones violaceipennis* Cameron, 1887 [examined].

Rhopalotoma Cameron, 1911: 318; Shenefelt, 1975: 1261. Type species (by monotypy): *Rhopalotoma crasitarsis* Cameron, 1911.

Pectenopius Fischer, 1961: 156; Marsh, 1979: 181 (synonymy with *Yelicones*). Type species (by original designation): *Pectenopius paradoxus* Fischer, 1961 [examined].

Diagnosis.— Hypoclypeal depression low and wide (fig. 344); labrum (largely) flat and more or less slanted backwards; occipital carina widely interrupted medio-dorsally; prosternum lamelliform, strongly protruding and visible in lateral view (fig. 326); transverse suture of mesoscutum widened in front of scutellar sulcus; propodeum with subbasal areola (fig. 332) or areola absent; second submarginal cell of fore wing small and vein r of fore wing longer than vein 2-SR (figs 321, 333); vein m-cu of hind wing distinct (fig. 321); fore tarsal segments comparatively wide (figs 328, 338); hind tarsus shortened (figs 331, 340); all tarsal claws coarsely pectinate (figs 327, 341); hind basitarsus with specialized area (fig. 330); dorsal carina of first metasomal tergite joined to enclose a triangular area (figs 324, 343); medio-basal area of second tergite present (fig. 324) or absent (fig. 343); ovipositor sheath short (hardly protruding beyond apex of metasoma) and slender (fig. 336).

Biology.— Parasites of Pyralidae.

Distribution.— Neotropical, South Nearctic, South Palaeartic, Oriental, Australian (including Papuan region).

Note.— Papp (1991) supplies a key to the *Yelicones* spp., excluding the Neotropical spp.; other Old World spp. that have been described subsequently have to be added (e.g. Papp, 1992).

In 1991 I included this genus in the Betylobraconinae because it does not fit well in the Rogadinae s.s. However, it still fits better in the Rogadinae (sensu lato!) because of its biology (mummification of the host larva: Čapek, 1970), long median carina of propodeum, dorsal carinae of first tergite united and enclosing an arched basal area (figs 324, 343) and the second tergite may have a comparatively large triangular medio-basal area (fig. 324). The aberrant hypoclypeal depression, venation and legs may be a secondary development. Therefore, I have included it again in the subfamily Rogadinae (van Achterberg, 1993).

Subfamily Vaepellinae Quicke, 1987
(figs 98-108)

Vaepellinae Quicke, 1987: 73; Quicke & van Achterberg, 1990: 44, 1993: 15.

Diagnosis.— Scapus strongly enlarged (fig. 101); antennal sockets much closer to each other than to eyes (fig. 99); hypoclypeal depression small (fig. 99); ocelli very small (fig. 100); maxillary palp with 5 segments (fig. 106); temple with specialized area ventrally (fig. 101); occipital and prepectal carinae absent (fig. 101); scutellar sulcus reduced, represented only by a narrow suture (fig. 103); first subdiscal cell of fore wing strongly narrowed distad (fig. 98); vein 3-M of fore wing largely sclerotized; second submarginal cell long (fig. 98); vein m-cu of hind wing absent; vein M+CU of hind wing about as long as vein 1-M (fig. 98); vein 1r-m of hind wing short; vein 1-M of ♀ slender, but widened in ♂ (Quicke, in litt.); femur about as wide as tibia (fig. 105); fourth tarsal segment and telotarsus rather robust (figs 105, 107); first tergite without dorsal carinae (fig. 104); hypopygium of ♀ large, acute apically and ovipositor rather long (figs 101, 102).

Distribution.— Afrotropical (one genus).

***Vaepellis* Quicke, 1987**
(figs 98-108)

Vaepellis Quicke, 1987: 74-75, figs 1-2; van Achterberg, 1993: 15, 106. Type species (by original designation): *Vaepellis varica* Quicke, 1987 [examined].

Diagnosis.— See subfamily diagnosis.

Biology.— Unknown; collected on a Loranthaceae (*Tapinanthus bangwensis*) in Ghana.

Distribution.— Afrotropical (only the type species known from West Africa).

Acknowledgements and abbreviations of depositories

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The following abbreviations of the depositories are used:

- AEI = American Entomological Institute, Gainesville, Florida.
ANIC = Australian National Insect Collection, CSIRO, Canberra.
BMNH = The Natural History Museum, London.
CNC = Canadian National Collection of Insects, Biological Resources Division Agriculture Canada, Ottawa.

INBIO= Instituto Nacional de Biodiversidad (National Biodiversity Institute of Costa Rica), San Jose, Costa Rica.

RMNH = Nationaal Natuurhistorisch Museum, Leiden.

RMSEL = Rocky Mountain Systematic Entomology Laboratory, University of Wyoming, Laramie, Wyoming.

USNM = National Museum of Natural History, Washington D.C.

ZIL = Zoological Institute, Lund.

ZMB = Zoologisches Museum der Humboldt-Universität, Berlin.

References

- Achterberg, C. van, 1976. A preliminary key to the subfamilies of the Braconidae (Hymenoptera).— Tijdschr. Ent. 119: 33-78, figs 1-123.
- Achterberg, C. van, 1980. Notes on some species of Braconidae (Hymenoptera) described by Hedwig from Iran & Afghanistan.— Ent. Ber., Amst. 40: 25-31, figs 1-18.
- Achterberg, C. van, 1982. A new genus of the Rogadinae-Lysitermini from Kazakhstan (Hymenoptera, Braconidae).— Ent. Ber., Amst. 42: 125-128, figs 1-11.
- Achterberg, C. van, 1984. Essay on the phylogeny of Braconidae (Hymenoptera: Ichneumonoidea).— Ent. Tidskr. 105: 41-58, figs 1-17.
- Achterberg, C. van, 1988a. Parallelisms in the Braconidae (Hymenoptera) with special reference to the biology.— Advances in Parasitic Hymenoptera Research: 85-115, figs 1-101.— Leiden.
- Achterberg, C. van, 1988b. Revision of the subfamily Blacinae Foerster (Hymenoptera, Braconidae).— Zool. Verh. Leiden 249: 1-324, figs 1-1250.
- Achterberg, C. van, 1990. Illustrated key to the subfamilies of the Holarctic Braconidae (Hymenoptera: Ichneumonoidea).— Zool. Med. Leiden 64: 1-20, figs 1-26.
- Achterberg, C. van, 1991. Revision of the genera of the Afrotropical and W. Palaearctic Rogadinae Foerster (Hymenoptera: Braconidae).— Zool. Verh. Leiden 273: 1-102, figs 1-390.
- Achterberg, C. van, 1993. Illustrated key to the subfamilies of the Braconidae (Hymenoptera: Ichneumonidae).— Zool. Verh. Leiden 283: 1-189, figs 1-66, photos 1-140, plates 1-102.
- Ashmead, W.H., 1900a. Classification of the Ichneumon flies, or the superfamily Ichneumonoidea.— Proc. U. S. natn. Mus. 23: 1-220.
- Ashmead, W.H., 1900b. Some new exotic parasitic Hymenoptera.— Ent. News 11: 623-630.
- Ashmead, W.H., 1905. Additions to the recorded hymenopterous fauna of the Philippine Islands, with descriptions of new species.— Proc. U.S. natn. Mus. 29: 957-971.
- Ashmead, W.H., 1906. Descriptions of new Hymenoptera from Japan.— Proc. U.S. natn. Mus. 30: 169-201.
- Barlin, M.R. & S.B. Vinson, 1979. The multiporous plate sensillum and its potential use in braconid systematics (Hymenoptera: Braconidae).— Can. Ent. 113: 931-938.
- Belokobylskij, S.A., 1984. O razdelenii triby Exothecini s.l. (Hymenoptera, Braconidae) na dve s opisaniem novogo roda i podroda.— Zool. Zh. 63: 1019-1026.
- Belokobylskij, S.A., 1986a. Novye vidy brakonidiz nadtriby Exothecidii (Hymenoptera, Braconidae) c juga dalnego Vostoka SSSR.— Syst. & Ekol. Nac. Dalnego Vostoka: 58-69, figs 1-30.
- Belokobylskij, S.A., 1986b. Obzor vidov rodov *Pambolus* Hal. i *Dimeris* Ruthe (Hymenoptera, Braconidae) Palearktiki.— Trudy zool. Inst. AN SSSR 159: 18-37, figs 1-71.
- Belokobylskij, S.A., 1986c. A new genus of the tribe Pambolini from Australia (Hymenoptera: Braconidae, Rogadinae).— Ent. Ber., Amst. 46: 86-88, figs 1-7.
- Belokobylskij, S.A. & V.I. Tobias, 1986. Doryctinae: p. 21-72. In: Medvedev, G.S. (ed.). Opredelitel Nasekomych Evropejskoi Tsasti SSSR 3, Peredpontdatokrylye 4.— Opr. Faune SSSR 145: 1-501, figs 1-263.
- Belokobylskij, S.A., 1988a. Brakonidy nadtriby Exothecidii (Hymenoptera, Braconidae, Doryctinae) ostroda Tajvan.— Trudy zool. Inst. AN SSSR 175: 3-37, figs 1-67.
- Belokobylskij, S.A., 1988b. Dva novych vida brakonid roda *Cedria* (Hymenoptera, Braconidae) iz Avstralii.— Zool. Zh. 67: 1583-1586, figs 1-9.
- Belokobylskij, S.A., 1989. Brakonidy triby Hormiini (Hymenoptera, Braconidae) Avstralii.— Ent. Obozr. 68: 376-392, figs 1-88.
- Belokobylskij, S.A., 1990a. Palearktitseskie vidy brakonid roda *Parahormius* (Hymenoptera, Braconidae).— Zool. Zh. 69: 59-65, figs 1-14.

150 van Achterberg. Generic revision of the subfamily Betylobraconinae. Zool. Verh. Leiden 298 (1995)

- Belokobyl'skij, S.A., 1990b. Materialy k faune brakonid nadtriby Exothecidii (Hymenoptera, Braconidae, Doryctinae) Vjetnama.— Trudy zool. Inst. AN SSSR 209: 115-140, figs 1-60.
- Belokobyl'skij, S.A., 1991. Novyi rod naezdnikov-brakonid triby Rhysipolini (Hymenoptera, Braconidae) iz Avstralii.— Ent. Obozr. 70: 642-645, figs 1-8.
- Belokobyl'skij, S.A., 1992. Brakonidy Triby Pambolini (Hymenoptera, Braconidae) Australii.— Ent. Obozr. 71: 179-198, figs 1-72.
- Belokobyl'skij, S.A., 1993a. O klassifikatsii i filogenii naezdnikov-brakonid podsemejstva Doryctinae i Exothecinae (Hymenoptera, Braconidae). Tsast 1. O klassifikatsii. 2.— Ent. Obozr. 72: 143-164, figs 1-178.
- Belokobyl'skij, S.A., 1993b. New taxonomic data on the braconid fauna (Hymenoptera Braconidae) of Vietnam.— Russ. ent. J. 2: 37-67, figs 1-125.
- Belokobyl'skij, S.A., 1993c. Contribution to the taxonomy of Braconidae (Hymenoptera) of the Russian Far East.— Russ. ent. J. 2: 87-103, figs 1-69.
- Belokobyl'skij, S.A., 1994a. K faune nidomalaiskich naezdnikov-brakonid trib Exothecini, Pambolini i Pentatermini (Hymenoptera, Braconidae).— Trudy zool. Inst. RAN 245[1992]: 125-173, figs 1-128.
- Belokobyl'skij, S.A., 1994b. Obzor naezdnikov-brakonid podsemejstva Doryctinae i Exothecinae (Hymenoptera, Braconidae) Dalnego Vostoka, Vostotsnoi Sibiri i Sopredelnykh territorij.— Trudy zapov. Dahursky, Kiev [= Hymenoptera Insects of Siberia and Far East Memoirs of the Dahursky Nature Reserve, Kiev] 3: 5-77, figs 1-4.
- Boucek, Z., 1956. On a new genus of Braconidae (Hymenoptera), with remarks on the wing venation.— Sborn. ent. Odd. nár. Mus. Praze 30: 441-446.
- Brues, C.T., 1923. *Termitobracon*, a termitophilous braconid from British Guiana.— Zoologica, N.Y. 3: 427-432.
- Cameron, P., 1883-1900. Biologia centrali-americana. Insecta, Hymenoptera.— 1: 1-487, pls 1-20.
- Cameron, P., 1911. On the Hymenoptera of the Georgetown Museum, British Guiana.— Timehri (3)1: 306-330.
- Čapek, M., 1970. A new classification of the Braconidae (Hymenoptera) based on the cephalic structures of the final instar larva and biological evidence.— Can. Ent. 102: 846-875.
- Cushman, R.A., 1923. A new subfamily of Braconidae (Hymenoptera) from termite nests.— Proc. ent. Soc. Wash. 25: 54-55.
- Edson, K.M. & S.B. Vinson, 1979. A comparative morphology of the venom apparatus of female braconids (Hymenoptera: Braconidae).— Can. Ent. 111: 1013-1024, figs 1-2, table 1.
- Enderlein, G., 1912. Zur Kenntnis der Spathiinen und einiger verwandter Gruppen.— Arch. Naturgesch. 78 (A):1-37.
- Fischer, M., 1961. Zwei neue Opiinen Gattungen (Hym., Braconidae).— Annln naturhist. Mus. Wien 64 [1960]: 154-158.
- Foerster, A., 1862. Synopsis der Familien und Gattungen der Braconen.— Verh. naturh. Ver. preus. Rheinl. 19: 225-288.
- Gahan, A.B., 1915. Revision of the North American ichneumon-flies of the subfamily Opiinae.— Proc. U.S. natn. Mus. 49: 63-95.
- Granger, C., 1949. Braconides de Madagascar.— Mem. Inst. scient. Madagascar A, 2: 1-428, figs 1-426.
- Haliday, A.H., 1933. An essay on the classification of the parasitic Hymenoptera of Britain, which correspond with the Ichneumonones minuti of Linnaeus.— Ent. Mag. 1: 259-276.
- He(d)qvist, K.-J., 1957. Studien über Braconiden. III. *Paracedria* n. gen., eine neue Gattung der Hormiinae aus Schweden.— Ent. Tidskr. 77: 219-220.
- Hedqvist, K.-J., 1963. Notes on Hormiinae with description of new genera and species (Hym., Ichneumonoidea, Braconidae).— Ent. Tidskr. 84: 30-61, figs 1-12.
- Hedwig, K., 1961. Ergebnisse der Deutschen Afghanistan-Expedition 1965 der Landessammlungen für Naturkunde Karlsruhe, Ichneumonidae, Braconidae (Hym.).— Beitr. naturk. Forsch. SüdWdtl. 19: 291-298, figs 1-2.
- Hellén, W., 1957. Zur Kenntnis der Braconiden (Hym.) Finnlands. I. Subfam. Braconinae (part.), Rhogadinae and Spathiinae.— Acta Soc. Fauna Flora fenn. 56: 1-59.
- Herrich-Schäffer, G.A.W., 1838. Faunae Insectorum Germaniae initiae oder Deutschlands Insecten. Hymenoptera.— Regensburg.
- Maetô, K., 1987. A comparative morphology of the male internal reproductive organs of the family Braconidae (Hymenoptera, Ichneumonoidea).— Kontyû 55: 32-42, figs 1-50.
- Marsh, P.M., 1968. The Nearctic Doryctinae, VI. The genera *Acrophasmus*, *Glyptocolastes*, *Doryctinus* and a new genus, *Stenocorse* (Hymenoptera: Braconidae).— Proc. ent. Soc. Wash. 70: 101-113, figs 1-24.

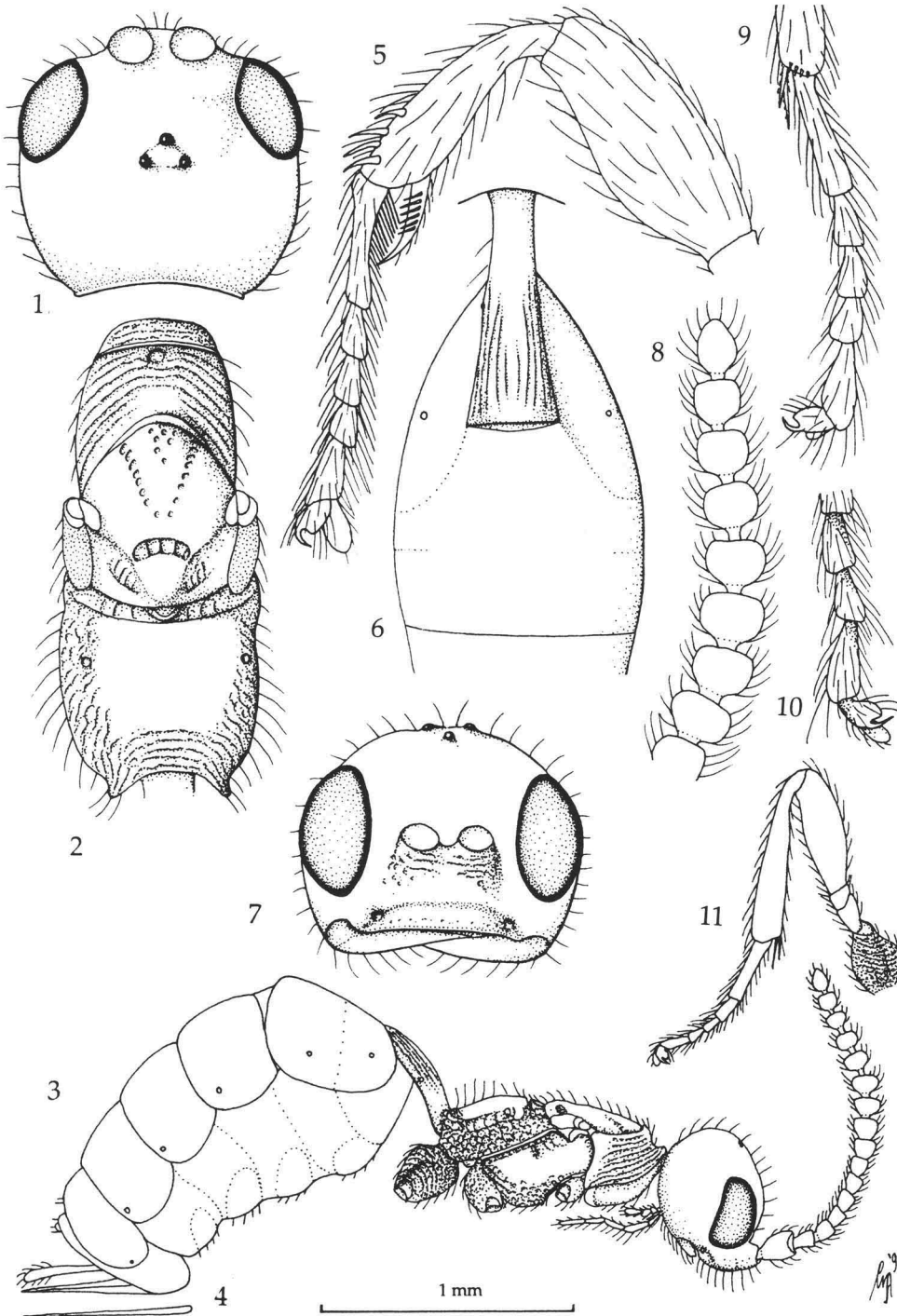
- Marsh, P.M., 1979. Braconidae, Aphididae. In: Krombein, K.V. et al. (eds). Catalog of Hymenoptera in America North of Mexico, 1: 144-313.— Washington D.C.
- Marshall, T.A., 1885. Monograph of the British Braconidae. Part 1.— Trans. R. ent. Soc. Lond. 1885: 1-280.
- Muesebeck, C.F.W., 1935. On the genus *Oncophanus* Foerster, with descriptions of two new related genera (Hymenoptera: Braconidae).— Anns ent. Soc. Am. 28: 241-250.
- Muesebeck, C.F.W., 1958. New Neotropical wasps of the family Braconidae (Hymenoptera) in the U.S. National Museum.— Proc. U.S. natn. Mus. 107: 405-461.
- Nees von Esenbeck, C.G., 1818. Appendix ad J.L.C. Gravenhorst conspectum generum et familiarum Ichneumonidum, genera et familias Ichneumonidum adscitorum exhibens.— Nova Acta Acad. Caesar. Leop. Carol. 9: 299-310.
- Nixon, G.E.J., 1940. New genera and species of Hormiinae, with a note on *Hormiopterus* Giraud (Hymenoptera, Braconidae).— Ann. Mag. Nat. Hist. (11)5: 473-492, figs 1-22.
- Nixon, G.E.J., 1950. New Indian Braconidae bred from Lepidopterous defoliators (Hymenoptera).— Anns Mag. Nat. Hist. (12)3: 453-474, figs 1-19.
- Papp, J., 1985. Braconidae (Hymenoptera) from Korea. VII.— Acta zool. hung. 31: 341-365, figs 1-37.
- Papp, J., 1986. Three new *Acanthormius* Ashmead species from India (Hymenoptera, Braconidae: Exothecinae).— Acta zool. hung. 32: 343-349, figs 1-12.
- Papp, J., 1989. A contribution to the braconid fauna of Israel (Hymenoptera), 2.— Israel J. Ent. 22 [1988]: 45-59, figs 1-8.
- Papp, J., 1990. New braconid wasps (Hymenoptera, Braconidae) in the Hungarian Natural History Museum, 1.— Anns hist.-nat. Mus. natn. hung. 82: 175-190, figs 1-46.
- Papp, J., 1991. New braconid wasps (Hymenoptera, Braconidae) in the Hungarian Natural History Museum, 2.— Anns hist.-nat. Mus. natn. hung. 83: 145-167, figs 1-92.
- Papp, J., 1992. New braconid wasps (Hymenoptera, Braconidae) in the Hungarian Natural History Museum, 3.— Anns hist.-nat. Mus. natn. hung. 84: 129-160, figs 1-98.
- Papp, J., 1993. New braconid wasps (Hymenoptera, Braconidae) in the Hungarian Natural History Museum, 4.— Anns hist.-nat. Mus. natn. hung. 84: 155-180, figs 1-79.
- Rasnitsyn, A.P. & M. Sharkey, 1988. New Eoichneumonidae from early Cretaceous of Siberia and Mongolia (Hymenoptera: Ichneumonoidea).— Advances in Parasitic Hymenoptera Research: 169-197, figs 1-21.— Leiden.
- Quicke, D.L.J., 1987. A new subfamily of Braconidae, the Vaepellinae, based on a new genus and species from Ghana (Insecta, Hymenoptera).— Zool. Scripta 16: 73-77, figs 1-2.
- Quicke, D.L.J. & C. van Achterberg, 1990. Phylogeny of the subfamilies of the family Braconidae (Hymenoptera: Ichneumonoidea).— Zool. Verh. Leiden 258: 1-95, figs 1-180.
- Quicke, D.L.J., L.C. Ficken & M.G. Fitton, 1992. New diagnostic ovipositor characters for doryctine wasps (Hymenoptera, Braconidae).— J. Nat. Hist. 26: 1035-1046, figs 1-28.
- Quicke, D.L.J., 1993. The polyphyletic origin of endoparasitism in the cyclostome lineages of Braconidae (Hymenoptera): a reassessment.— Zool. Med. Leiden 67: 159-177, figs 1-3, tables 1-2.
- Quicke, D.L.J., 1994. Phylogenetics and biological transitions in the Braconidae (Hymenoptera: Ichneumonoidea).— Norw. J. Agric. Sc. Suppl. 16: 155-162, fig. 1, table 1.
- Quicke, D.L.J., M.G. Fitton, J.R. Tunstead, S.N. Ingram & P.V. Gaitens, 1994. Ovipositor structure and relationships within the Hymenoptera, with special reference to the Ichneumonoidea.— J. Nat. Hist. 28: 635-682, figs 1-200, tables 1-2.
- Shaw, M.R. & T. Huddleston, 1991. Classification and biology of braconid wasps (Hymenoptera: Braconidae).— Handbk Ident. Br. Ins. 7(11): 1-126, figs 1-126.
- Shenefelt, R.D., 1975. Braconidae, 8.— Hym. Cat. (nov. ed.) 12: 1115-1262.
- Shenefelt, R.D. & P.M. Marsh, 1976. Braconidae, 9.— Hym. Cat. (nov. ed.) 13: 1263-1424.
- Shenefelt, R.D., 1978. Braconidae, 10.— Hym. Cat. (nov. ed.) 15: 1425-1872.
- Szépligeti, G.V., 1900. Braconiden aus Neu-Guinea in der Sammlung des Ungarischen National-Museums.— Természetr. Füz. 23: 49-65.
- Telenga, N.A., 1941. Hymenoptera 5(3). Fam. Braconidae 1.— Fauna Rossii (n. s.) 24: 1-465, figs 1-129.
- Tobias, V.I., 1962. Novyi rody naezdnikov-brakonid v faune SSR (Hym., Braconidae).— Zool. Zh. 41: 1190-1197.
- Tobias, V.I., [1967]1968. Voprosy klassifikatsii i filogenii sem. Braconidae (Hymenoptera).— Chteniya Pamyati N.A. Kholodkovskogo (Moscow-Leningrad): 3-43.
- Tobias, V.I., 1971. Obzor naezdnikov-brakonid (Hymenoptera) fauny SSSR.— Trudy vses. ent. Obsch. 54: 156-268, figs 1-112. Translation (1975): A review of the Braconidae (Hymenoptera) of the USSR: 1-164, figs 1-112.— New Delhi.

- 152 van Achterberg. Generic revision of the subfamily Betylobraconinae. Zool. Verh. Leiden 298 (1995)
- Tobias, V.I. & J.I. Alexeev, 1973. Novyj rod naezdnikov-brakonid (Hymenoptera, Braconidae) so sred-neaziatsko-juzhnoafrikanskim arealom.— Zool. Zh. 52: 286-289, figs 1-6.
- Tobias, V.I., 1974. K poznaniju brakonid (Hymenoptera, Braconidae) Mongolii.— Nasekomye Mongolii 2: 261-274, figs 1-17.
- Tobias, V.I., 1976. Brakonidy Kavkaza (Hymenoptera, Braconidae).— Opred. Faune SSSR 110: 1-287, pls 1-67.
- Tobias, V.I., 1979. Dva novychi maloizvestnoe podsemejstva brakonid (Hymenoptera, Braconidae) iz Avstralii.— Ent. Obozr. 58: 128-142, figs 1-37.
- Tobias, V.I., 1986. Rogadinae: p. 72-85. In: Medvedev, G.S. (ed.). Opredelitel nasekomykh Evropeiskoi tchasti SSSR 3, Perepontchatokrylye 4.— Opr. Faune SSSR 145: 1-501, figs 1-263.
- Togashi, I., 1980. Discovery of the genus *Yelicones* Cameron (Hymenoptera, Braconidae) from Japan.— Kontyû 48: 517-520.
- Viereck, H.L., 1911. Descriptions of six new genera and thirty-one new species of ichneumon flies.— Proc. U. S. nat. Mus. 40: 170-196
- Viereck, H.L., 1912. Descriptions of one new family, eight new genera and thirty-three new species of Ichneumon flies.— Proc. U. S. natn. Mus. 43: 575-593.
- Wharton, R.A., S.R. Shaw, M.J. Sharkey, D.B. Wahl, J.B. Woolley, J.B. Whitfield, P.M. Marsh & W. Johnson, 1992. Phylogeny of the subfamilies of the family Braconidae (Hymenoptera: Ichneumonoidea): a reassessment.— Cladistics 8: 199-235, figs 1-8.
- Wharton, R.A., 1993. Review of the Hormiini (Hymenoptera: Braconidae) with a description of new taxa.— J. Nat. Hist. 27: 107-171, figs 1-95.
- Whitfield, J.B., 1988. Revision of the Nearctic species of the genus *Stiropius* Cameron (= *Bucculatriplex* Auct.) with the description of a new related genus (Hymenoptera: Braconidae).— Syst. Ent. 13: 373-385, figs 1-14.
- Whitfield, J.B., 1990. Phylogenetic review of the *Stiropius* group of genera (Hymenoptera: Braconidae, Rogadinae) with description of a new neotropical genus.— Proc. ent. Soc. Wash. 92: 36-43, figs 1-10.
- Whitfield, J.B. & D.L. Wagner, 1991. Annotated key to the genera of Braconidae (Hymenoptera) attacking leafmining Lepidoptera in the Holarctic region.— J. Nat. Hist. 25: 733-754, figs 1-49.
- Whitfield, J.B., 1992. The polyphyletic origin of endoparasitism in the cyclostome lineages of Braconidae (Hymenoptera).— Syst. Ent. 17: 273-286, figs 1-6, tables 1-4.
- Wilkinson, D.S., 1934. On two new Braconid genera from India (Hymenoptera).— Stylops 3: 80-84.

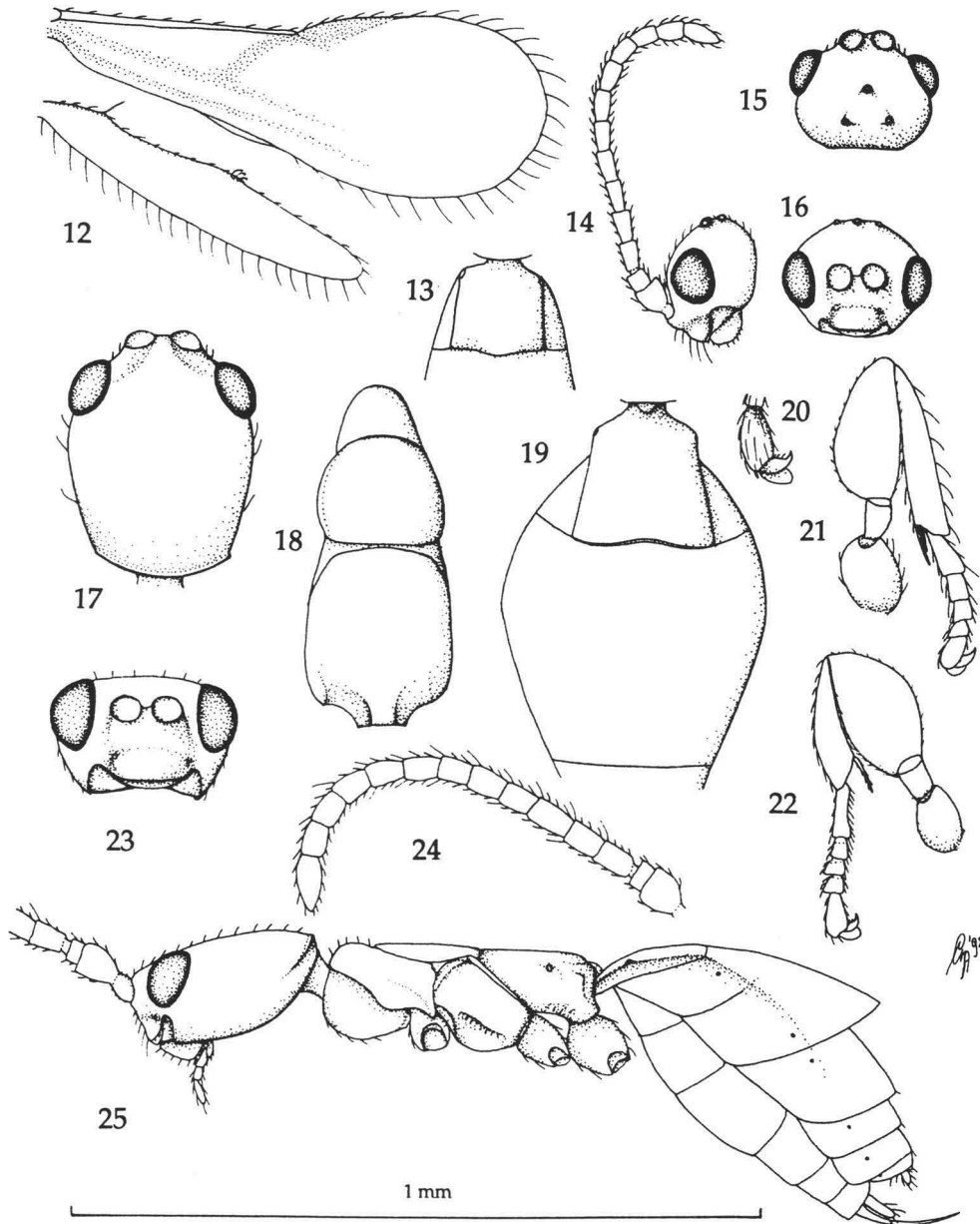
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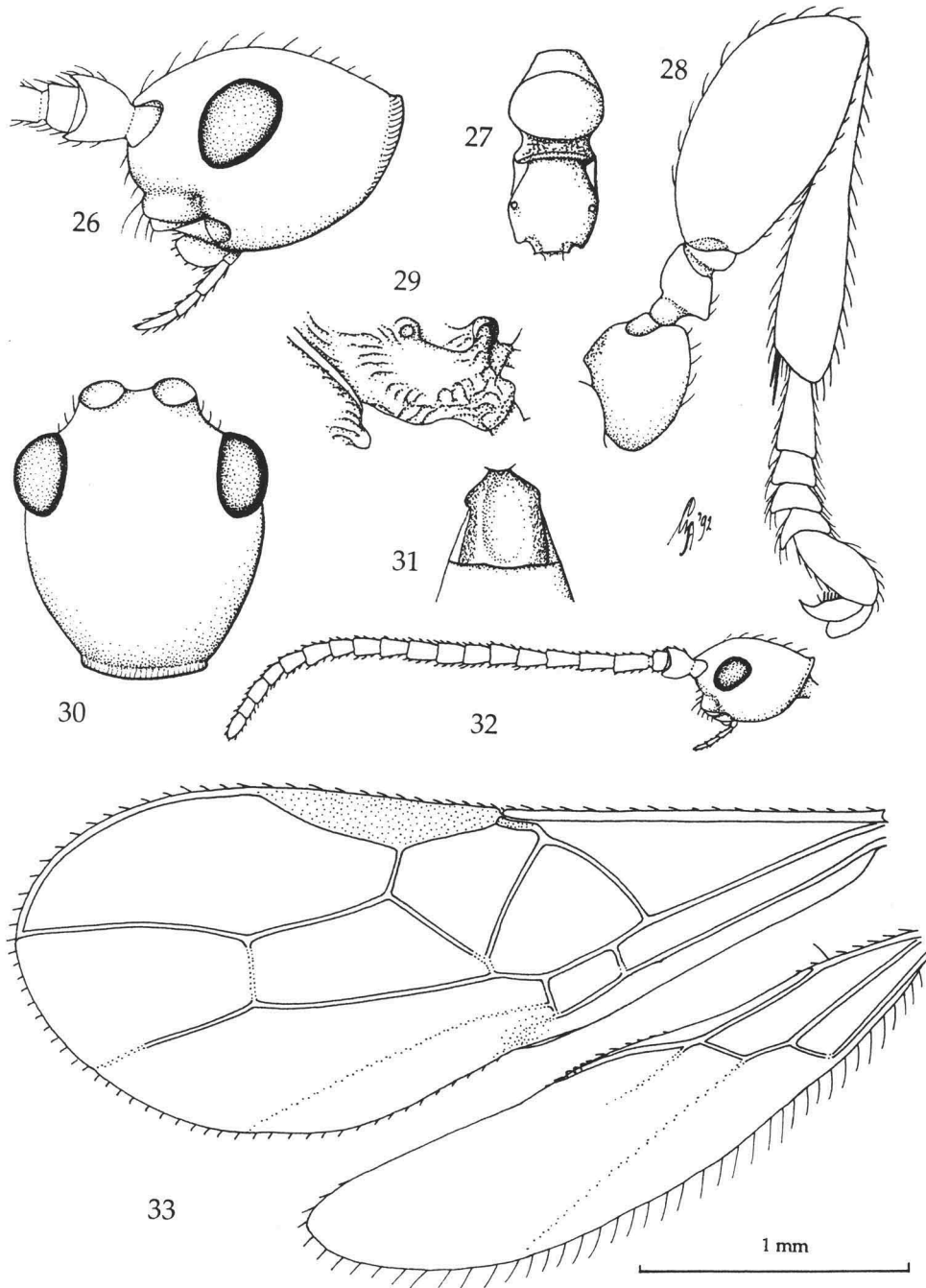
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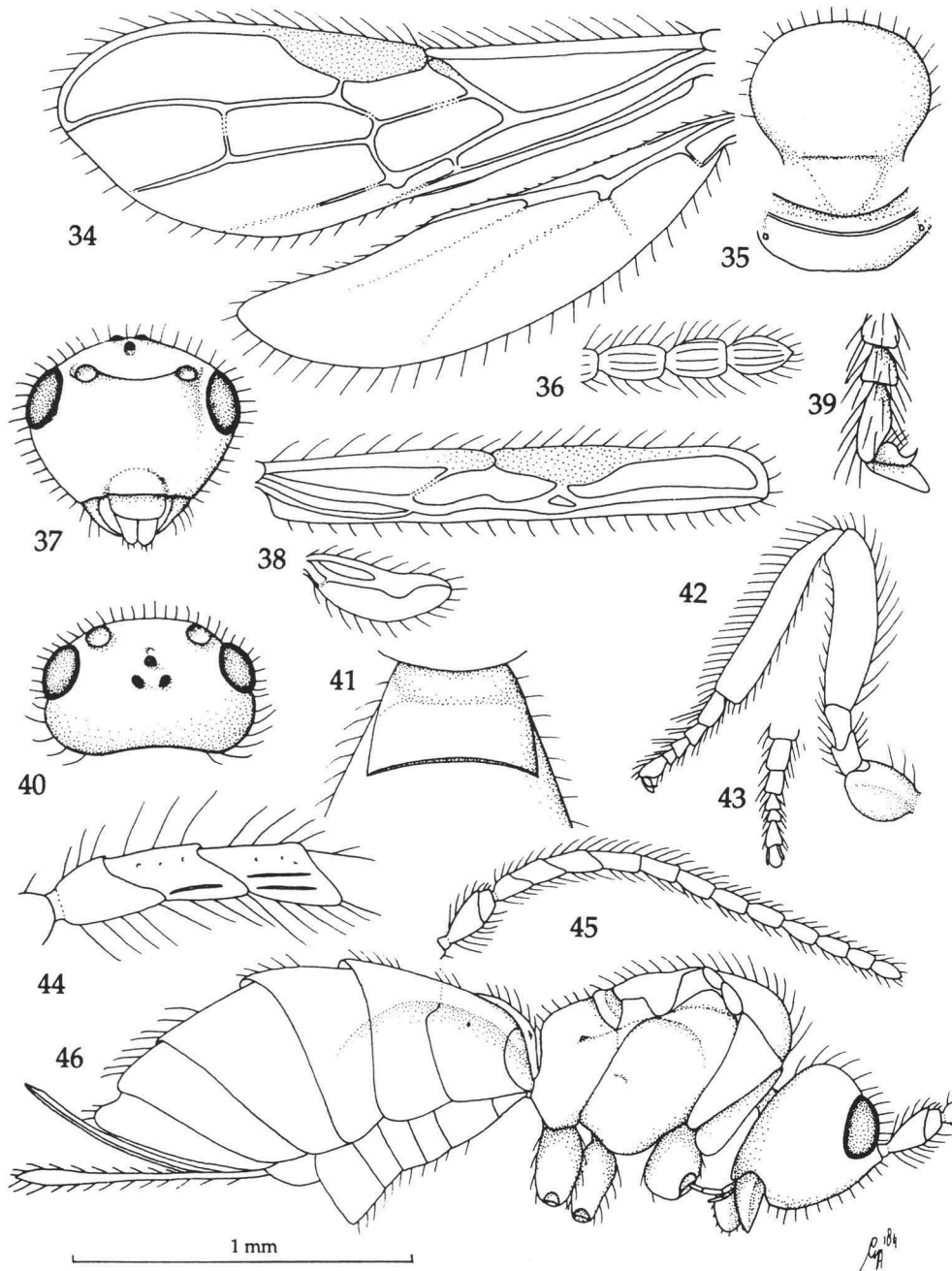
Figs 1-11, *Mannokeraia apterus* gen. nov. & spec. nov., ♀, holotype. 1, head, dorsal aspect; 2, mesosoma, dorsal aspect; 3, habitus, lateral aspect; 4, ovipositor, ventral aspect; 5, fore tarsus, lateral aspect; 6, first-third metasomal tergites, dorsal aspect; 7, head, frontal aspect; 8, apex of antenna; 9, middle tarsus, lateral aspect; 10, outer hind claw; 11, hind leg 1, 2, 6, 7: 2.2 × scale-line; 3, 4, 11: 1.0 ×; 5, 9, 10: 3.3 ×; 8: 2.5 ×.



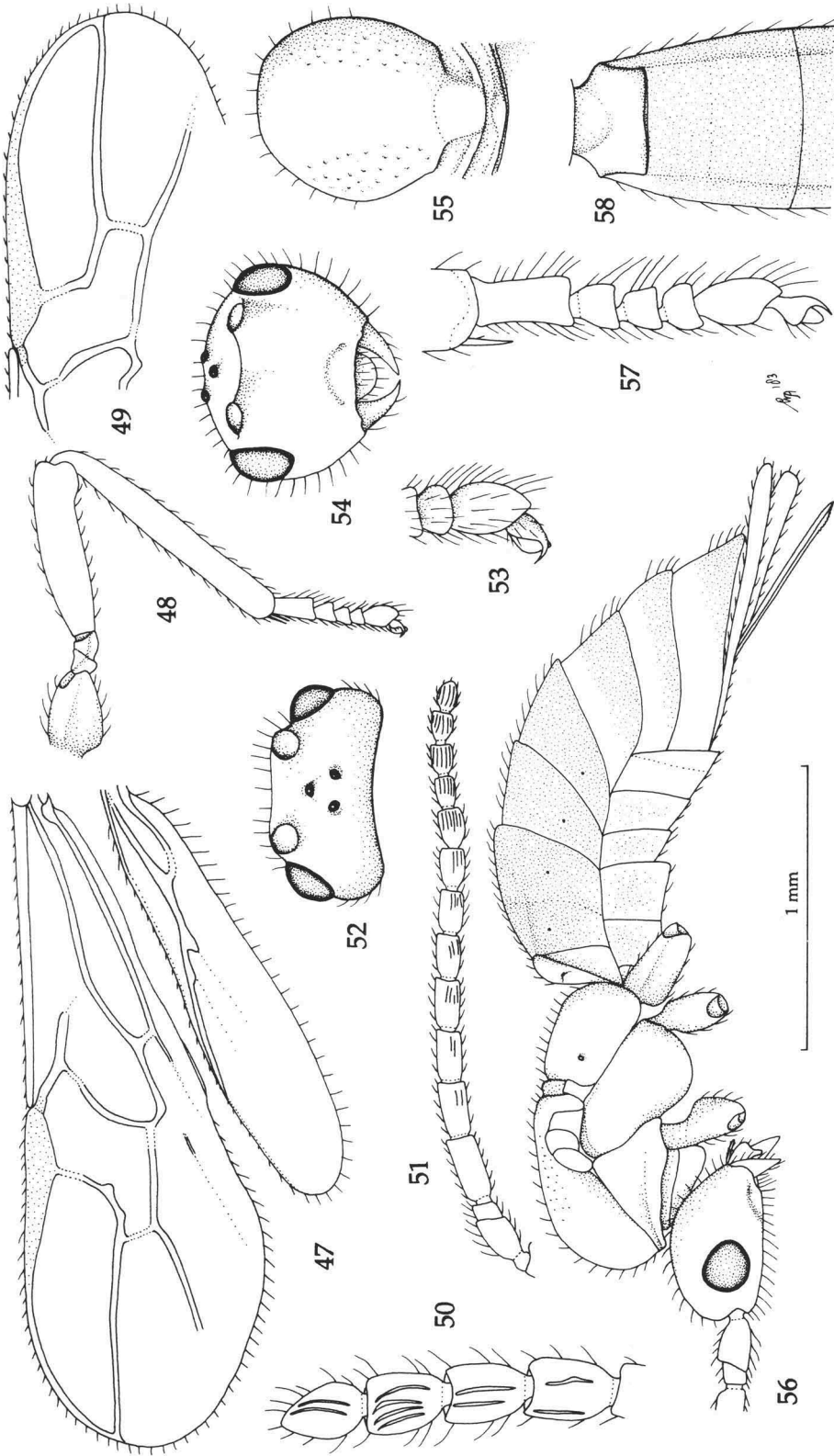
Figs 12-25, *Masonia prognatha* gen. nov. & spec. nov., ♀, holotype, but 12-16 of ♂, paratype. 12, wings; 13, first metasomal tergite, dorsal aspect; 14, head, lateral aspect; 15, 17, head, dorsal aspect; 16, 23, head, frontal aspect; 18, mesosoma, dorsal aspect; 19, first-third metasomal tergites, dorsal aspect; 20, middle claw; 21, hind leg; 22, fore leg; 24, antenna; 25, habitus, lateral aspect. 12, 14-16, 21, 22, 24, 25: 1.0 × scale-line; 13, 17-20, 23: 1.2 ×.



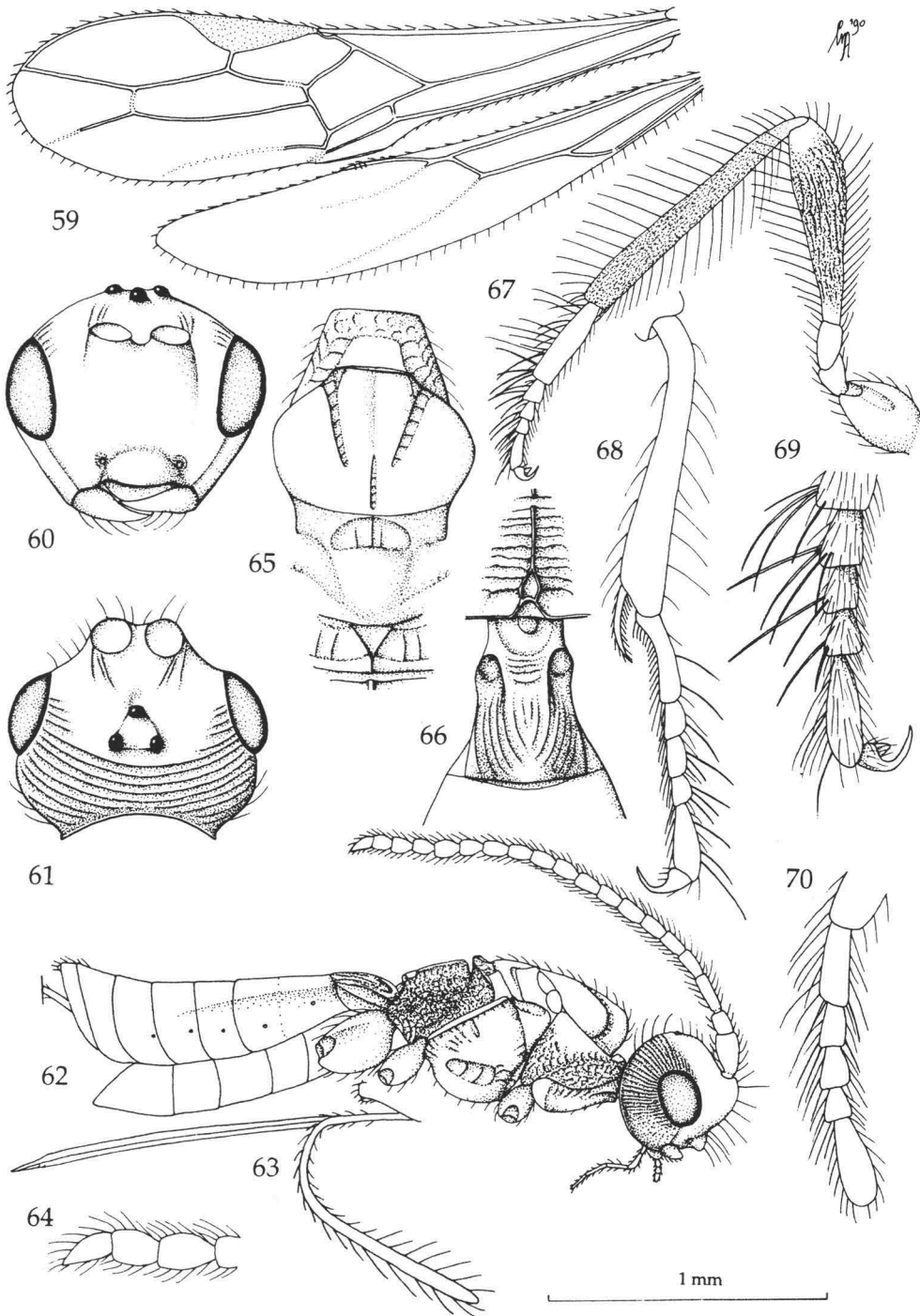
Figs 26-32, *Masonia bulbofemoralis* gen. nov. & spec. nov., ♀, holotype; fig. 33, *Hormiitis elliptivalva* spec. nov., ♀, holotype. 26, head, lateral aspect; 27, mesosoma, dorsal aspect; 28, hind leg; 29, metapleuron and propodeal tubercles, lateral aspect; 30, head, dorsal aspect; 31, first metasomal tergite, dorsal aspect; 32, head and antenna, lateral aspect; 33, wings. 26, 28-30: 2.5 × scale-line; 27, 31, 32: 1.0 ×; 33: 1.3 ×.



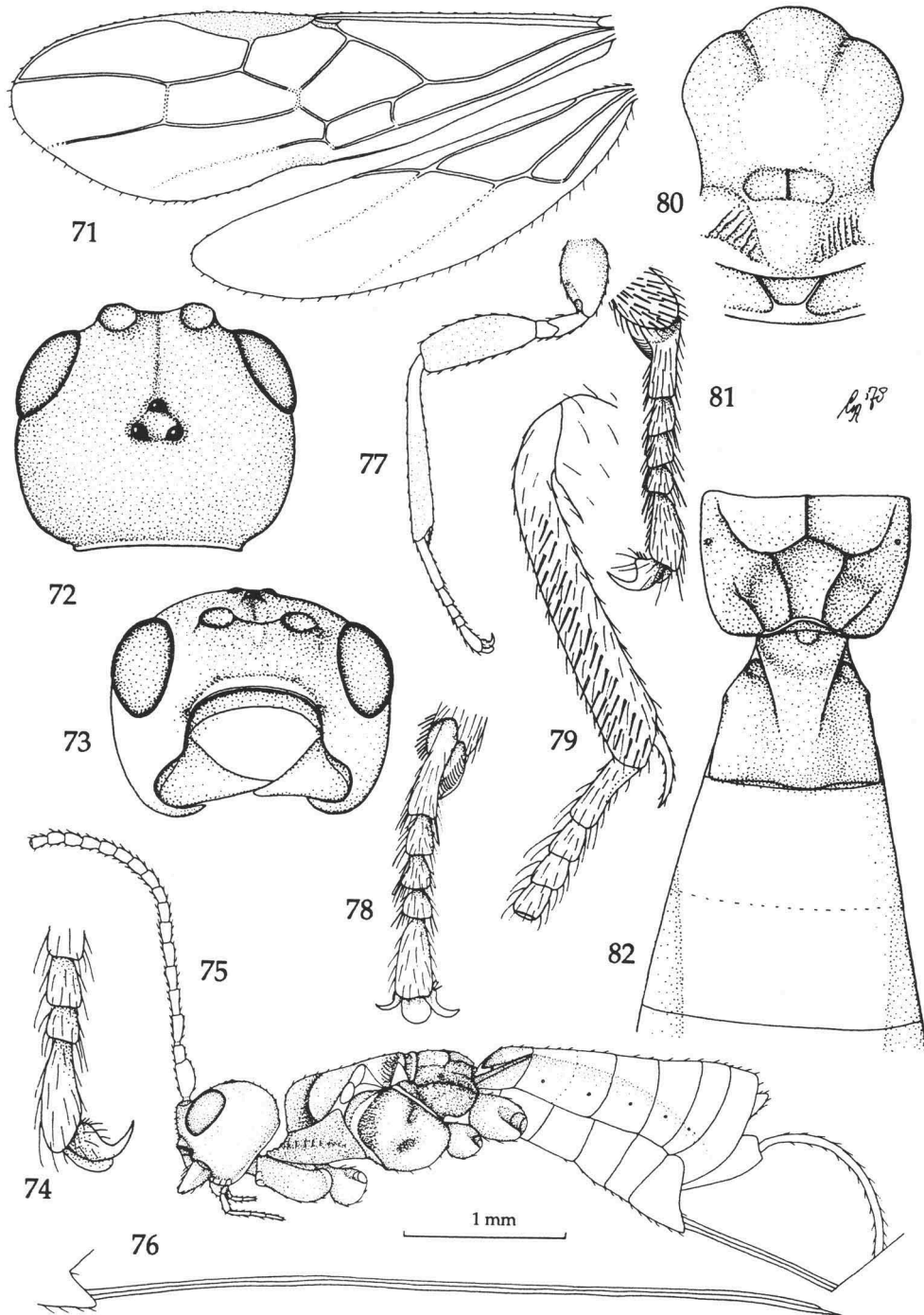
Figs 34-46, *Termitobracon emersoni* Brues, ♀, Panama, Barro Colorado Island, but 38 of ♂, Guyana, Kartabo. 34, 38, wings; 35, mesosoma, dorsal aspect; 36, apex of antenna; 37, head, frontal aspect; 39, hind claw; 40, head, dorsal aspect; 41, first metasomal tergite, dorsal aspect; 42, hind leg; 43, hind tarsus, dorsal aspect; 44, third-sixth antennal segments, lateral aspect; 45, antenna; 46, habitus, lateral aspect. 34, 35, 37, 38, 40-43, 45, 46: 1.0 × scale-line; 36, 39, 44: 2.5 ×.



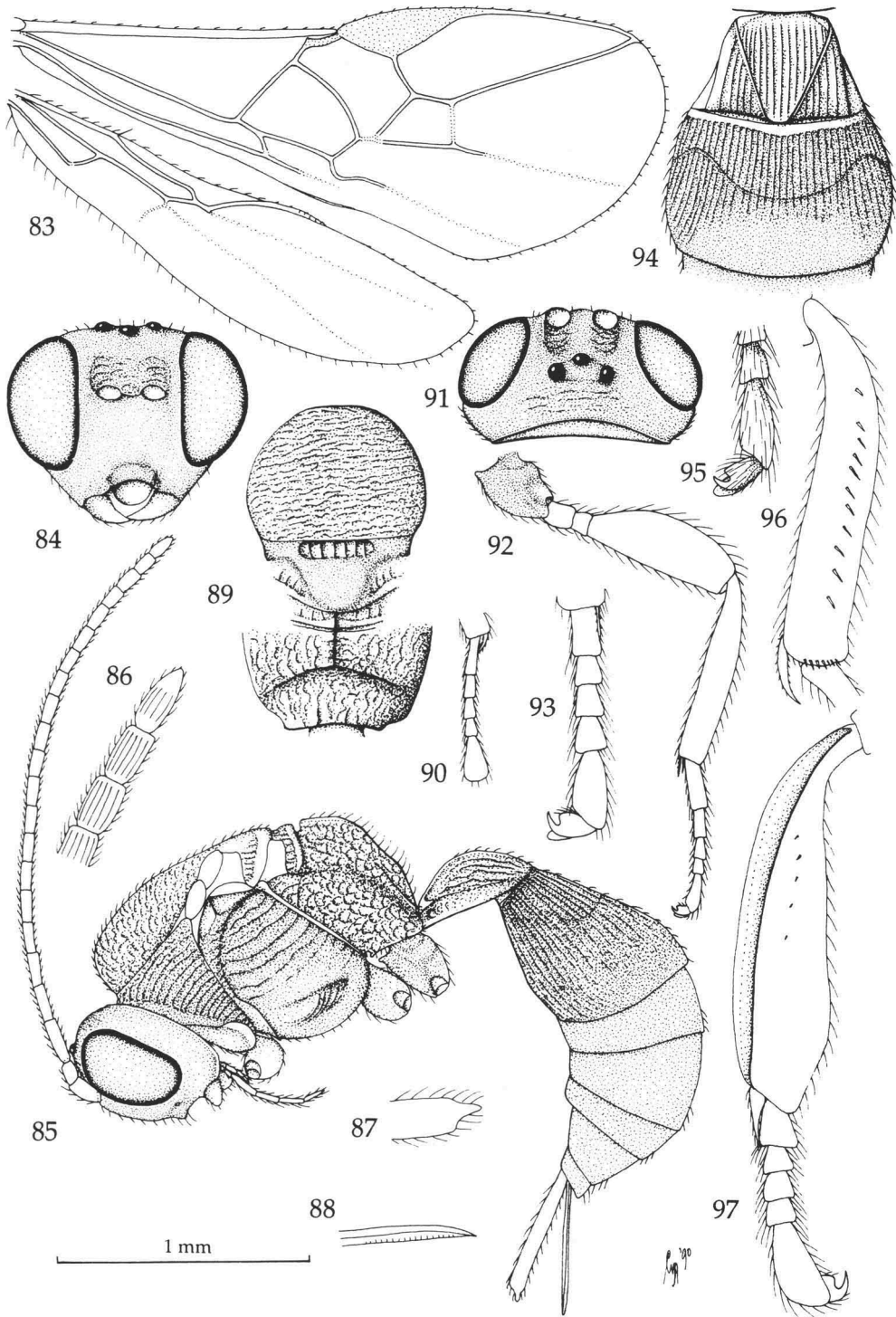
Figs 47-58, *Ypsistocerus mami* Cushman, ♀, holotype. 47, left wings; 48, hind leg; 49, detail of right fore wing; 50, apex of antenna; 51, antenna; 52, head, dorsal aspect; 53, hind claw; 54, mesosoma, dorsal aspect; 55, mesosoma, frontal aspect; 56, habitus, dorsal aspect; 57, fore tarsus, lateral aspect; 58, first-third metasomal tergites, dorsal aspect. 47-49, 51, 56: 1.0 × scale-line; 50, 53, 57: 2.5 ×; 52, 54, 55, 58: 1.1 ×.



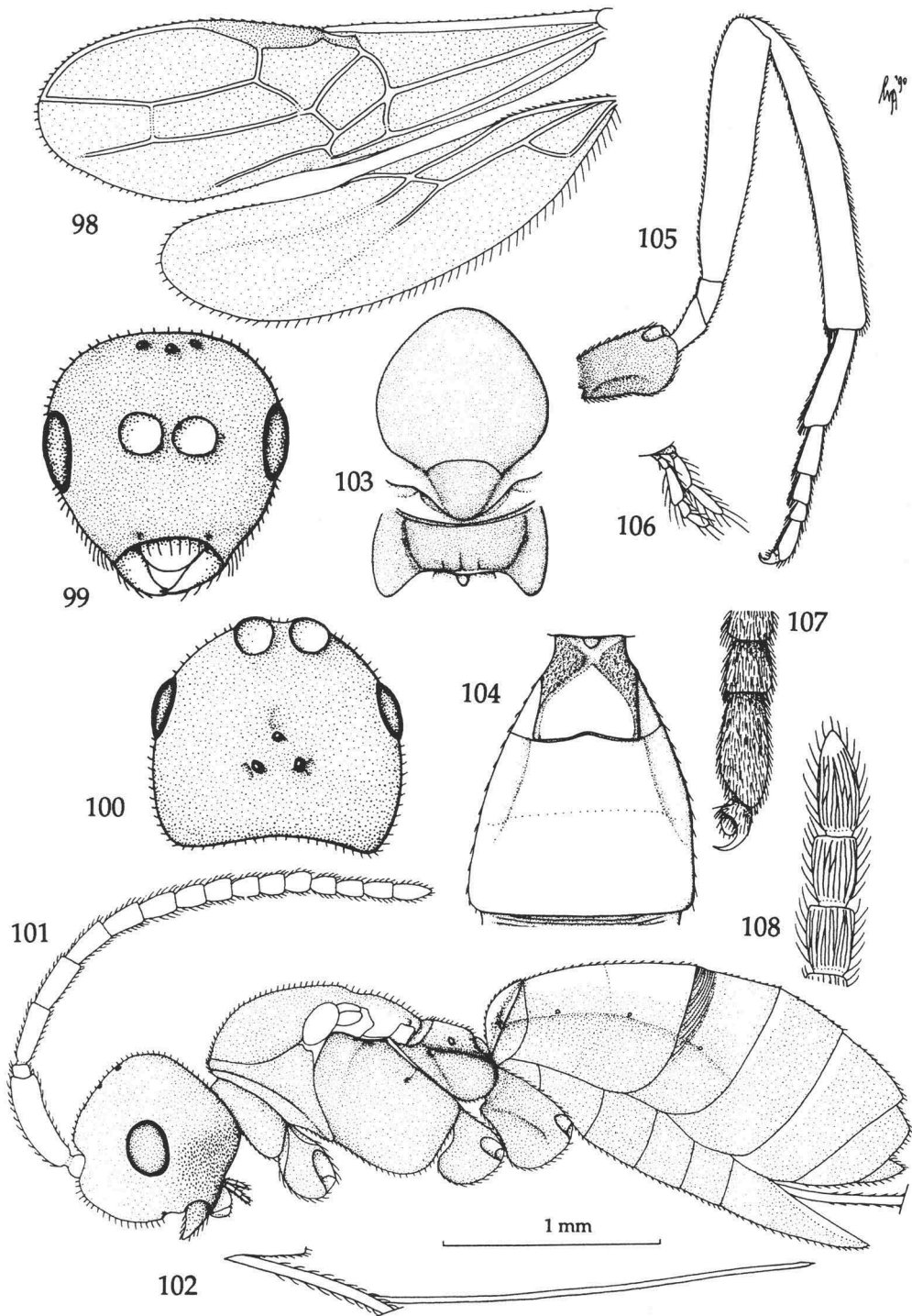
Figs 59-70, *Anachyra setosipes* gen. nov. & spec. nov., ♀, holotype. 59, wings; 60, head, frontal aspect; 61, head, dorsal aspect; 62, habitus, lateral aspect; 63, ovipositor; 64, apex of antenna; 65, thorax, dorsal aspect; 66, propodeum and first metasomal tergite, dorsal aspect; 67, hind leg; 68, fore tibia and tarsus, lateral aspect; 69, inner hind claw; 70, middle tarsus, dorsal aspect. 59, 62, 63, 67: 1.0 × scale-line; 60, 61, 65, 66: 1.7 ×; 64, 68-70: 2.5 ×.



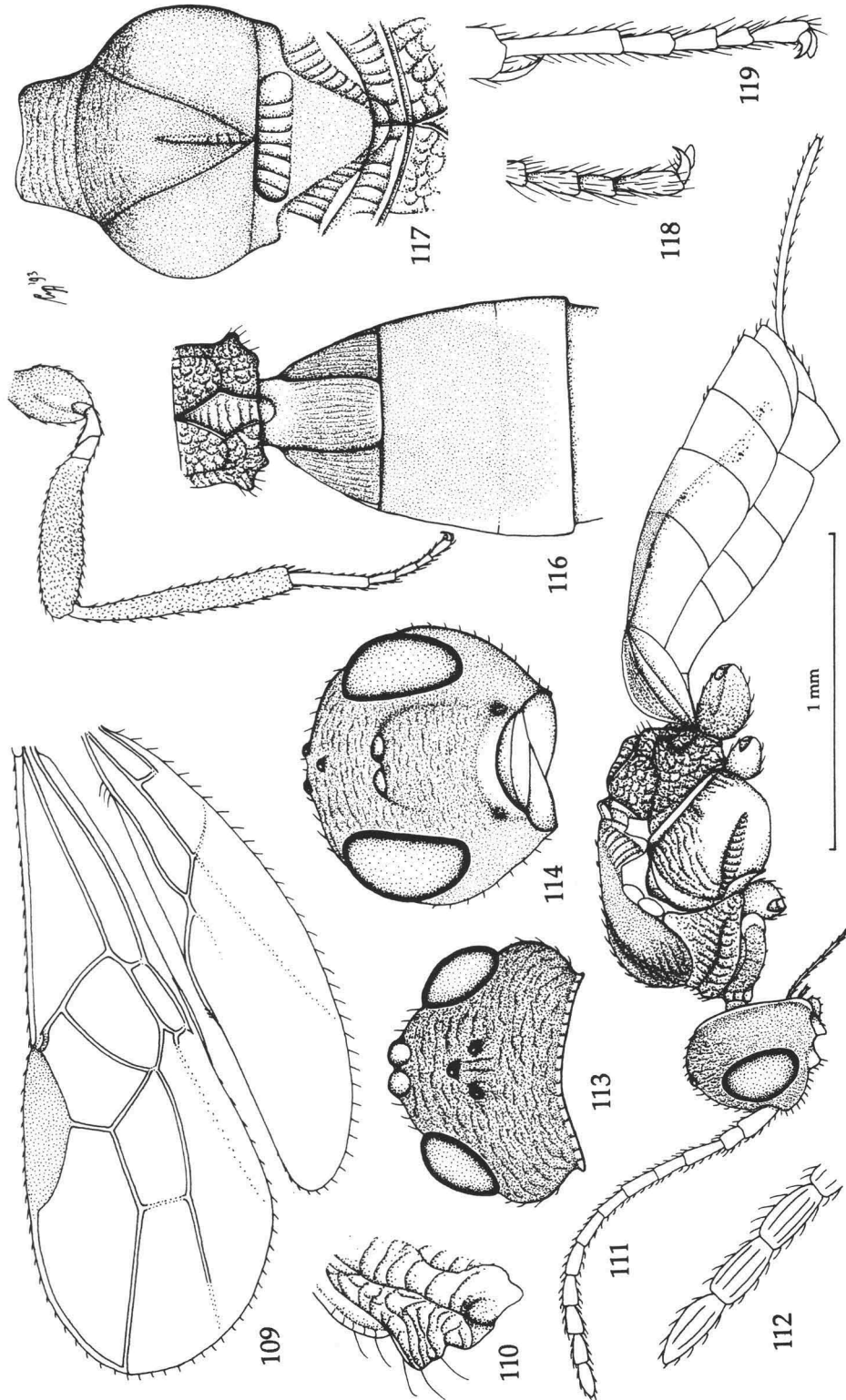
Figs 71-82, *Doryctomorpha antipoda* Ashmead, ♀, holotype, but 78, 81 of ♀, New Zealand, Mistletoe Bay. 71, wings; 72, head, dorsal aspect; 73, head, frontal aspect; 74, inner hind claw; 75, habitus, lateral aspect; 76, ovipositor; 77, hind leg; 78, fore tarsus, dorsal aspect; 79, fore tibia and tarsus, lateral aspect; 80, thorax, dorsal aspect; 81, fore tarsus, lateral aspect; 82, propodeum, first-third metasomal tergites, dorsal aspect. 71, 75-77: 1.0 × scale-line; 72, 73, 80, 82: 2.1 ×; 74, 79: 35 ×; 78, 81: 2.5 ×.



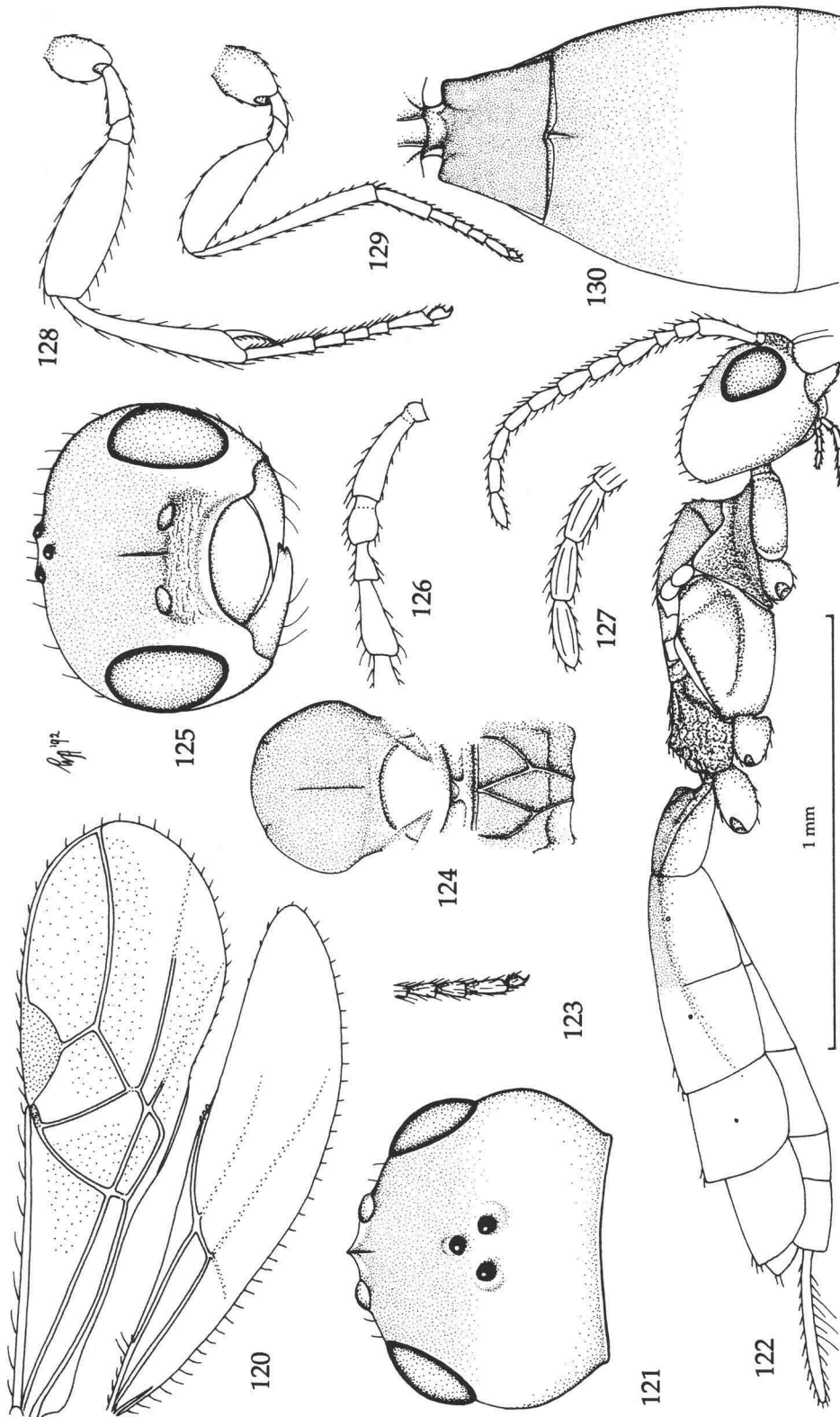
Figs 83-97, *Stenocorse bruchivora* (Crawford), ♀ (but 97 of ♂), Mexico, Morelos. 83, wings; 84, head, frontal aspect; 85, habitus, lateral aspect; 86, apex of antenna; 87, apex of ovipositor sheath; 88, apex of ovipositor, lateral aspect; 89, mesosoma, dorsal aspect; 90, fore tarsus, dorsal aspect; 91, head, dorsal aspect; 92, hind leg; 93, middle tarsus, lateral aspect; 94, first-third metasomal tergites, dorsal aspect; 95, outer hind claw; 96, fore tibia, frontal aspect; 97, fore tibia and tarsus of ♂, inner lateral aspect. 83, 85, 89, 92, 94: 1.0 × scale-line; 84, 90, 91: 1.2 ×; 86-88, 93, 95: 2.5 ×; 96, 97: 2.9 ×.



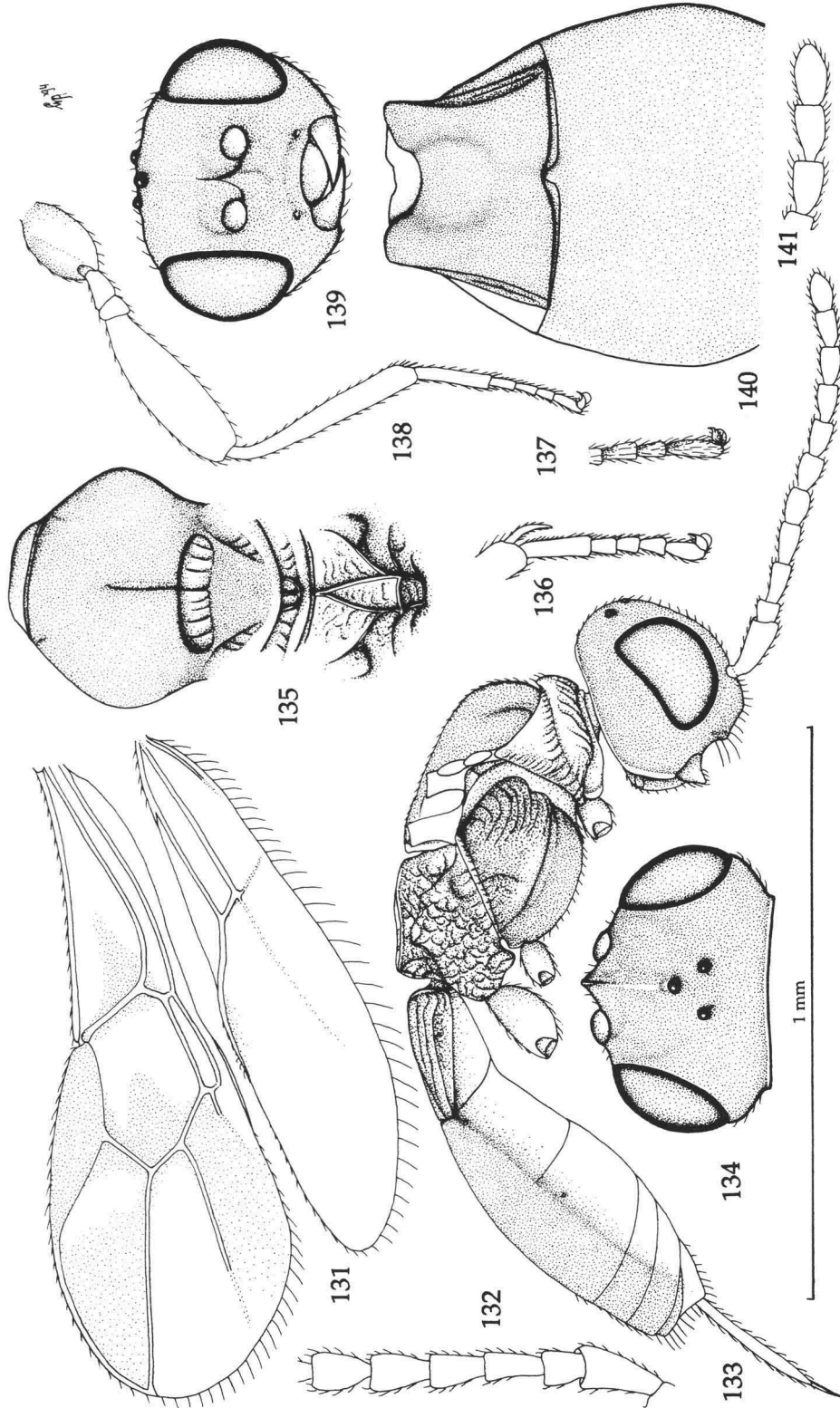
Figs 98-108, *Vaepellis varica* Quicke, ♀, holotype. 98, wings; 99, head, frontal aspect; 100, head, dorsal aspect; 101, habitus, lateral aspect; 102, ovipositor, lateral aspect; 103, mesosoma, dorsal aspect; 104, first-third metasomal tergites, dorsal aspect; 105, hind leg; 106, palpi; 107, outer hind claw; 108, apex of antenna. 98-105: 1.0 × scale-line; 106-108: 2.5 ×.



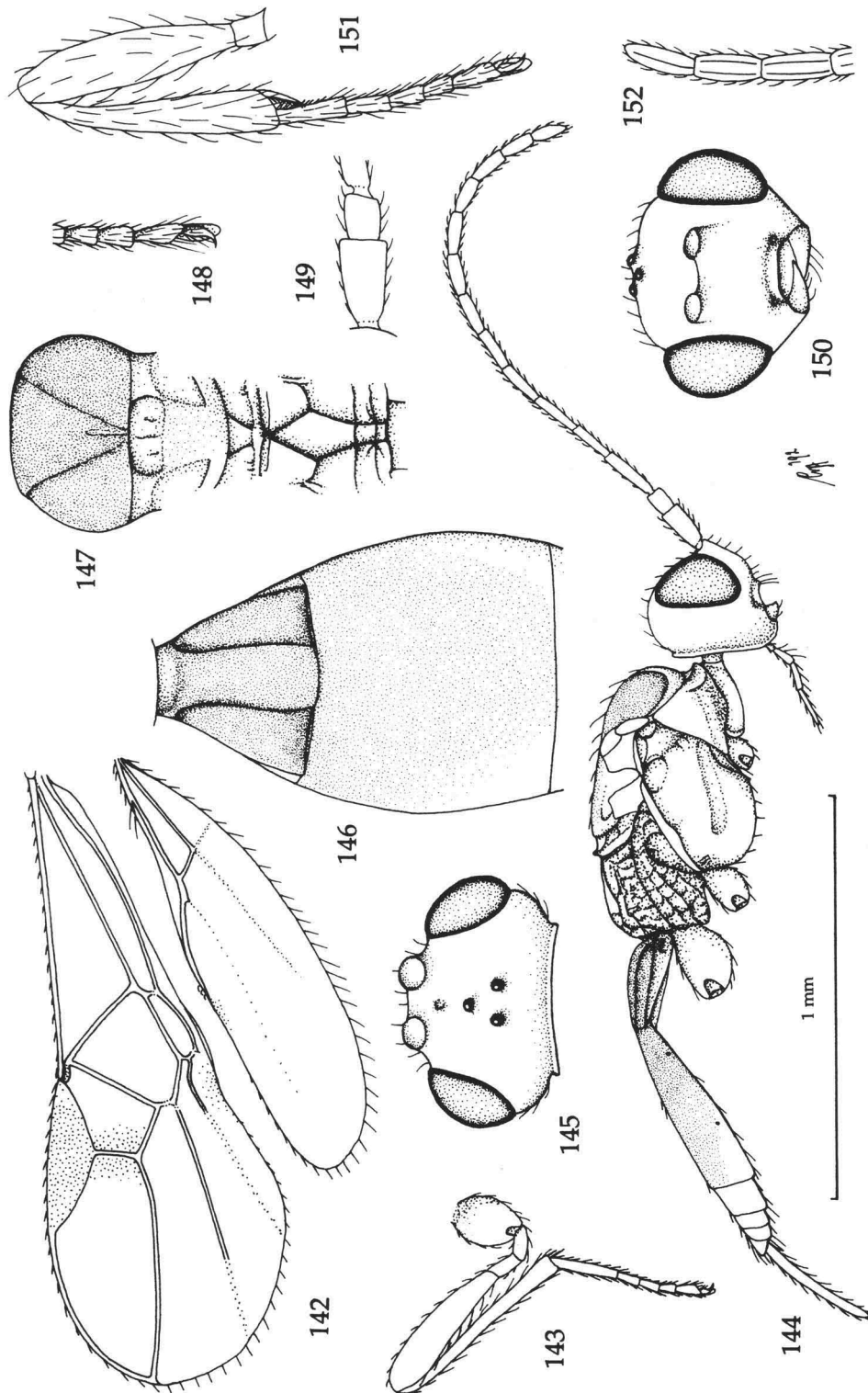
Figs 109-119, *Chremylus elaphus* Haliday, ♀, Netherlands, Waarder. 109, wings; 110, detail of propodeal tubercle, ventro-lateral aspect; 111, habitus, lateral aspect; 112, apex of antenna; 113, head, dorsal aspect; 114, head, frontal aspect; 115, hind leg; 116, propodeum, first-third metasomal tergite, dorsal aspect; 117, thorax, dorsal aspect; 118, outer hind claw; 119, fore tarsus, lateral aspect. 109, 111, 115, 116: 1.0 × scale-line; 110, 112, 118, 119: 2.5 ×; 113, 114, 117: 1.6 ×.



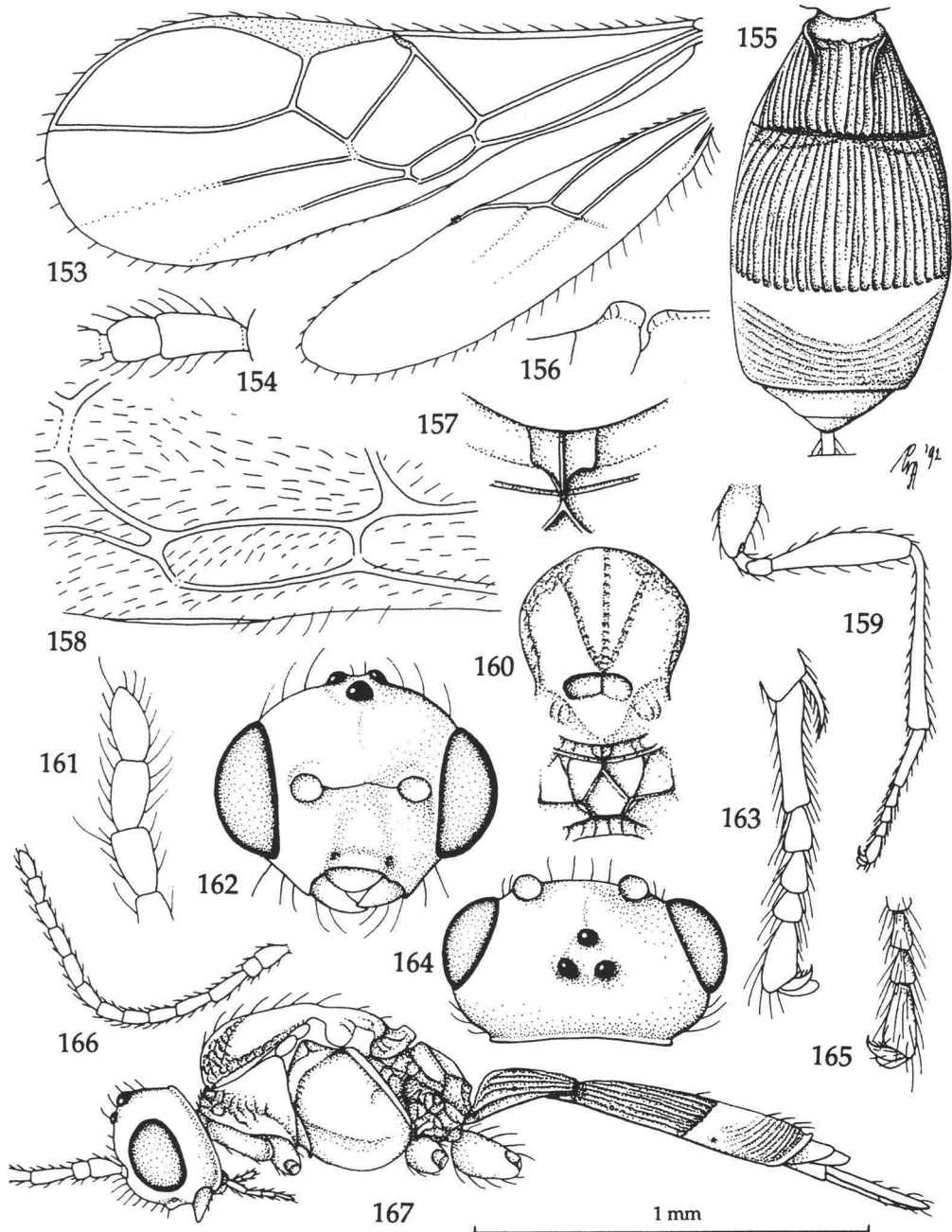
Figs 120-130, *Pseudochremylus angulifer* gen. nov. & spec. nov., ♀, holotype. 120, wings, dorsal aspect; 121, habitus, dorsal aspect; 122, head, dorsal aspect; 123, outer hind claw; 124, mesosoma, dorsal aspect; 125, head, frontal aspect; 126, base of antenna; 127, hind leg; 128, apex of antenna; 129, fore leg; 130, first-third metasomal tergites, dorsal aspect. 120, 122, 129: 1.0 × scale-line; 121, 123, 125-128: 1.7 ×; 124, 130: 1.1 ×.



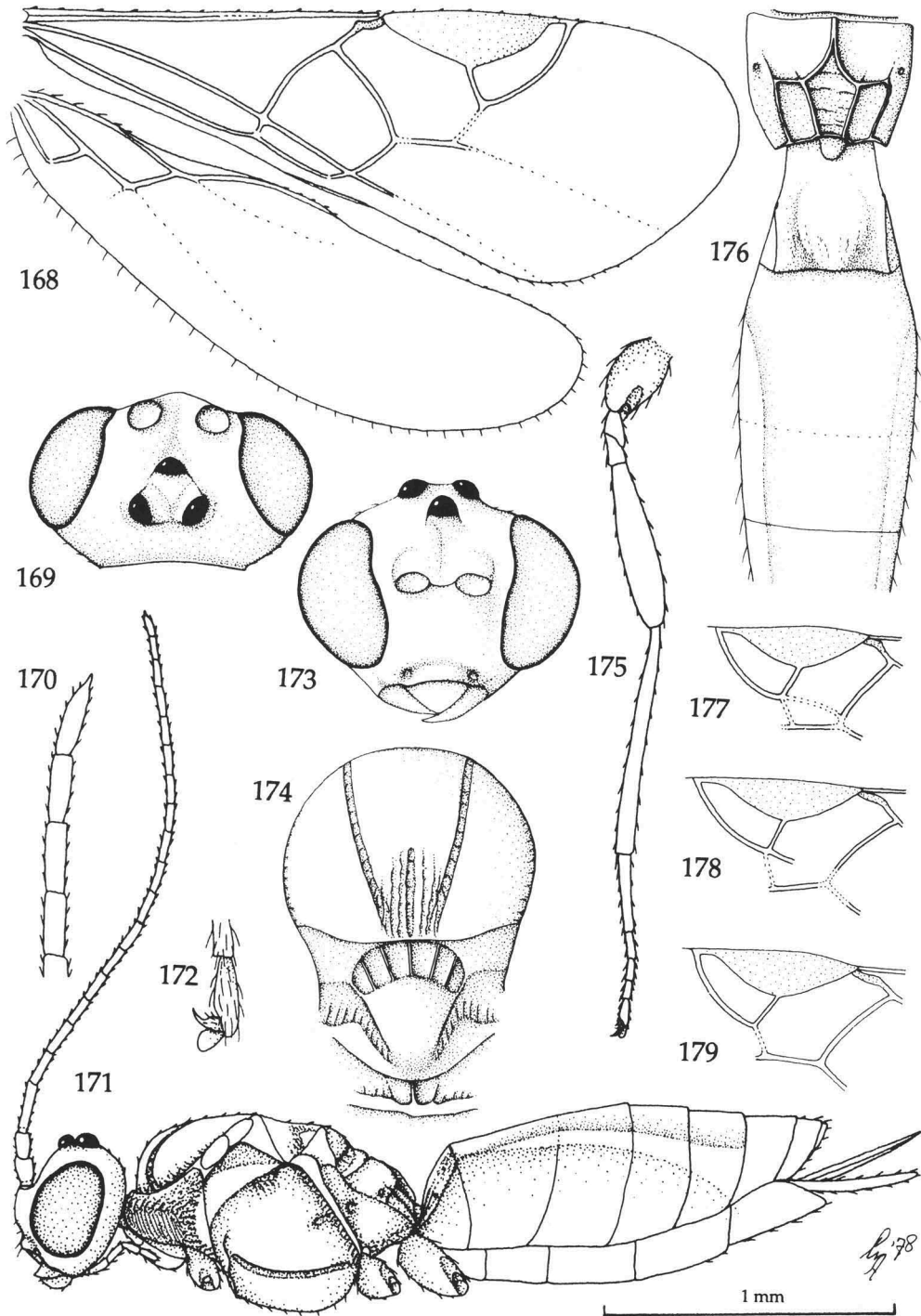
Figs 131-141, *Chremylomorphia mirabilis* Belokobylskij, ♀, holotype. 131, wings; 132, base of antenna; 133, habitus, lateral aspect; 134, head, dorsal aspect; 135, mesosoma, dorsal aspect; 136, fore tarsus, lateral aspect; 137, outer hind claw; 138, hind leg; 139, head, frontal aspect; 140, first and second metasomal tergites, dorsal aspect; 141, apex of antenna. 131, 133, 138: 1.0 × scale-line; 132, 136, 141: 1.3 ×; 134, 135, 139, 140: 1.1 ×; 137: 1.8 ×.



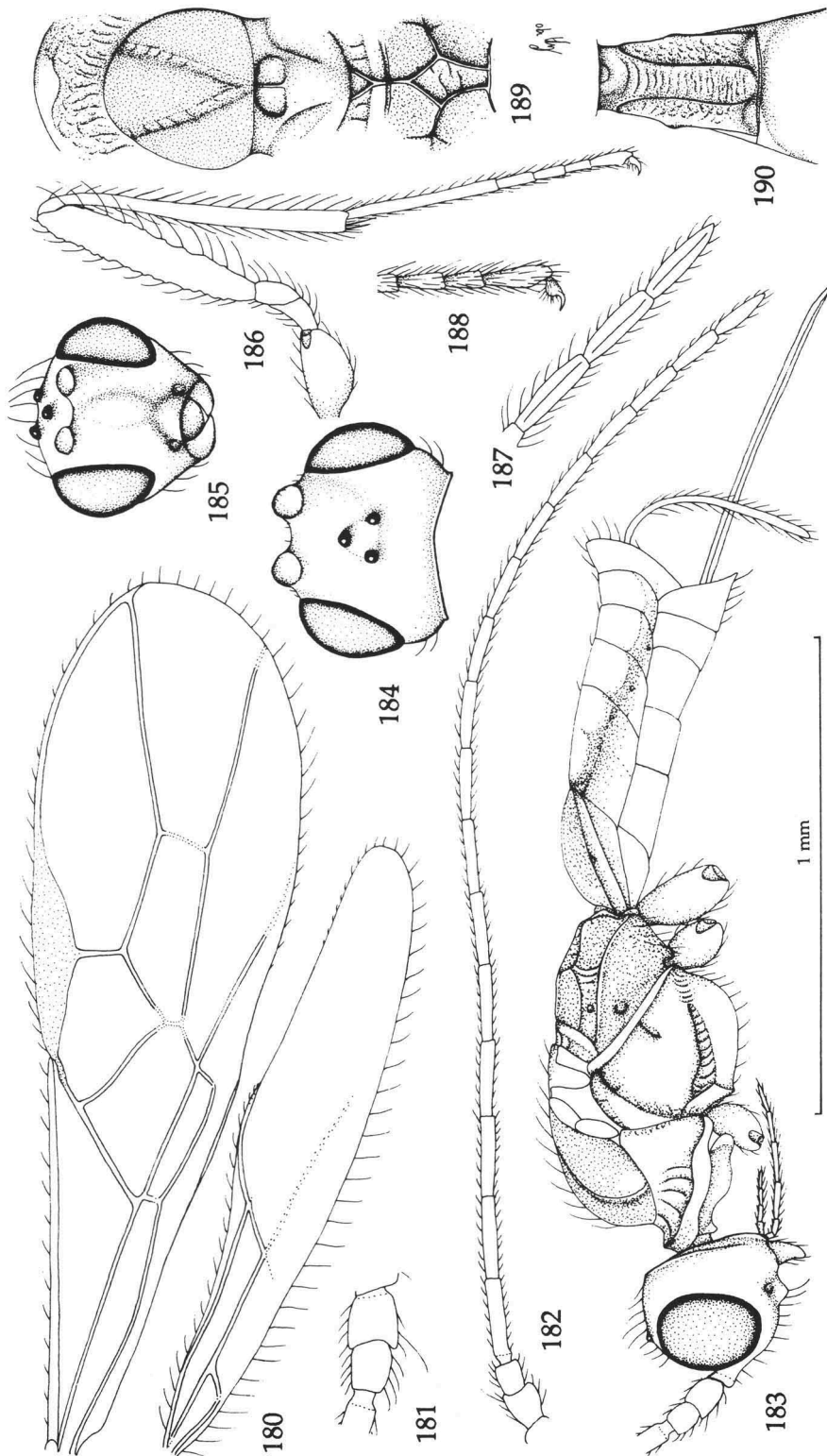
Figs 142-152, *Chremyloloides cardaleae* gen. nov. & spec. nov., ♀, holotype. 142, wings; 143, hind leg; 144, habitus, lateral aspect; 145, head, dorsal aspect; 146, first third metasomal tergites, dorsal aspect; 147, mesosoma, dorsal aspect; 148, outer hind claw; 149, base of antenna; 150, head, frontal aspect; 151, fore leg; 152, apex of antenna. 142-144: 1.0 × scale-line; 145-147, 150: 1.2 ×; 148, 149, 151, 152: 1.8 ×.



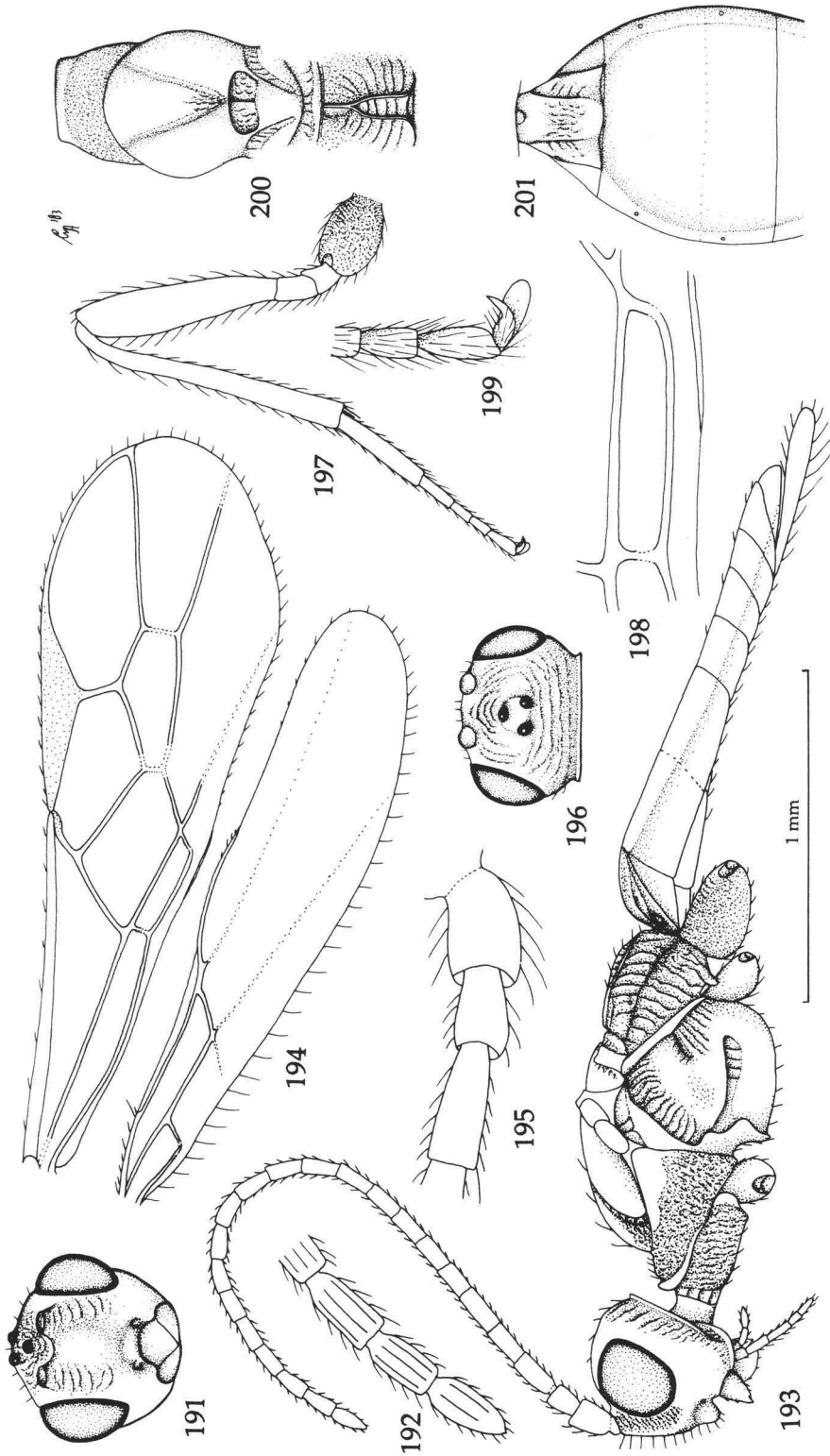
Figs 153-167, *Cedria paradoxa* Wilkinson, ♀, India, Dehra Dun. 153, wings; 154, detail of scapus and pedicellus, lateral aspect; 155, metasoma, dorsal aspect; 156, metanotum, lateral aspect; 157, id., dorsal aspect; 158, detail of first subdiscal cell of fore wing; 159, hind leg; 160, mesosoma, dorsal aspect; 161, apex of antenna; 162, head, frontal aspect; 163, fore tarsus, lateral aspect; 164, head, dorsal aspect; 165, outer hind claw; 166, antenna; 167, habitus, lateral aspect. 153, 155, 159, 160, 166, 167: 1.0 × scale-line; 154, 156-158, 161, 163, 165: 2.5 ×; 162, 164: 1.4 ×.



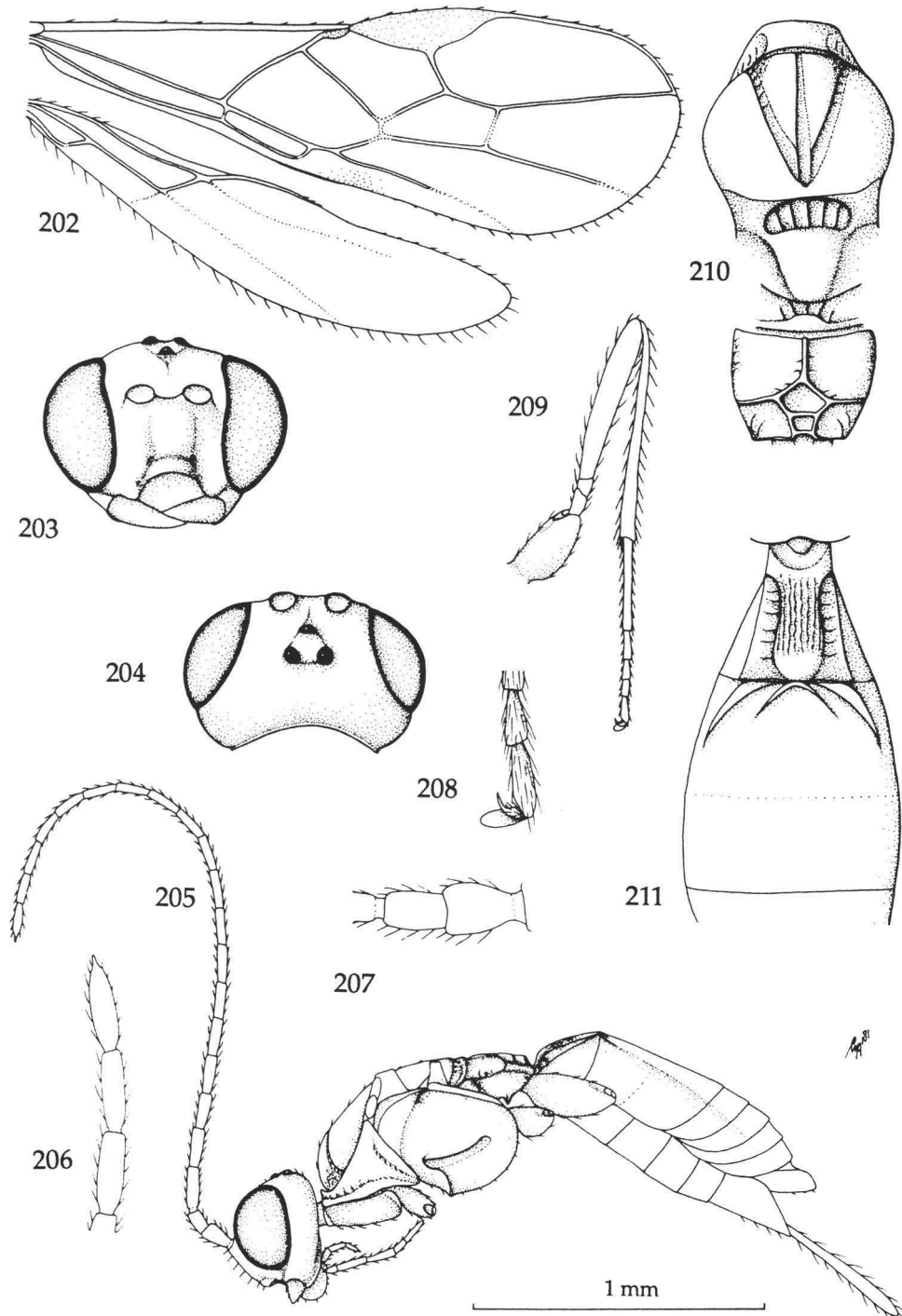
Figs 168-179, *Hormisca tatianae* Telenga, ♀, Turkmenia, Repetek, but 177-179 after Tobias, 1974. 168, wings; 169, head, dorsal aspect; 170, apex of antenna; 171, habitus, lateral aspect; 172, outer hind claw; 173, head, frontal aspect; 174, thorax, dorsal aspect; 175, hind leg; 176, first-third metasomal tergites, dorsal aspect; 177-179, detail of veins r-m and 2-SR of fore wing. 168, 171, 175: 1.0 × scale-line; 169, 173, 174, 176: 1.4 ×; 170, 172: 2.5 ×.



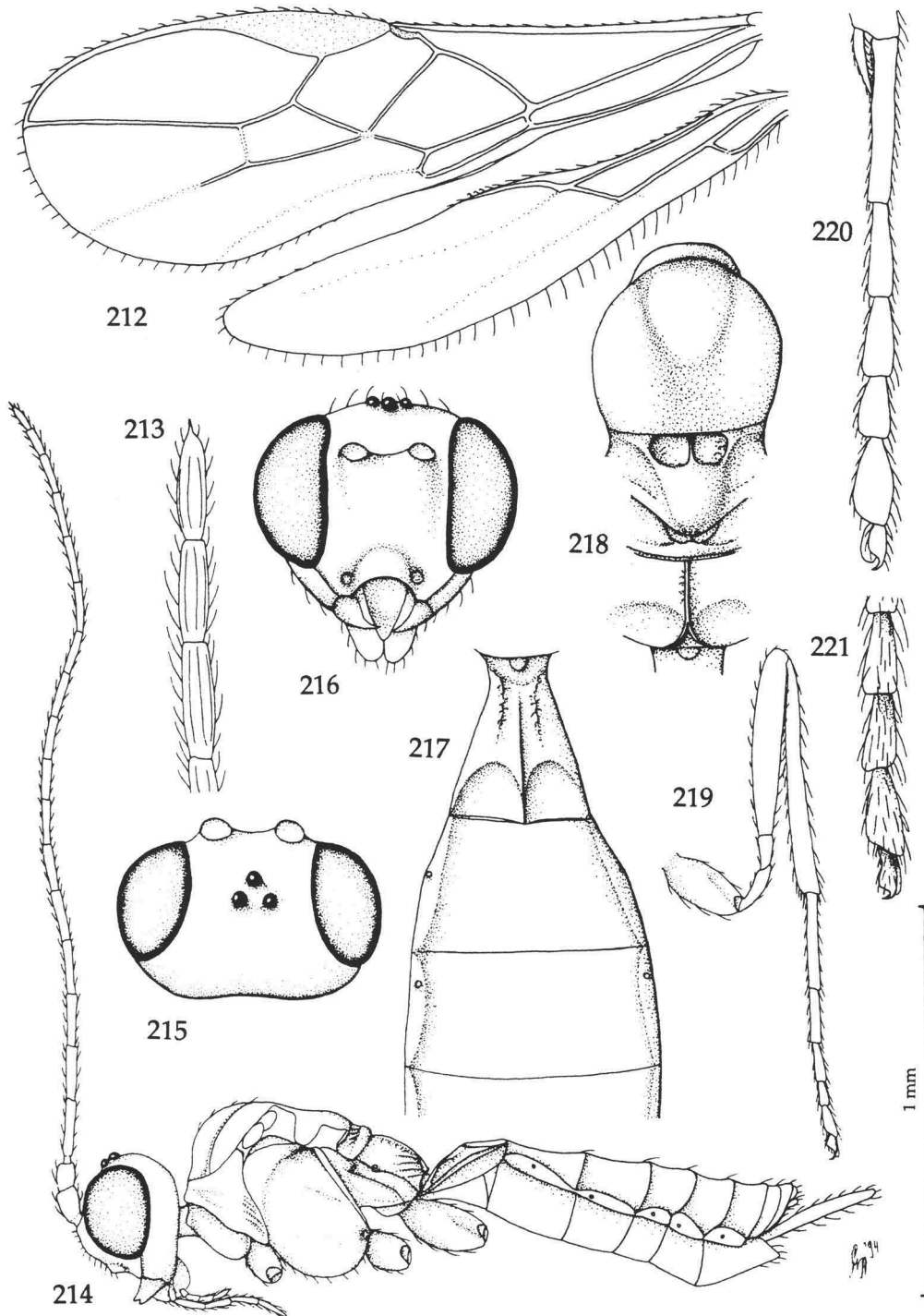
Figs 180-190. *Taiwarhormius granulosus* Belokobylskij, ♀, holotype. 180, wings; 181, detail of scapus and pedicellus, lateral aspect; 182, antenna; 183, habitus, lateral aspect; 184, head, dorsal aspect; 185, head, frontal aspect; 186, head, lateral aspect; 187, apex of antenna; 188, outer hind claw; 189, mesosoma, dorsal aspect; 190, first metasomal tergite, dorsal aspect. 181, 187, 188: 1.0 × scale-line; 181, 187, 188: 1.6 ×; 184, 185, 189, 190: 1.1 ×.



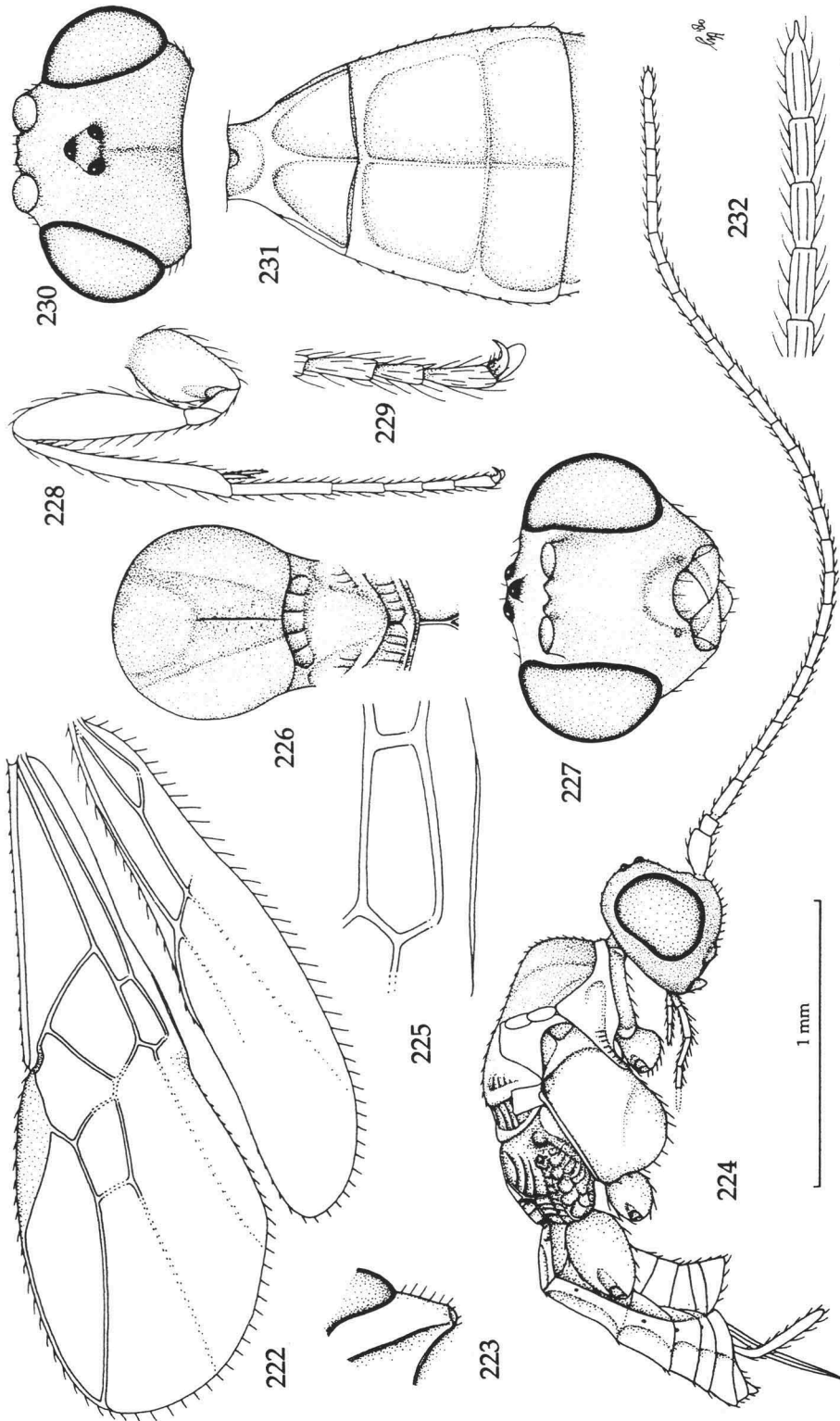
Figs 191-201, *Hormius moniliatus* Nees, ♀, neotype. 191, head, frontal aspect; 192, apex of antenna; 193, habitus, lateral aspect; 194, wings; 195, base of antenna; 196, head, dorsal aspect; 197, hind leg; 198, detail of first subdiscal cell of fore wing; 199, outer hind claw; 200, mesosoma, dorsal aspect; 201, first-third metasomal tergites, dorsal aspect. 191, 193, 194, 196, 197, 200, 201: 1.0 × scale-line; 192, 195, 198, 199: 2.5 ×.



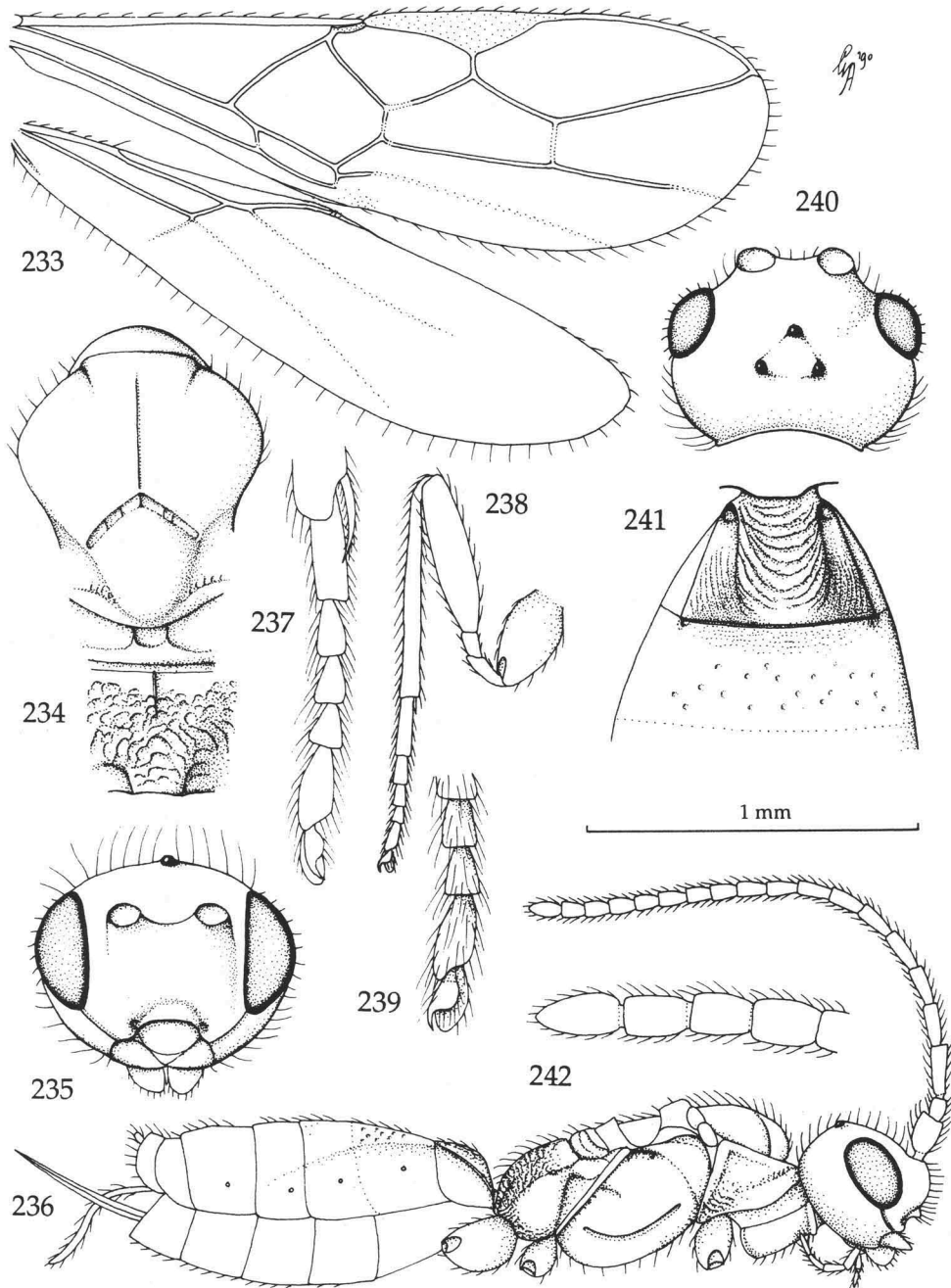
Figs 202-211, *Hormius romani* (Hedqvist), ♀, holotype. 202, wings; 203, head, frontal aspect; 204, head, dorsal aspect; 205, habitus, lateral aspect; 206, apex of antenna; 207, detail of scapus and pedicellus, lateral aspect; 208, inner hind claw; 209, hind leg; 210, mesosoma, dorsal aspect; 211, first-third metasomal tergites, dorsal aspect. 202, 205, 209: 1.0 × scale-line; 203, 204, 210, 211: 1.6 ×; 206-208: 2.5 ×.



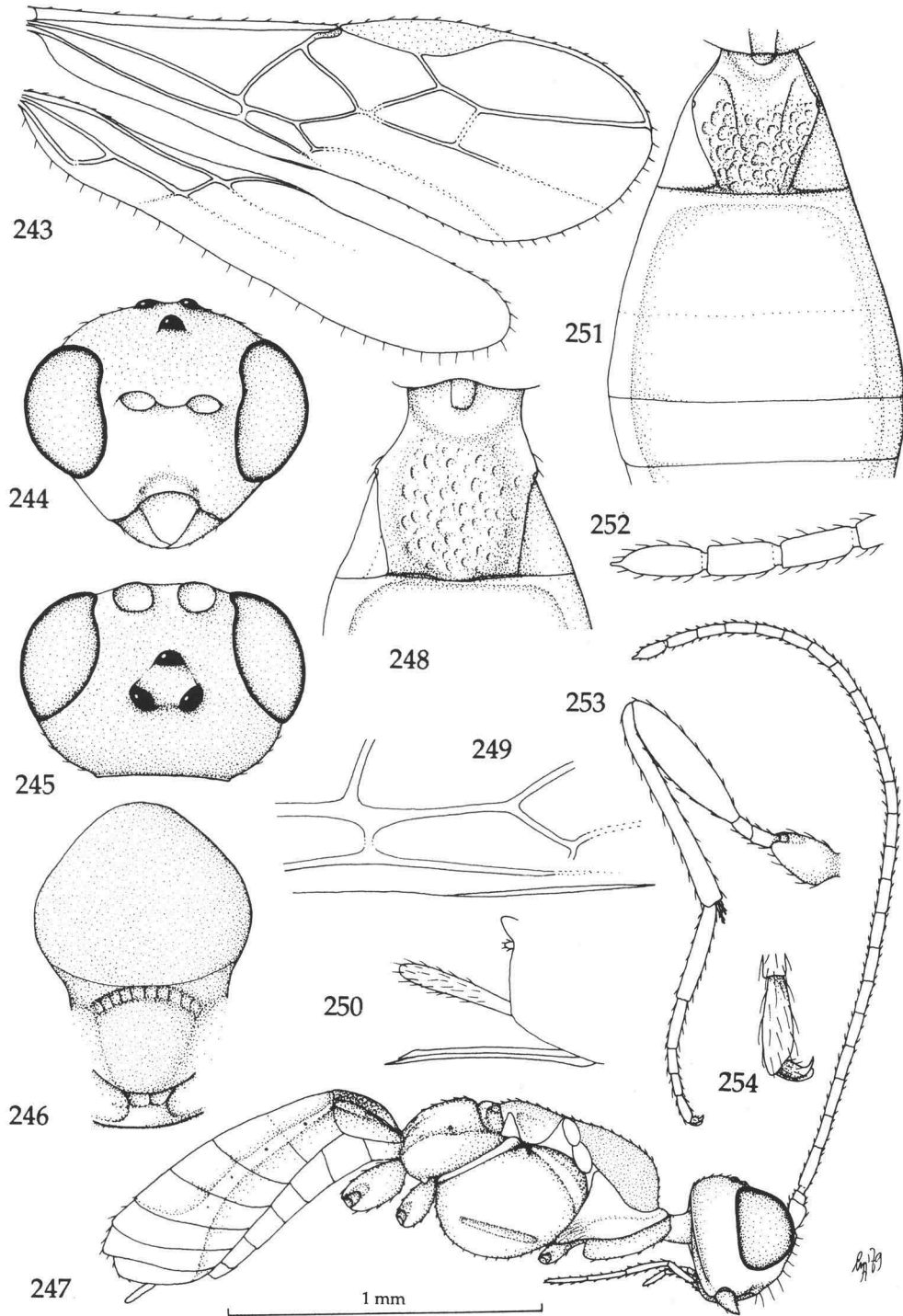
Figs 212-221, *Allobracon gahani* Wharton, ♀, paratype. 212, wings; 213, apex of antenna; 214, habitus, lateral aspect; 215, head, dorsal aspect; 216, head, frontal aspect; 217, first-third metasomal tergites, dorsal aspect; 218, mesosoma, dorsal aspect; 219, hind leg; 220, fore tarsus, lateral aspect; 221, outer hind claw. 212, 214, 219: 1.0 × scale-line; 213, 220, 221: 2.5 ×; 215-218: 1.5 ×.



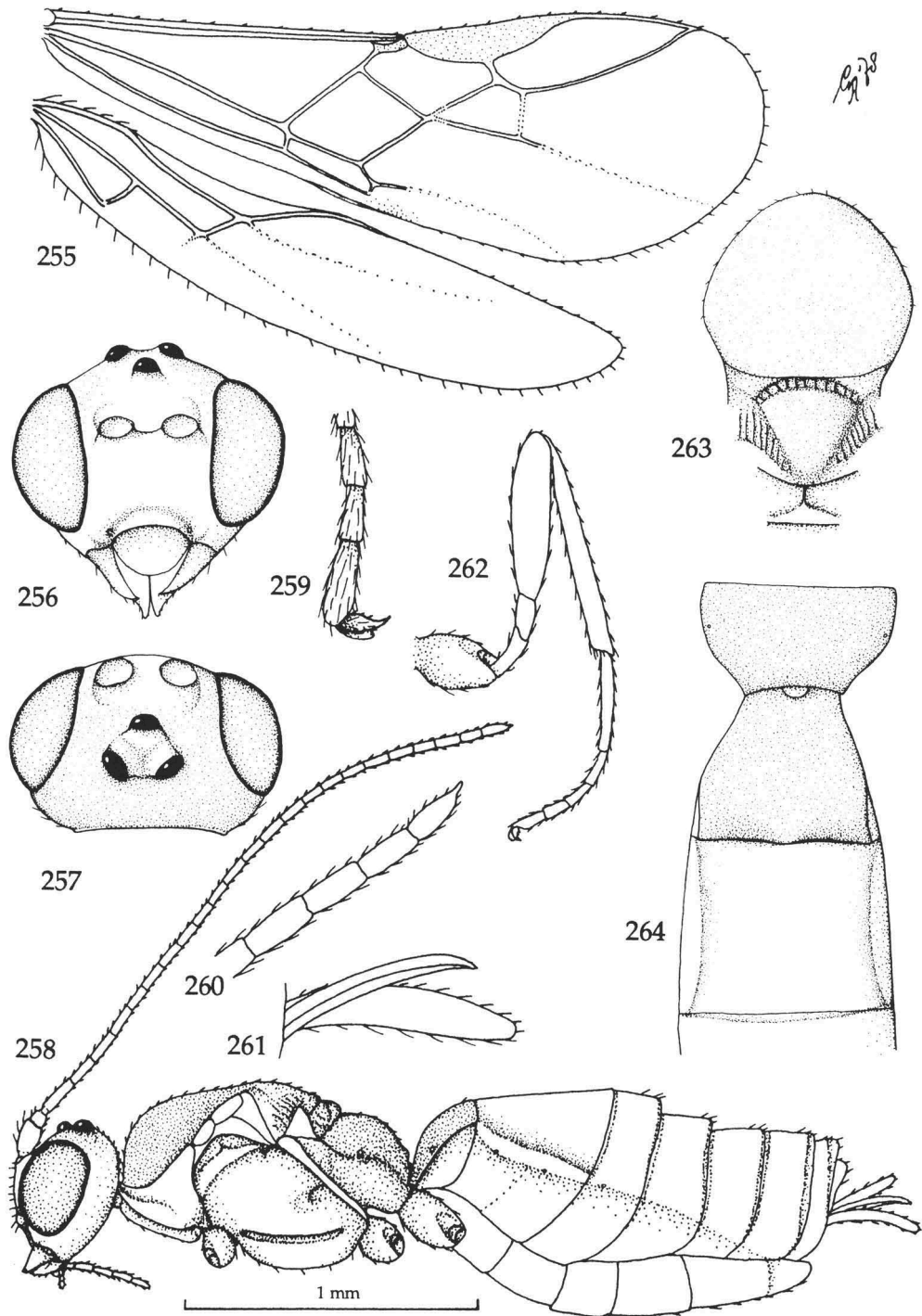
Figs 222-232, *Parachremylus scyrigi* Granger, ♀, holotype. 222, wings; 223, detail of ventral part of occipital carina; 224, habitus, lateral aspect; 225, detail of first subdiscal cell of fore wing; 226, mesosoma, dorsal aspect; 227, head, frontal aspect; 228, hind leg; 229, inner middle claw; 230, head, dorsal aspect; 231, first-third metasomal tergites, dorsal aspect; 232, apex of antenna. 222, 224, 228: 1.0 × scale-line; 223, 226, 227, 230, 231: 1.6 ×; 225, 229, 232: 2.5 ×.



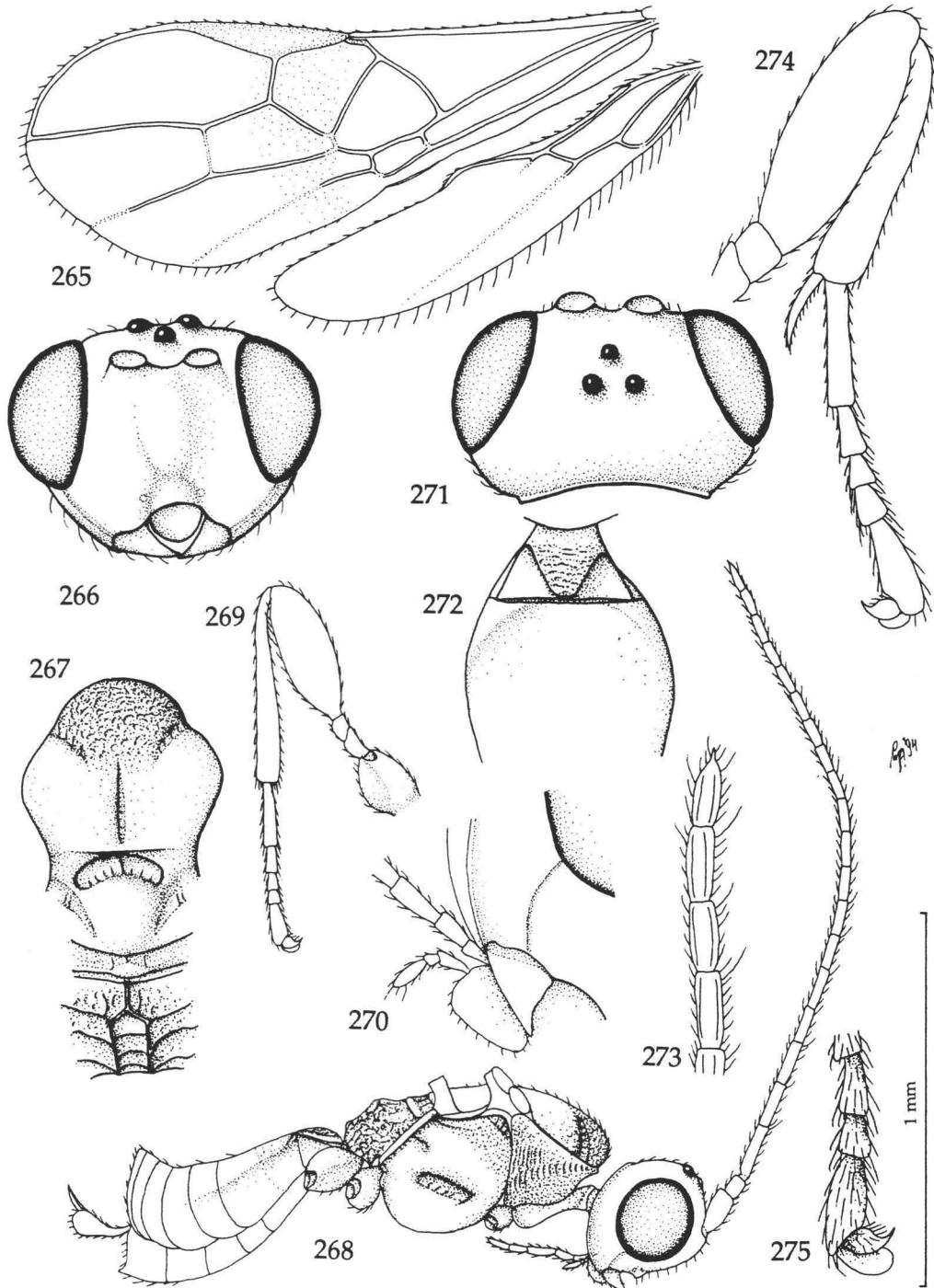
Figs 233-242, *Austrohormius punctatus* spec. nov., ♀, holotype. 233, wings; 234, mesosoma, dorsal aspect; 235, head, frontal aspect; 236, habitus, lateral aspect; 237, fore tarsus, lateral aspect; 238, hind leg; 239, outer hind claw; 240, head, dorsal aspect; 241, first and second metasomal tergites, dorsal aspect; 242, apex of antenna. 233, 236, 238: 1.0 × scale-line; 234, 235, 240, 241: 1.6 ×; 237, 239, 242: 2.5 ×.



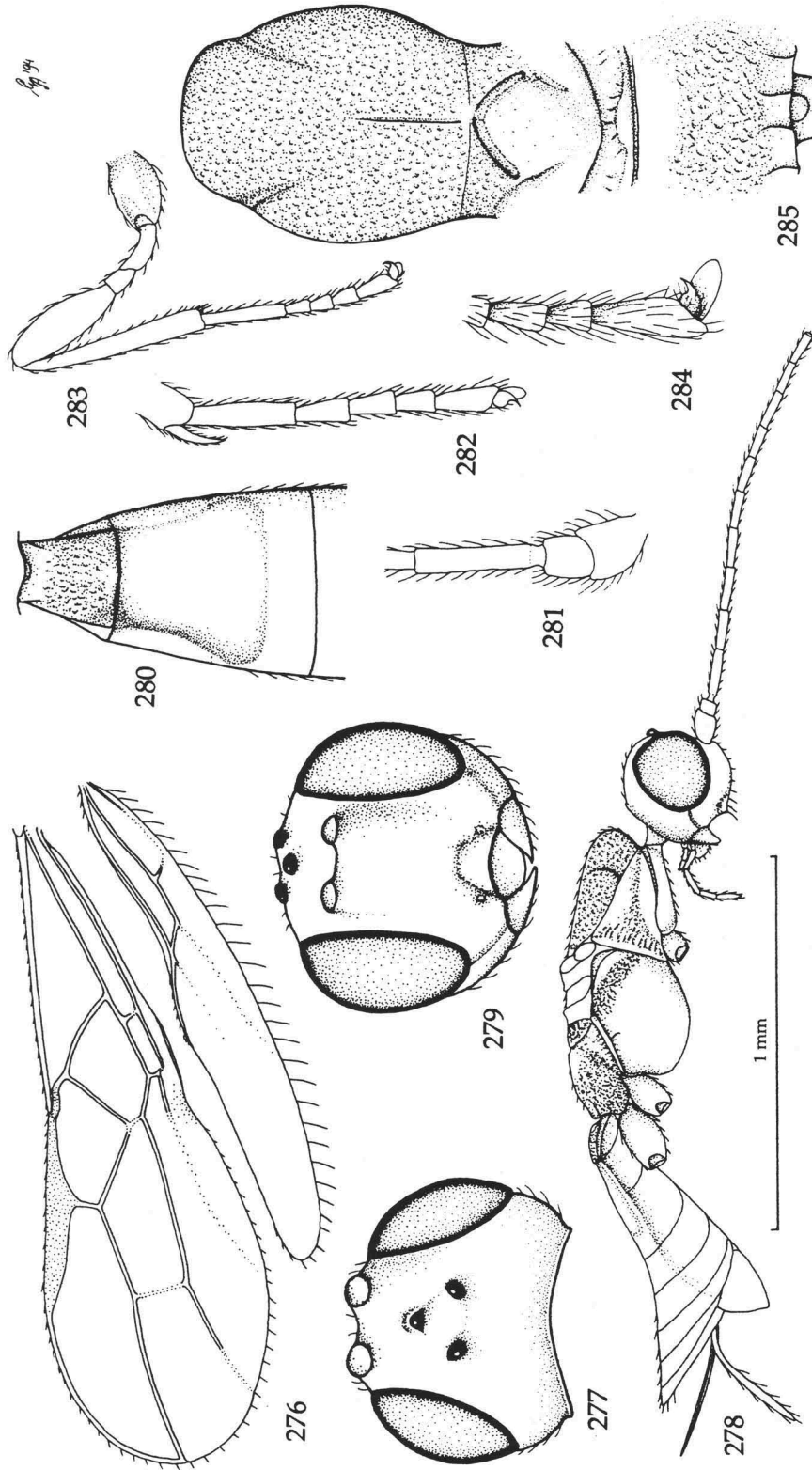
Figs 243-254, *Avga choaspis* Nixon, ♂, paratype, but 248 of ♀, holotype and 250 after Nixon, 1960. 243, wings; 244, head, frontal aspect; 245, head, dorsal aspect; 246, thorax, dorsal aspect; 247, habitus, lateral aspect; 248, first metasomal tergite, dorsal aspect; 249, detail of first subdiscal cell of fore wing; 250, ovipositor and ovipositor sheath, lateral aspect; 251, first-fourth metasomal tergites, dorsal aspect; 252, apex of antenna; 253, hind leg; 254, inner hind claw. 243, 247, 253: 1.0 × scale-line; 244-246, 251: 1.8 ×; 248: 2.0 ×; 249, 252, 254: 2.5 ×.



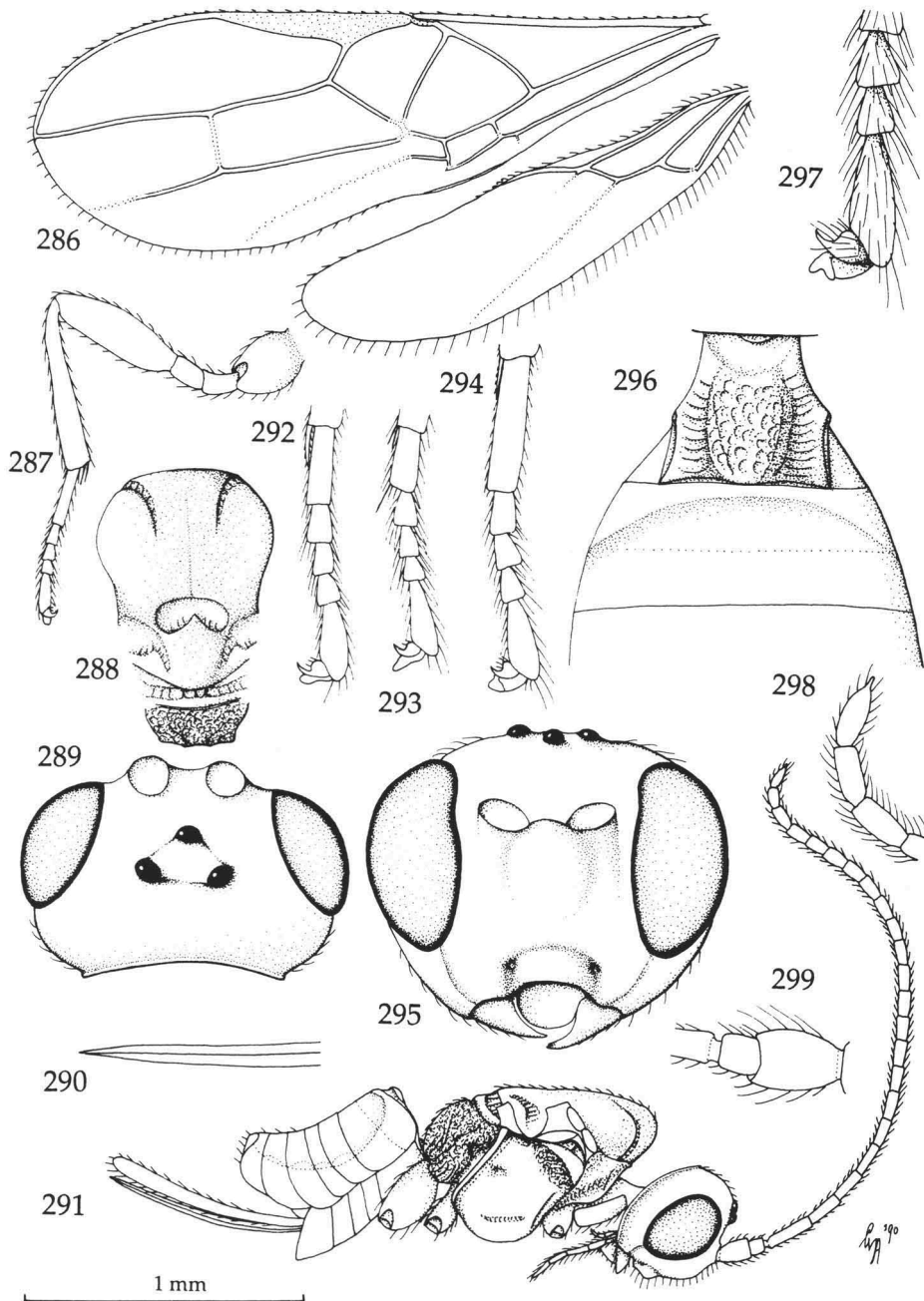
Figs 255-264, *Pseudobiosteres dorsomaculatus* Hedwig, ♀, Turkmenia, Repetek. 255, wings; 256, head, frontal aspect; 257, head, dorsal aspect; 258, habitus, lateral aspect; 259, outer hind claw; 260, apex of antenna; 261, ovipositor and ovipositor sheath, lateral aspect; 262, hind leg; 263, thorax, dorsal aspect; 264, propodeum, first-third metasomal tergites, dorsal aspect. 255, 258, 262: 1.0 × scale-line; 256, 257, 263, 264: 2.0 ×; 259-261: 2.5 ×.



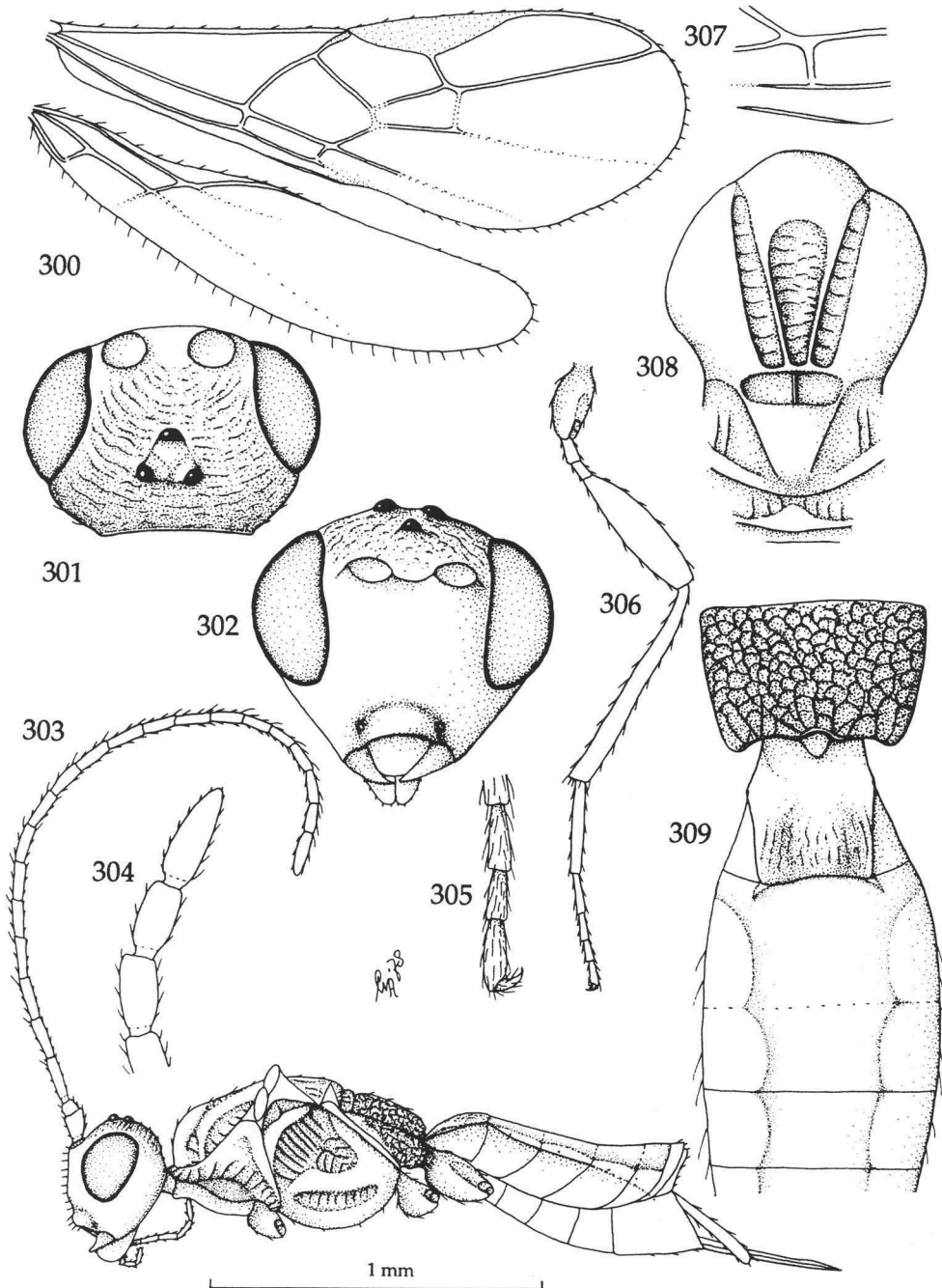
Figs 265-275, *Proavga lativalva* Belokobylskij, ♀, holotype. 265, wings; 266, head, frontal aspect; 267, mesosoma, dorsal aspect; 268, habitus, lateral aspect; 269, hind leg; 270, detail of ventral part of occipital carina; 271, head, dorsal aspect; 272, first and second metasomal tergites, dorsal aspect; 273, apex of antenna; 274, fore leg; 275, outer hind claw. 265, 268, 269: 1.0 × scale-line; 266, 271: 1.6 ×; 267, 272: 1.2 ×; 270, 273-275: 2.5 ×.



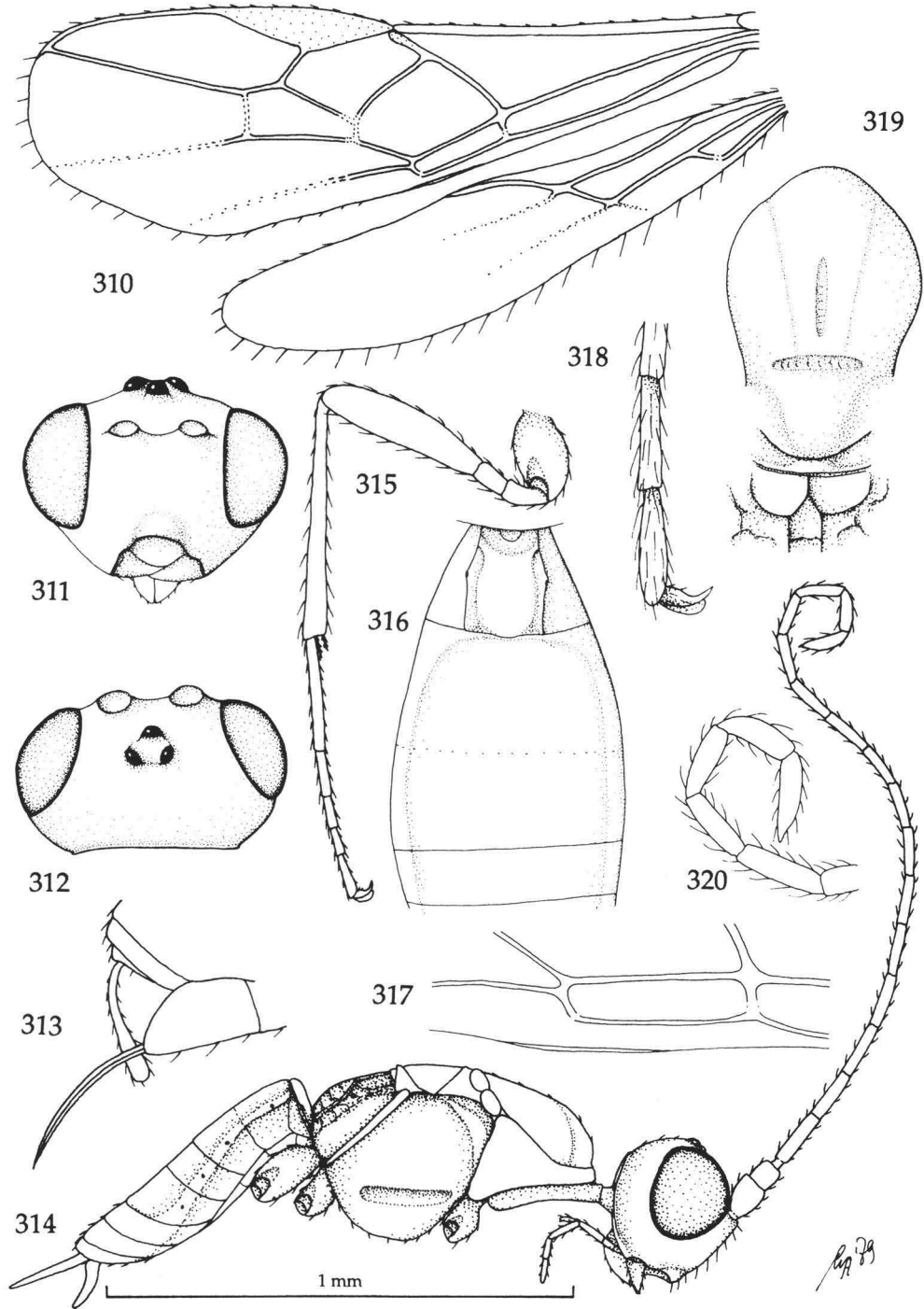
Figs 276-285, *Apoayga cardalei* (Belokobylskij), ♀, holotype. 276, wings; 277, head, dorsal aspect; 278, habitus, lateral aspect; 279, head, lateral aspect; 280, frontal aspect; 281, first-third metasomal tergites, dorsal aspect; 282, base of antenna; 283, fore tarsus, lateral aspect; 284, hind leg; 285, outer hind claw; 286, mesosoma, dorsal aspect. 276, 278, 283: 1.0 × scale-line; 277, 279, 280, 285: 2.0 ×; 281, 282, 284: 2.5 ×.



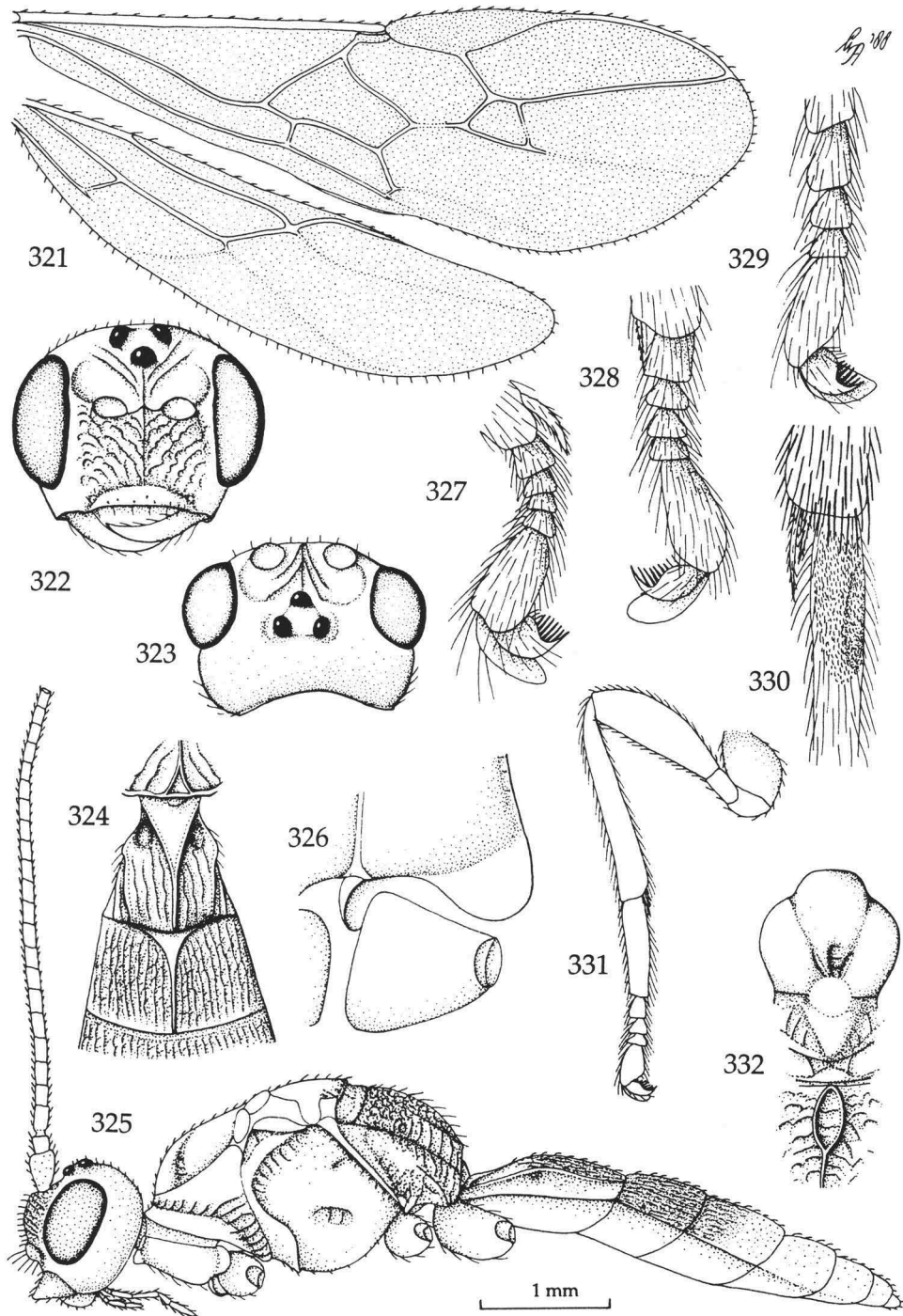
Figs 286-299, *Hormiitis brevitarsis* gen. nov. & spec. nov., ♀, holotype. 286, wings; 287, hind leg; 288, mesosoma, dorsal aspect; 289, head, dorsal aspect; 290, apex of ovipositor, lateral aspect; 291, habitus, lateral aspect; 292, fore tarsus, lateral aspect; 293, middle tarsus, lateral aspect; 294, hind tarsus, lateral aspect; 295, head, frontal aspect; 296, first-third metasomal tergites, dorsal aspect; 297, inner hind claw; 298, apex of antenna; 299, detail of scapus and pedicellus, lateral aspect. 286, 287, 291: 1.0 × scale-line; 288: 1.2 ×; 289, 294-296: 2.0 ×; 290, 292, 293, 298, 299: 2.5 ×; 297: 2.9 ×.



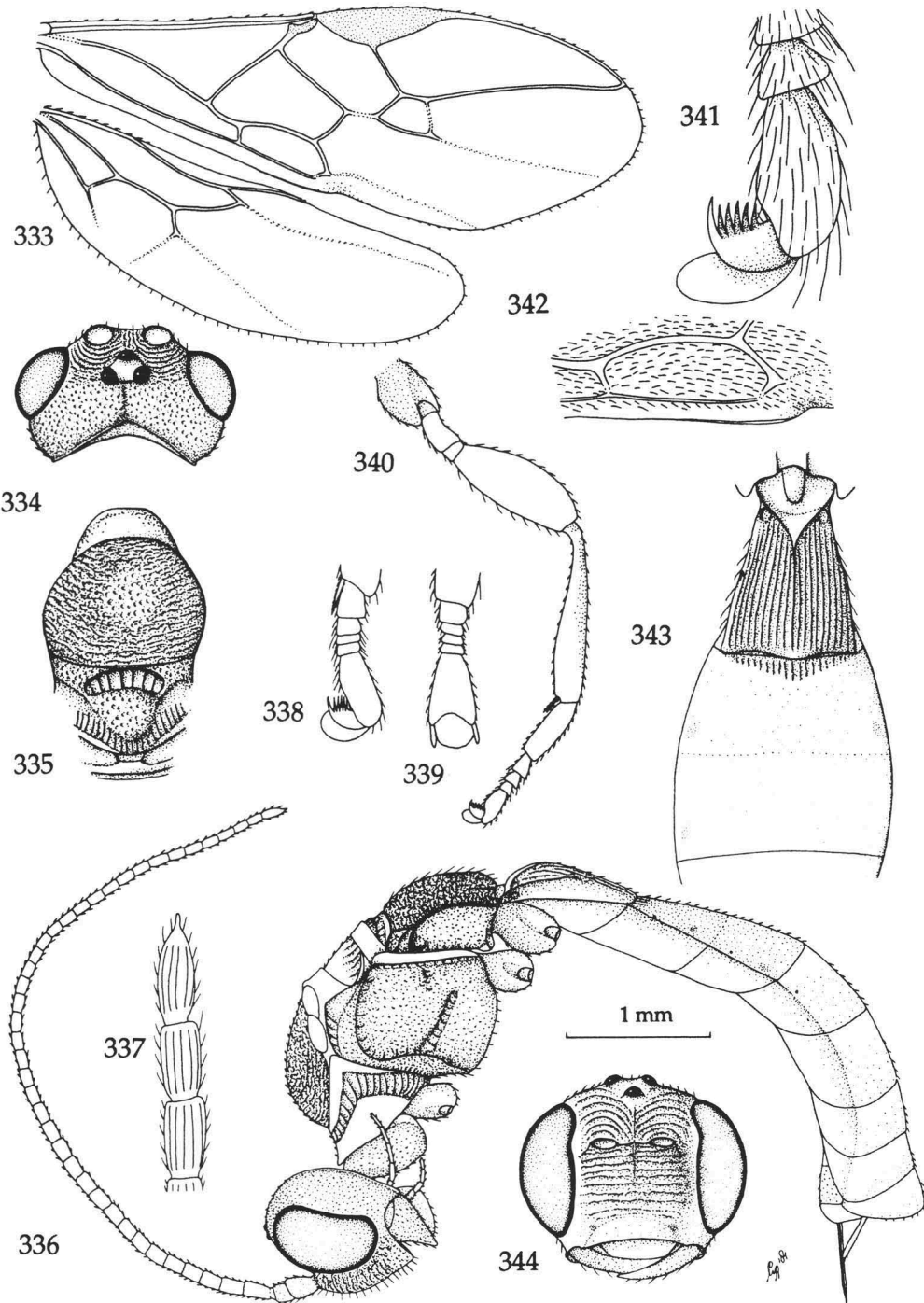
Figs 300-309, *Pseudohormius turkmenus* Tobias & Alexeev, ♀, Ukraina, Gelendzhik. 300, wings; 301, head, dorsal aspect; 302, head, frontal aspect; 303, habitus, lateral aspect; 304, apex of antenna; 305, inner hind claw; 306, hind leg; 307, apex of first subdiscal cell of fore wing; 308, thorax, dorsal aspect; 309, propodeum, first-fourth metasomal tergites, dorsal aspect. 300, 303, 306: 1.0 × scale-line; 301, 302, 308, 309: 1.5 ×; 304, 305, 307: 2.5 ×.



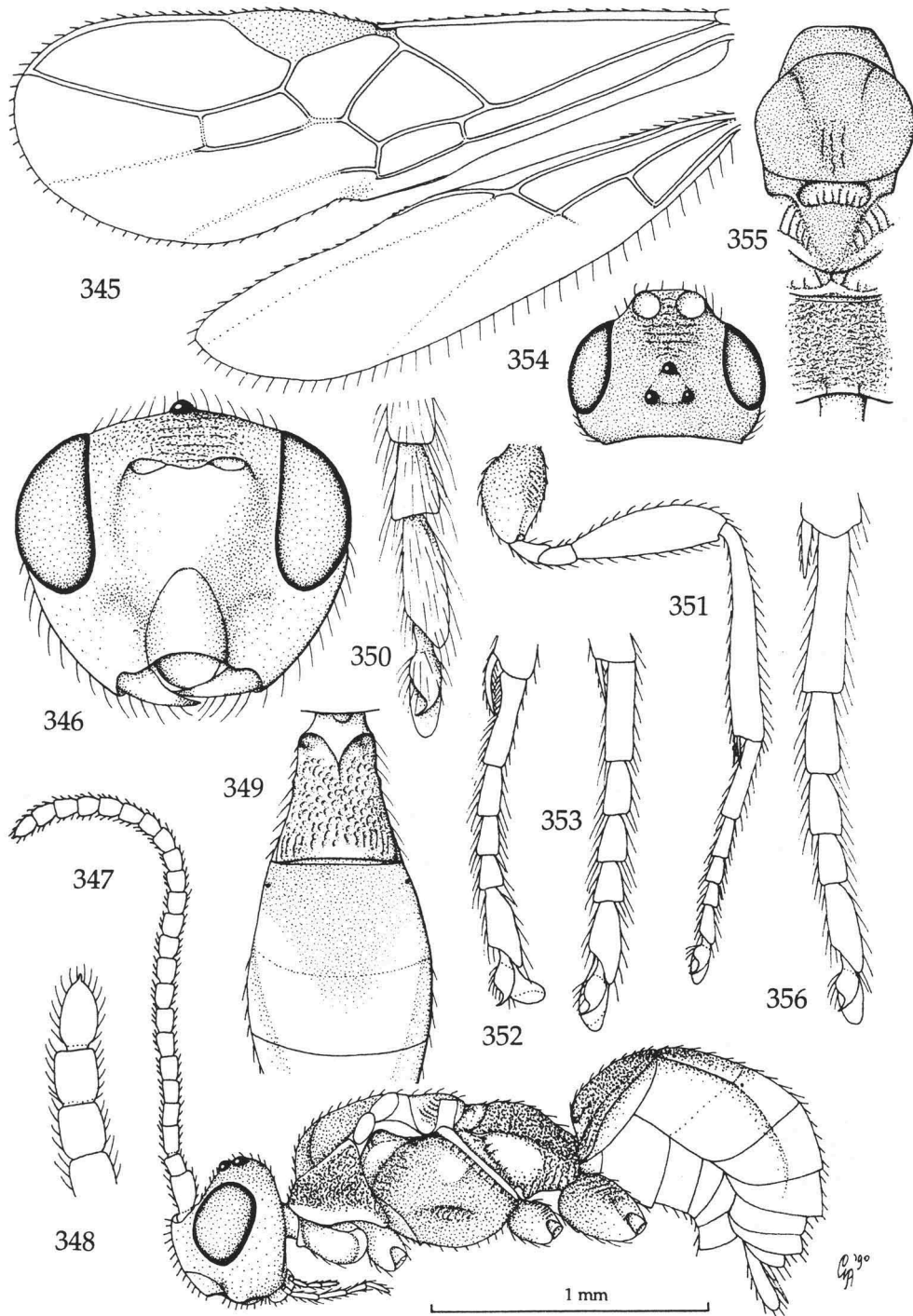
Figs 310-320, *Parahormius jason* Nixon, ♂, paratype, but 313 of ♀, holotype. 310, wings; 311, head, frontal aspect; 312, head, dorsal aspect; 313, ovipositor and ovipositor sheath, lateral aspect; 314, habitus, lateral aspect; 315, hind leg; 316, first-fourth metasomal tergites, dorsal aspect; 317, detail of first subdiscal cell of fore wing; 318, outer hind claw; 319, thorax, dorsal aspect; 320, apex of antenna. 310, 313-315: 1.0 × scale-line; 311, 312, 316, 319: 2.0 ×; 317, 318, 320: 2.5 ×.



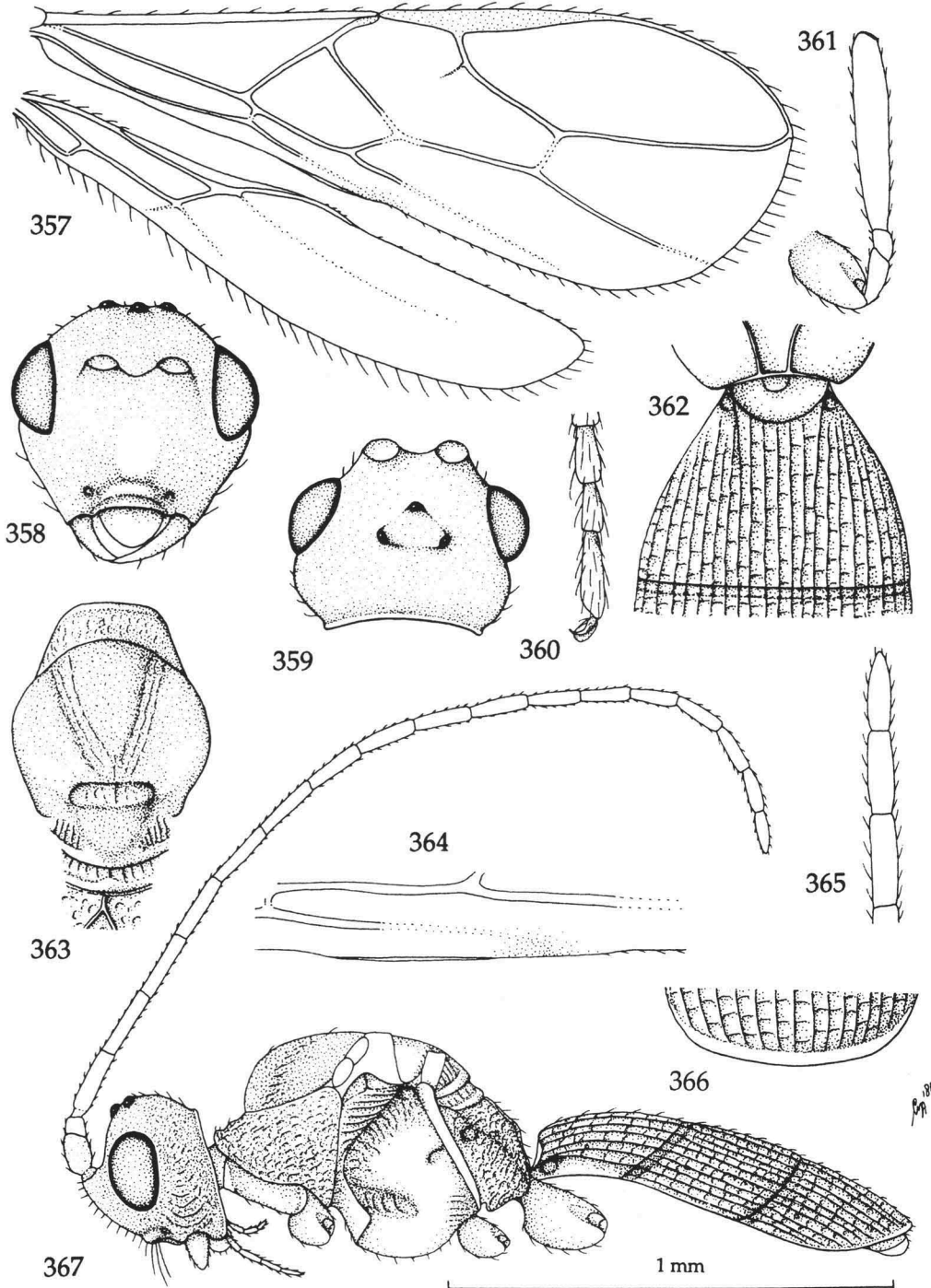
Figs 321-332, *Yelicones violaceipennis* Cameron, ♂, holotype. 321, wings; 322, head, frontal aspect; 323, head, dorsal aspect; 324, first and second metasomal tergites, dorsal aspect; 325, habitus, lateral aspect; 326, prosternum, ventral aspect; 327, fore tarsus, lateral aspect; 328, middle tarsus, lateral aspect; 329, hind tarsus, lateral aspect; 330, base of hind basitarsus, inner aspect; 331, hind leg; 332, mesosoma, dorsal aspect. 321, 324, 325, 331, 332: 1.0 × scale-line; 322, 323: 1.5 ×; 326: 3.2 ×; 327-330: 2.6 ×.



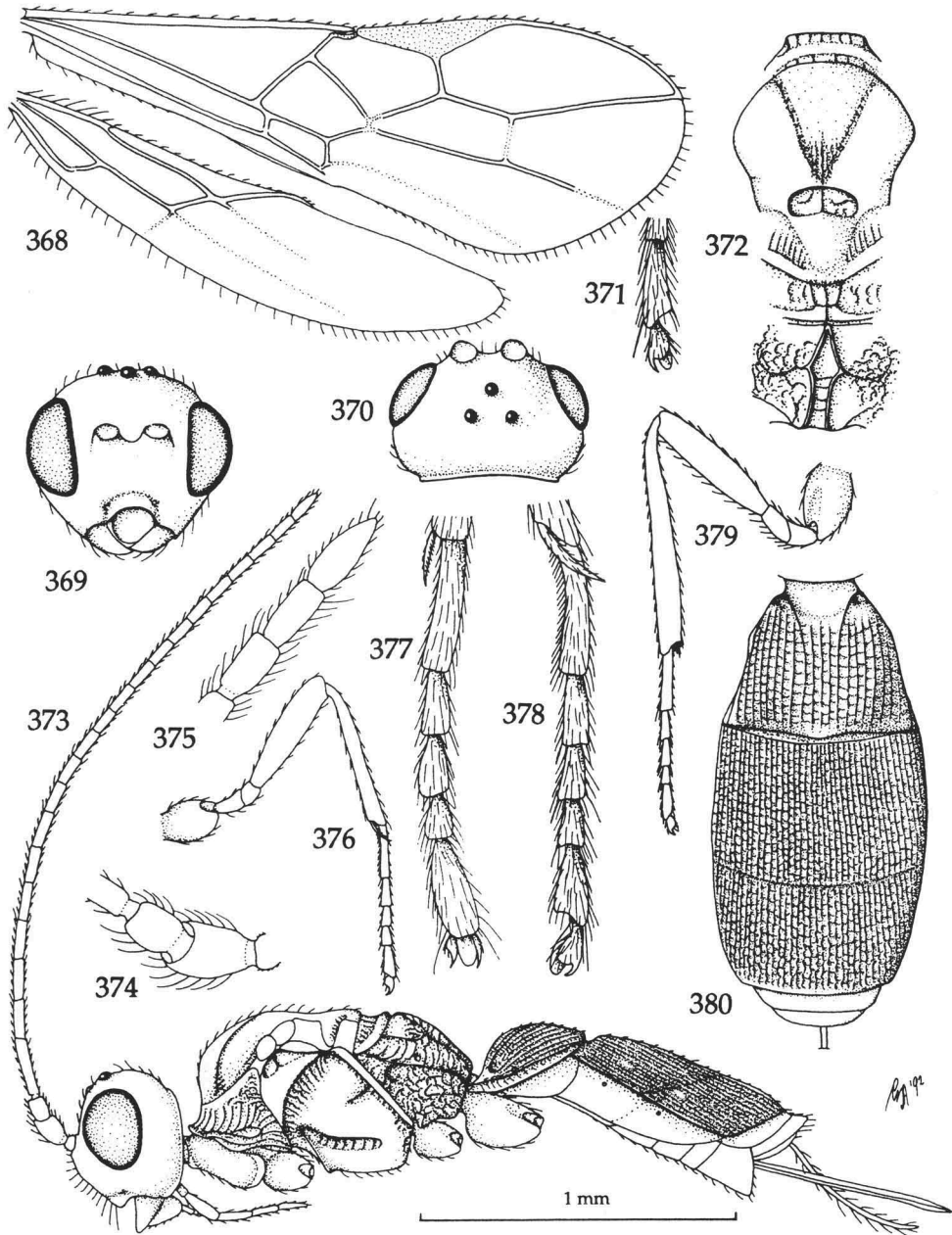
Figs 333-344, *Yelicones paradoxus* (Fischer), ♀, holotype. 333, wings; 334, head, dorsal aspect; 335, thorax, dorsal aspect; 336, habitus, lateral aspect; 337, apex of antenna; 338, fore tarsus, lateral aspect; 339, fore tarsus, dorsal aspect; 340, hind leg; 341, outer hind claw; 342, detail of first subdiscal cell of fore wing; 343, first-third metasomal tergites, dorsal aspect; 344, head, frontal aspect. 333, 336, 340: 1.0 × scale-line; 334, 335, 343, 344: 1.5 ×; 337, 341: 5.0 ×; 338, 339, 342: 2.0 ×.



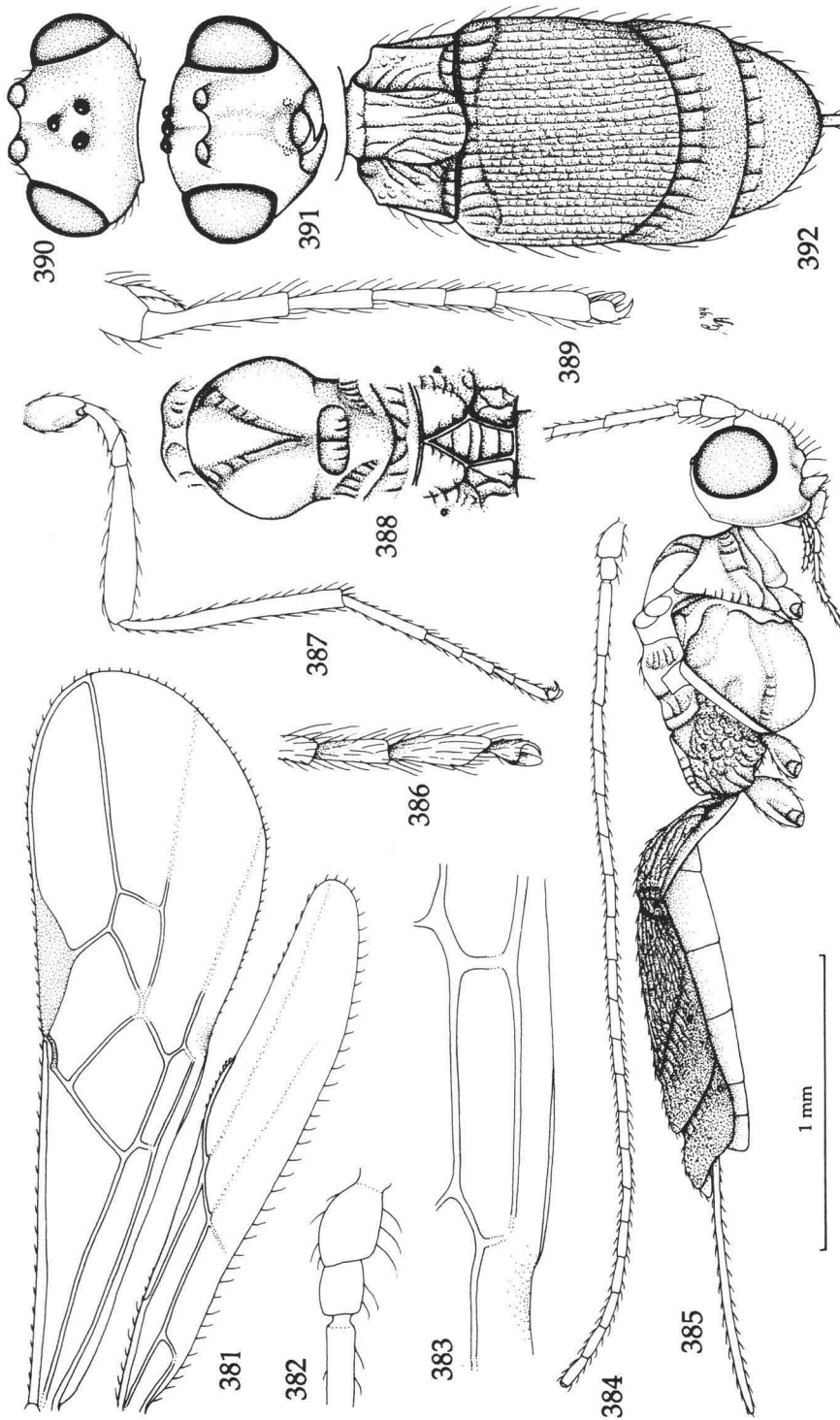
Figs 345-356, *Rhinoprotoma masneri* gen. nov. & spec. nov., ♀, holotype. 345, wings; 346, head, frontal aspect; 347, habitus, lateral aspect; 348, apex of antenna; 349, first-third metasomal tergites, dorsal aspect; 350, outer hind claw; 351, hind leg; 352, fore tarsus, lateral aspect; 353, middle tarsus, lateral aspect; 354, head, dorsal aspect; 355, mesosoma, dorsal aspect; 356, hind tarsus, lateral aspect. 345, 347, 351: 1.0 × scale-line; 346, 352, 353, 356: 1.9 ×; 348: 2.5 ×; 349, 354, 355: 1.2 ×; 350: 2.8 ×.



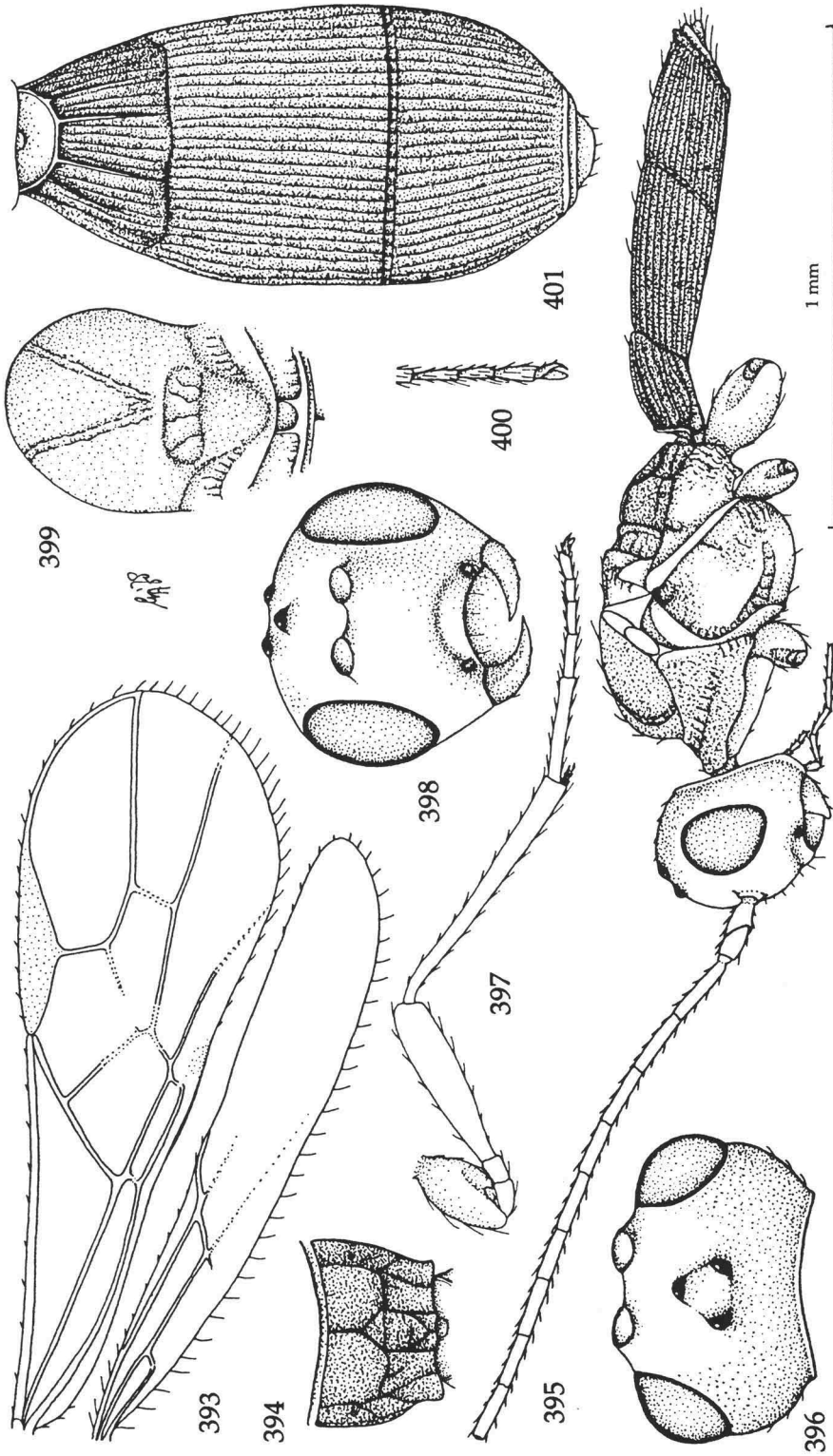
Figs 357-367, *Tritermus tobiasi* van Achterberg, ♂, holotype. 357, wings; 358, head, frontal aspect; 359, head, dorsal aspect; 360, outer hind claw; 361, hind leg (as far as present); 362, first metasomal tergite, dorsal aspect; 363, mesosoma, dorsal aspect; 364, detail of first subdiscal cell of fore wing; 365, apex of antenna; 366, apex of third metasomal tergite, dorsal aspect; 367, habitus, lateral aspect. 357, 361, 367: 1.0 × scale-line; 358, 359, 362, 363, 366: 1.4 ×; 360, 364, 365: 2.0 ×.



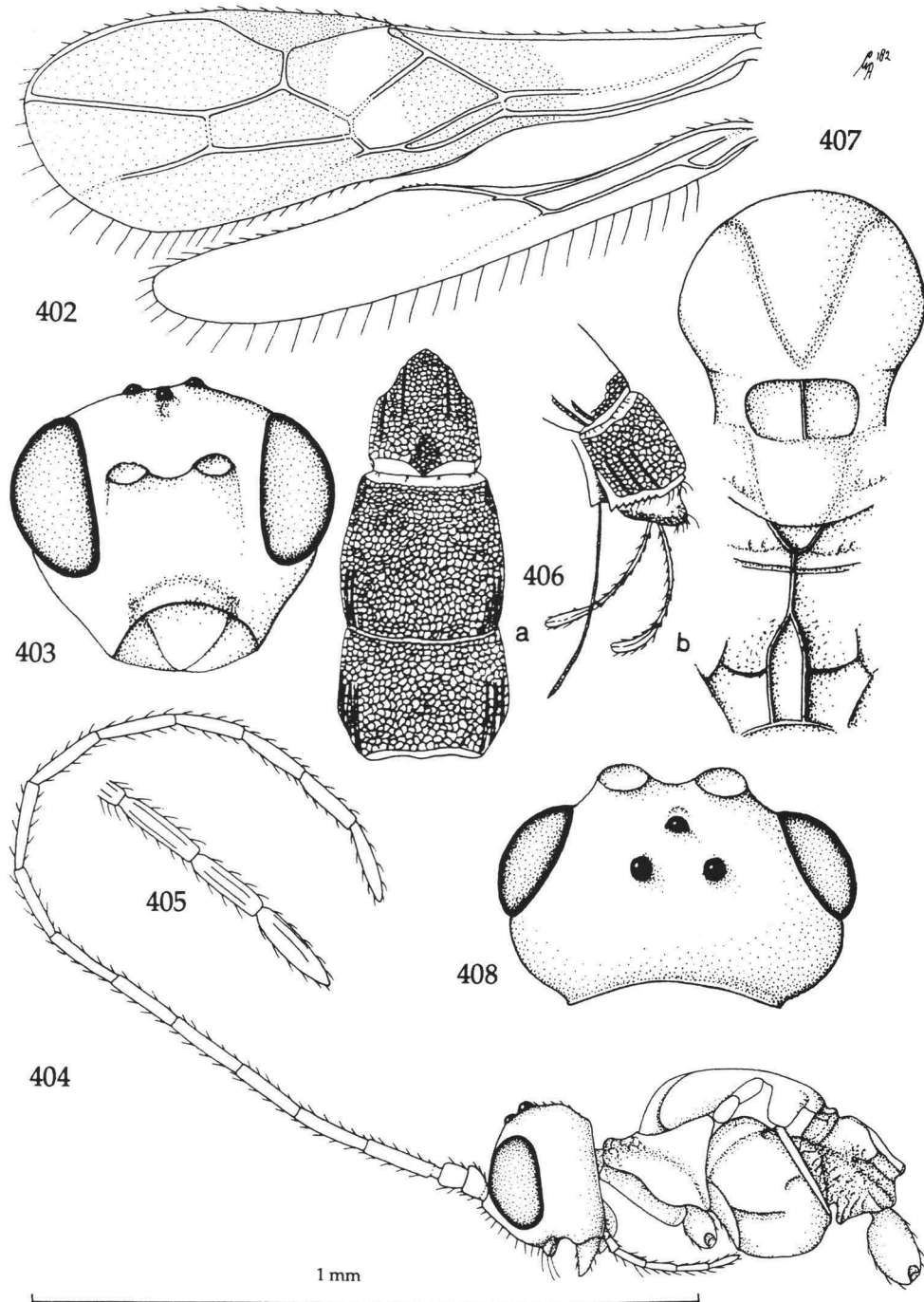
Figs 368-380, *Lysitermoides huggerti* gen. nov. & spec. nov., ♀, holotype. 368, wings; 369, head, frontal aspect; 370, head, dorsal aspect; 371, outer hind claw; 372, mesosoma, dorsal aspect; 373, habitus, lateral aspect; 374, base of antenna; 375, apex of antenna; 376, fore leg; 377, fore tarsus, dorsal aspect; 378, fore tarsus, lateral aspect; 379, hind leg; 380, metasoma, dorsal aspect. 368, 373, 376, 379: 1.0 × scale-line; 369, 370, 372, 380: 1.2 ×; 371, 374, 375, 377, 378: 2.5 ×.



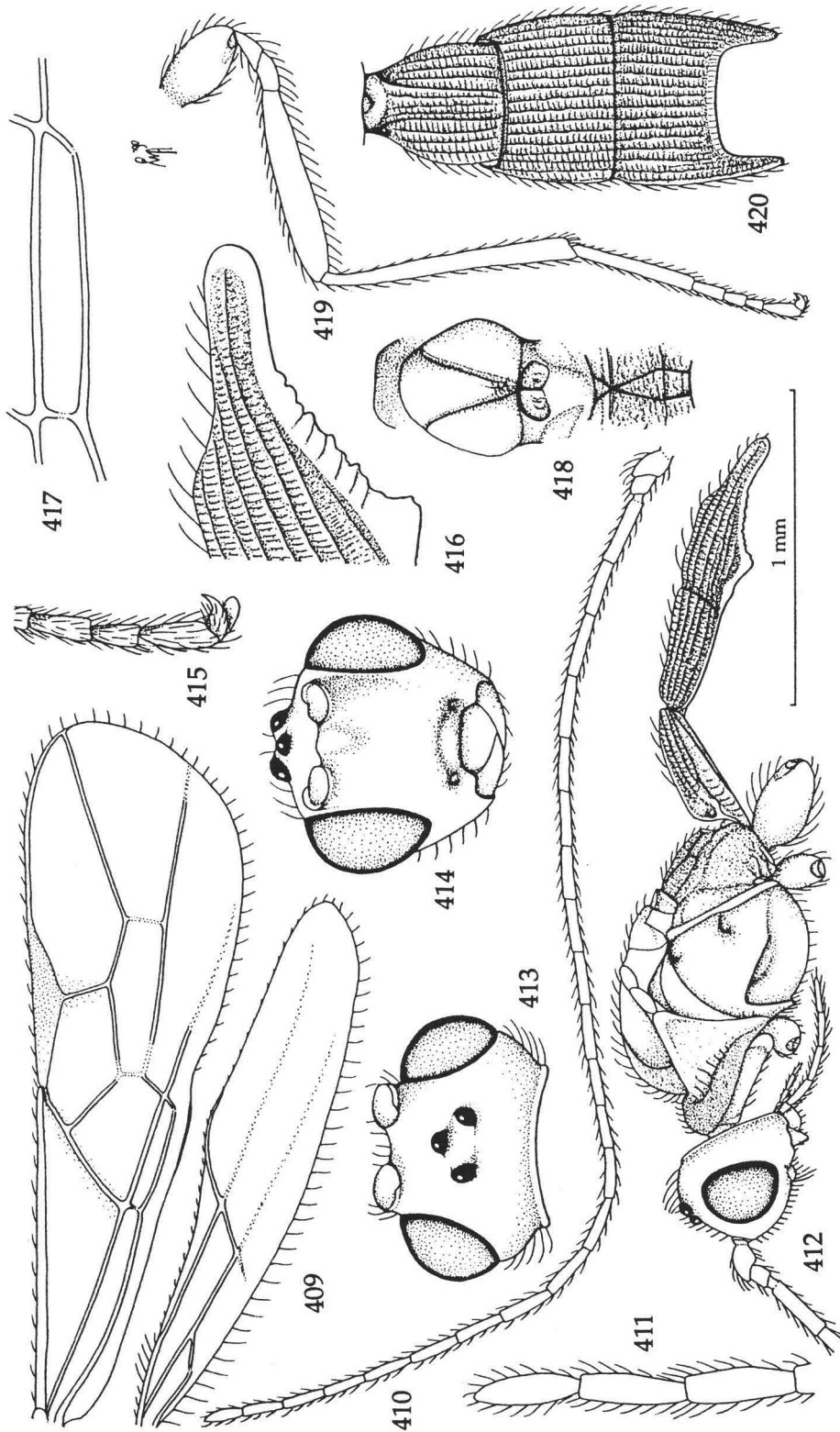
Figs 381-392, *Tetratermus huddlestoni* Wharton, ♀, holotype. 381, wings; 382, detail of scapus and pedicellus, lateral aspect; 383, detail of first subdiscal cell of fore wing; 384, antenna; 385, habitus, lateral aspect; 386, outer hind claw; 387, hind leg; 388, mesosoma, dorsal aspect; 389, fore tarsus, lateral aspect; 390, head, dorsal aspect; 391, head, frontal aspect; 392, metasoma, dorsal aspect. 381, 384, 385, 387: 1.0 × scale-line; 382, 383, 386, 389: 2.7 ×; 388, 390-392: 1.2 ×.



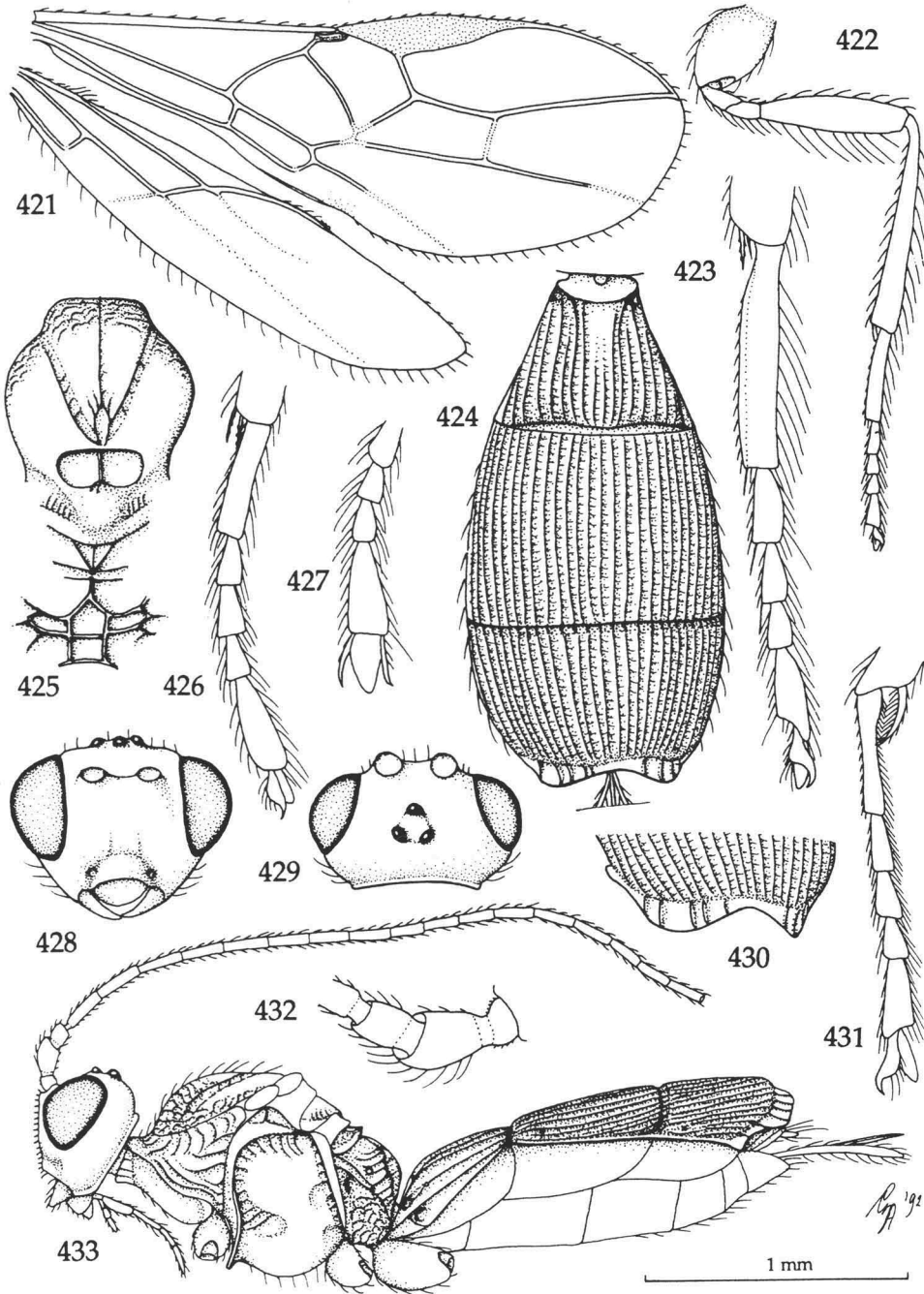
Figs 393-401, *Lysitermus (L.) pallidus* Foerster, ♂, paratype of *L. taiitzkii* (Tobias). 393, wings; 394, propodeum, dorsal aspect; 395, habitus, lateral aspect; 396, head, dorsal aspect; 397, hind leg; 398, head, frontal aspect; 399, mesosoma, dorsal aspect; 400, hind claw; 401, metasoma, dorsal aspect. 393, 395, 397: 1.0 × scale-line; 394, 396, 398-401: 1.3 ×.



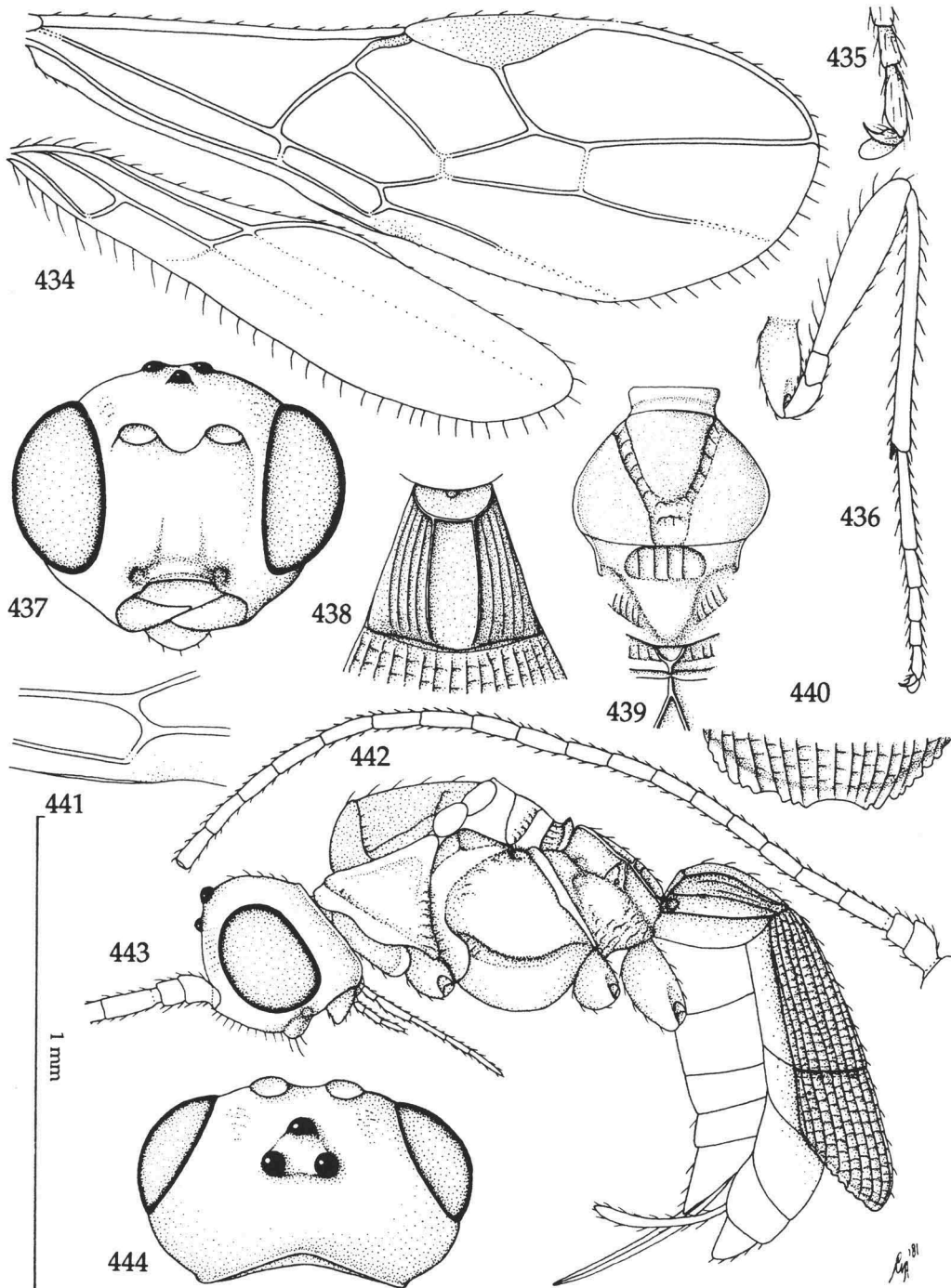
Figs 402-408, *Lysitermus (Trissarthrum) maculipennis* (Ashmead), ♂, holotype, but 406a+b after Wharton, 1993. 402, wings; 403, head, frontal aspect; 404, habitus (metasoma missing), lateral aspect; 405, apex of antenna; 406a, metasoma, dorsal aspect; 406b, third metasomal tergite and ovipositor, lateral aspect; 407, mesosoma, dorsal aspect; 408, head, dorsal aspect. 402, 404: 1.0 × scale-line; 403: 1.5 ×; 405: 1.3 ×; 407: 1.8 ×.



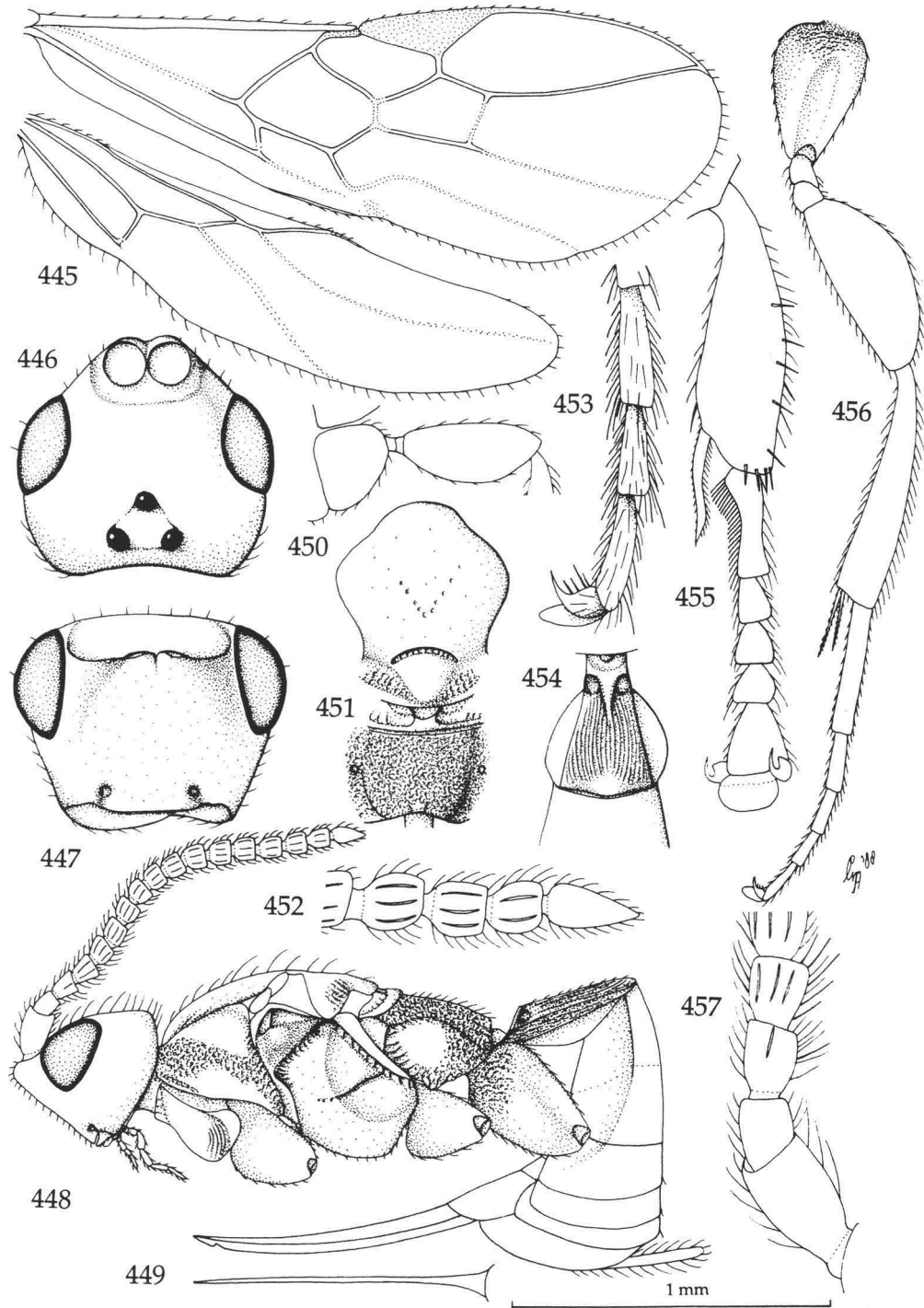
Figs 409-420, *Acanthormius sumatrensis* van Achterberg, ♂, holotype. 409, wings; 410, antenna; 411, apex of antenna; 412, habitus, lateral aspect; 413, head, dorsal aspect; 414, head, frontal aspect; 415, outer hind claw; 416, apex of third metasomal tergite, dorsal aspect; 417, detail of first subdiscal cell of fore wing; 418, mesosoma, dorsal aspect; 419, hind leg; 420, metasoma, dorsal aspect. 409, 410, 412, 418-420: 1.0 × scale-line; 411, 415-417: 2.5 ×; 413, 414: 1.5 ×.



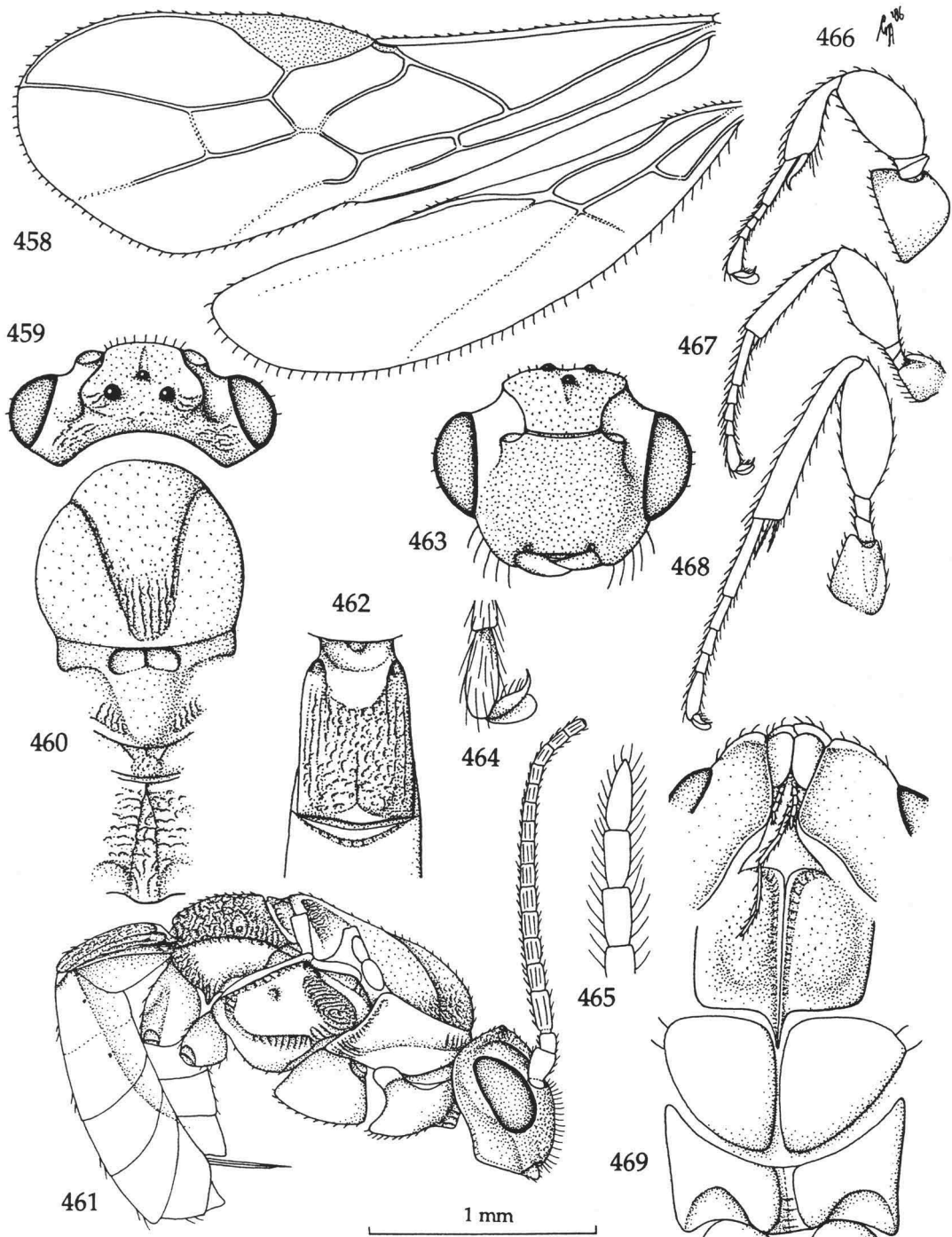
Figs 421-433, *Aulosaphoides brevitarsus* gen. nov. & spec. nov., ♀, holotype. 421, wings; 422, hind leg; 423, hind tarsus, lateral aspect; 424, metasoma, dorsal aspect; 425, mesosoma, dorsal aspect; 426, middle tarsus, lateral aspect; 427, fore tarsus, dorsal aspect; 428, head, frontal aspect; 429, head, dorsal aspect; 430, apex of third metasomal tergite, latero-apical aspect; 431, fore tarsus, lateral aspect; 432, base of antenna; 433, habitus, lateral aspect. 421, 422, 433: 1.0 × scale-line; 424, 425, 428-430: 1.3 ×; 423, 426, 427, 431, 432: 2.5 ×.



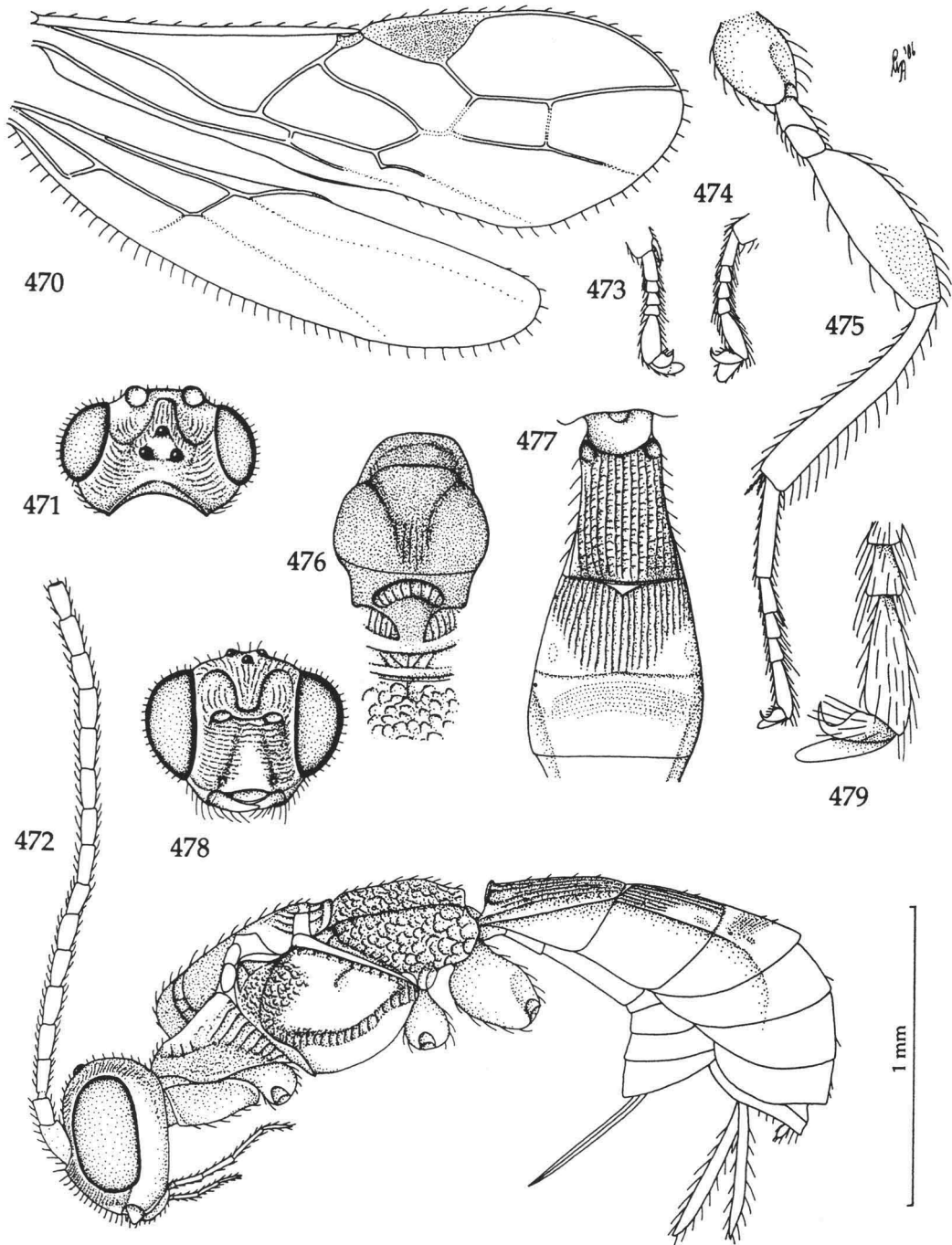
Figs 434-444, *Aulosaphes unicolor* (Ashmead), ♀, holotype. 434, wings; 435, hind claw; 436, hind leg; 437, head, frontal aspect; 438, first metasomal tergite, dorsal aspect; 439, mesosoma, dorsal aspect; 440, apex of third metasomal tergite, dorso-posterior aspect; 441, detail of first subdiscal cell of fore wing; 442, antenna; 443, habitus, lateral aspect; 444, head, dorsal aspect. 434, 436, 442, 443: 1.0 × scale-line; 435, 441: 2.0 ×; 437-440, 444: 1.4 ×.



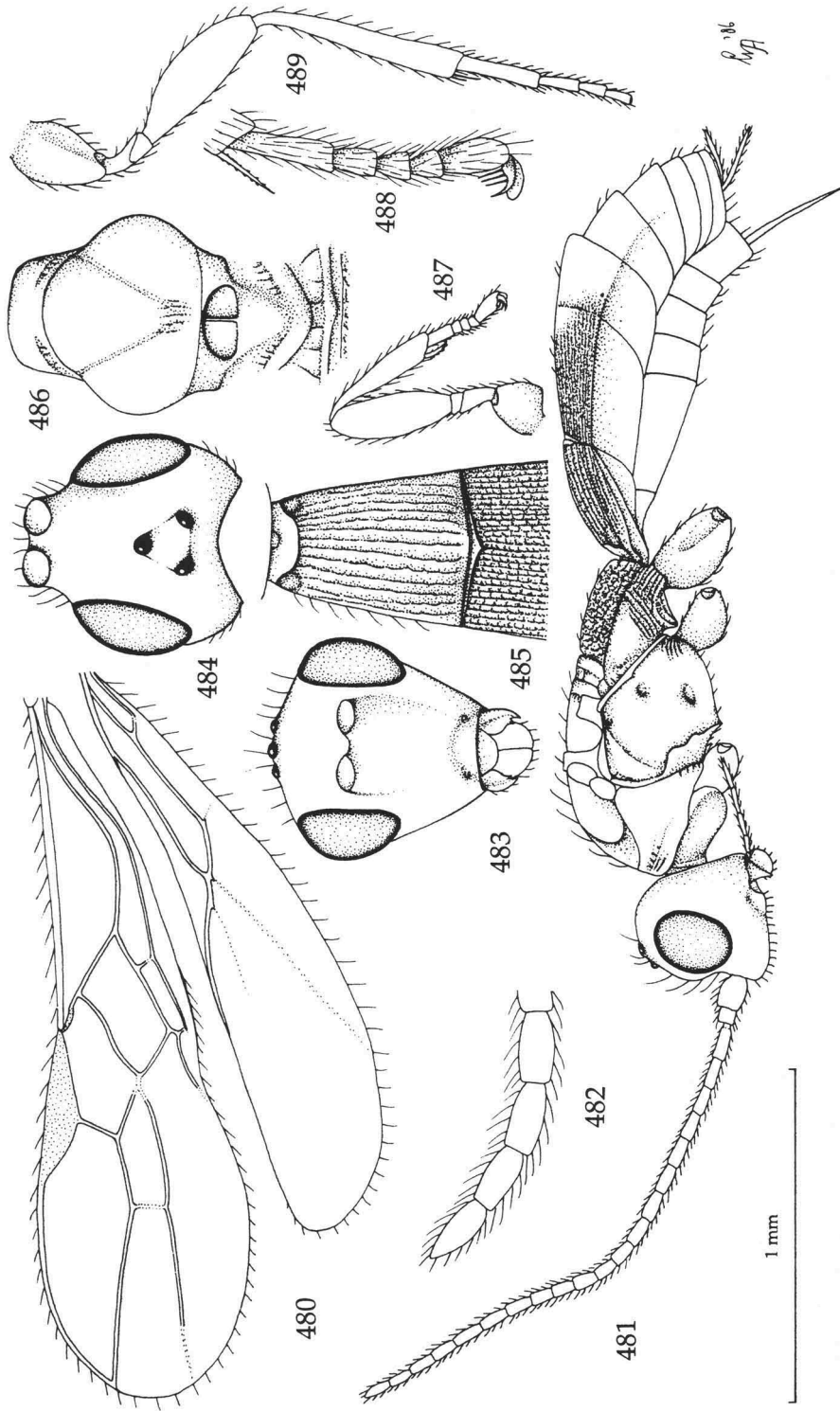
Figs 445-457, *Planitorus breviflagellaris* gen. nov. & spec. nov., ♀, holotype. 445, wings; 446, head, dorsal aspect; 447, head, frontal aspect; 448, habitus, lateral aspect; 449, ovipositor, ventral aspect; 450, fore femur, lateral aspect; 451, mesosoma, dorsal aspect; 452, apex of antenna; 453, hind claw; 454, first metasomal tergite, dorsal aspect; 455, fore tibia and tarsus, lateral aspect; 456, hind leg; 457, base of antenna. 445, 448-451, 454, 456: 1.0 × scale-line; 446, 447: 1.6 ×; 452, 453, 455, 457: 2.5 ×.



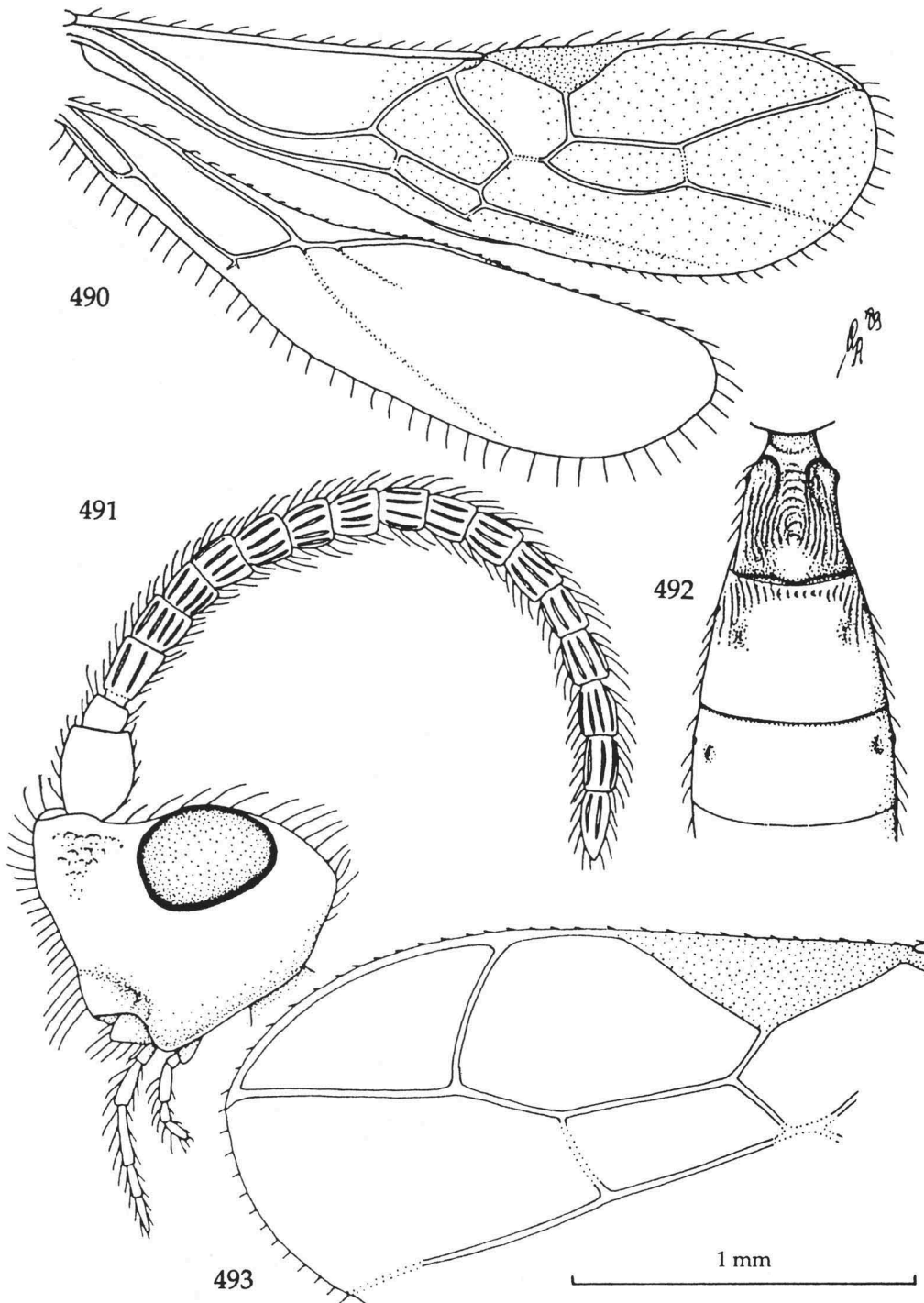
Figs 458-469, *Betylobracon waterhousei* Tobias, ♀, holotype, but 465 of ♀ from Australia, Winsor Tableland. 458, wings; 459, head, dorsal aspect; 460, mesosoma, dorsal aspect; 461, habitus, lateral aspect; 462, first metasomal tergite, dorsal aspect; 463, head, frontal aspect; 464, middle claw; 465, apex of antenna; 466, fore leg; 467, middle leg; 468, hind leg; 469, head and thorax, ventral aspect. 458, 461, 466-468: 1.0 × scale-line; 459, 460, 462, 463, 469: 1.3 ×; 464, 465: 2.5 ×.



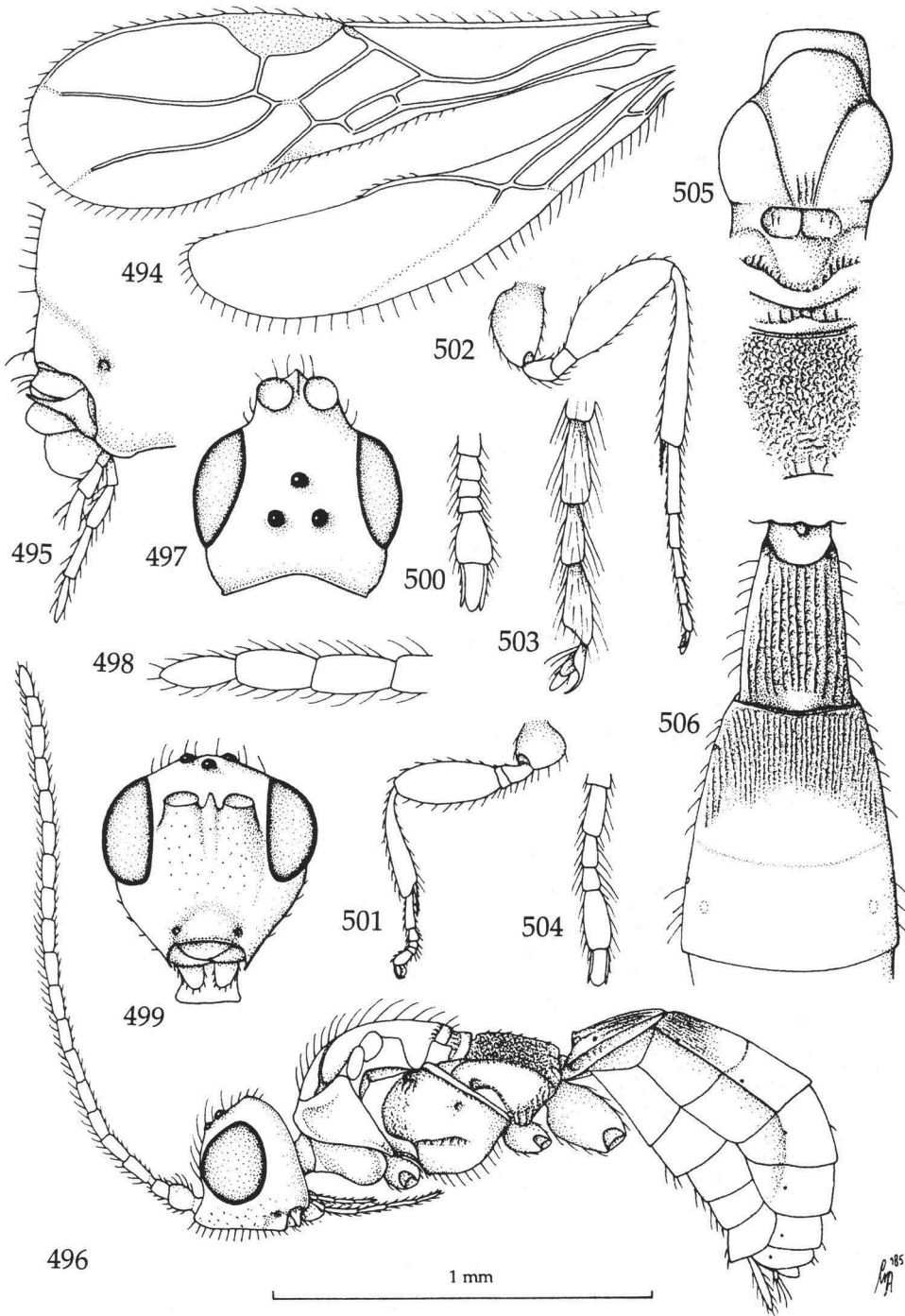
Figs 470-479, *Mesocentrus crassipes* Szépligeti, ♀, lectotype. 470, wings; 471, head, dorsal aspect; 472, habitus, lateral aspect; 473, fore tarsus, lateral aspect; 474, middle tarsus, lateral aspect; 475, hind leg; 476, mesosoma, dorsal aspect; 477, first-third metasomal tergites, dorsal aspect; 478, head, frontal aspect; 479, outer hind claw. 470-478: 1.0 × scale-line; 479: 2.5 ×.



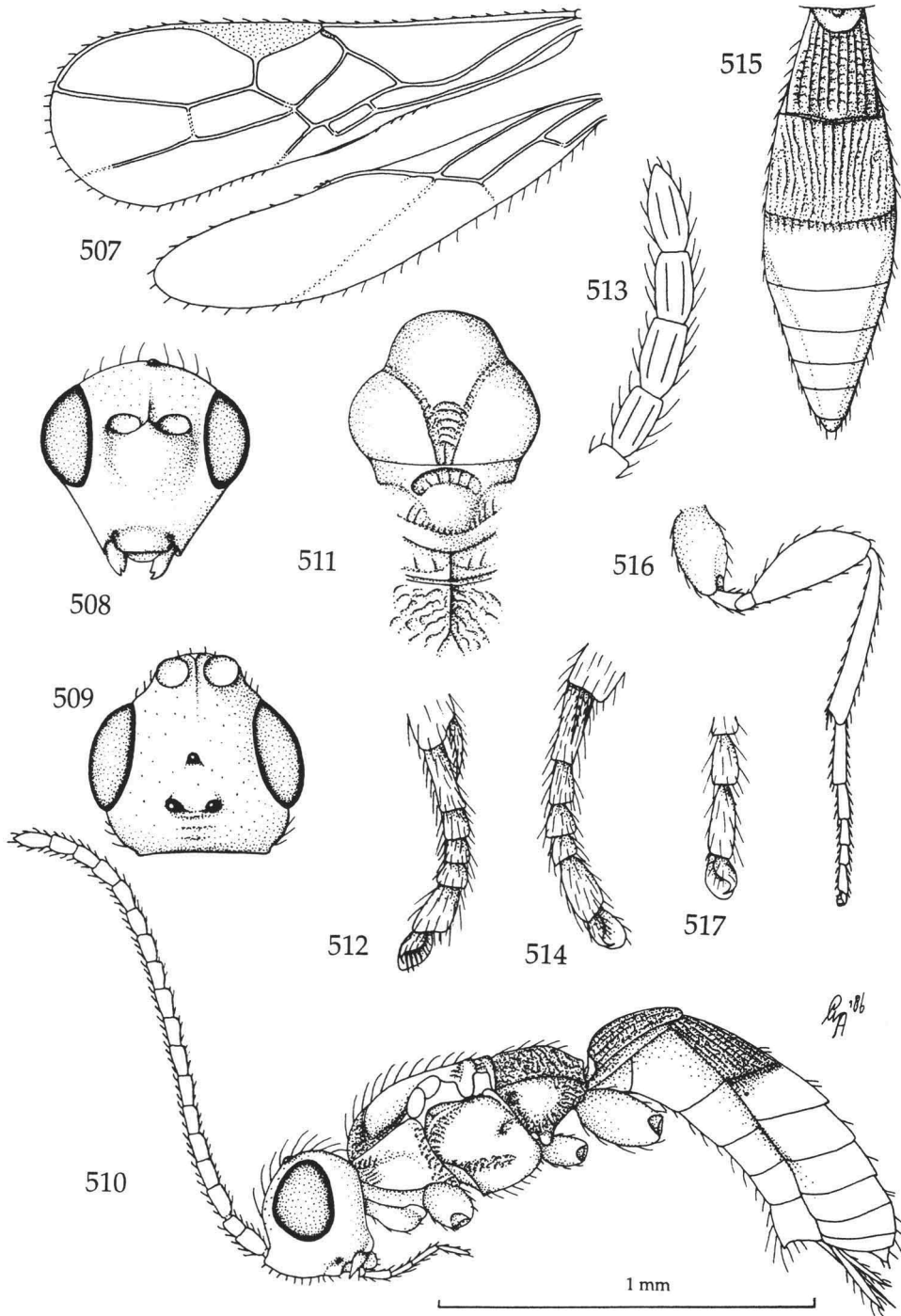
Figs 480-489, *Facitorius superus* gen. nov. & spec. nov., ♀, holotype. 480, wings; 481, habitus, lateral aspect; 482, apex of antenna; 483, head, frontal aspect; 484, head, dorsal aspect; 485, first metasomal tergite, dorsal aspect; 486, head, dorsal aspect; 487, fore leg; 488, middle leg, lateral aspect; 489, hind leg; 480, 481, 487, 489: 1.0 × scale-line; 482, 488: 2.5 ×; 483-486: 1.6 ×.



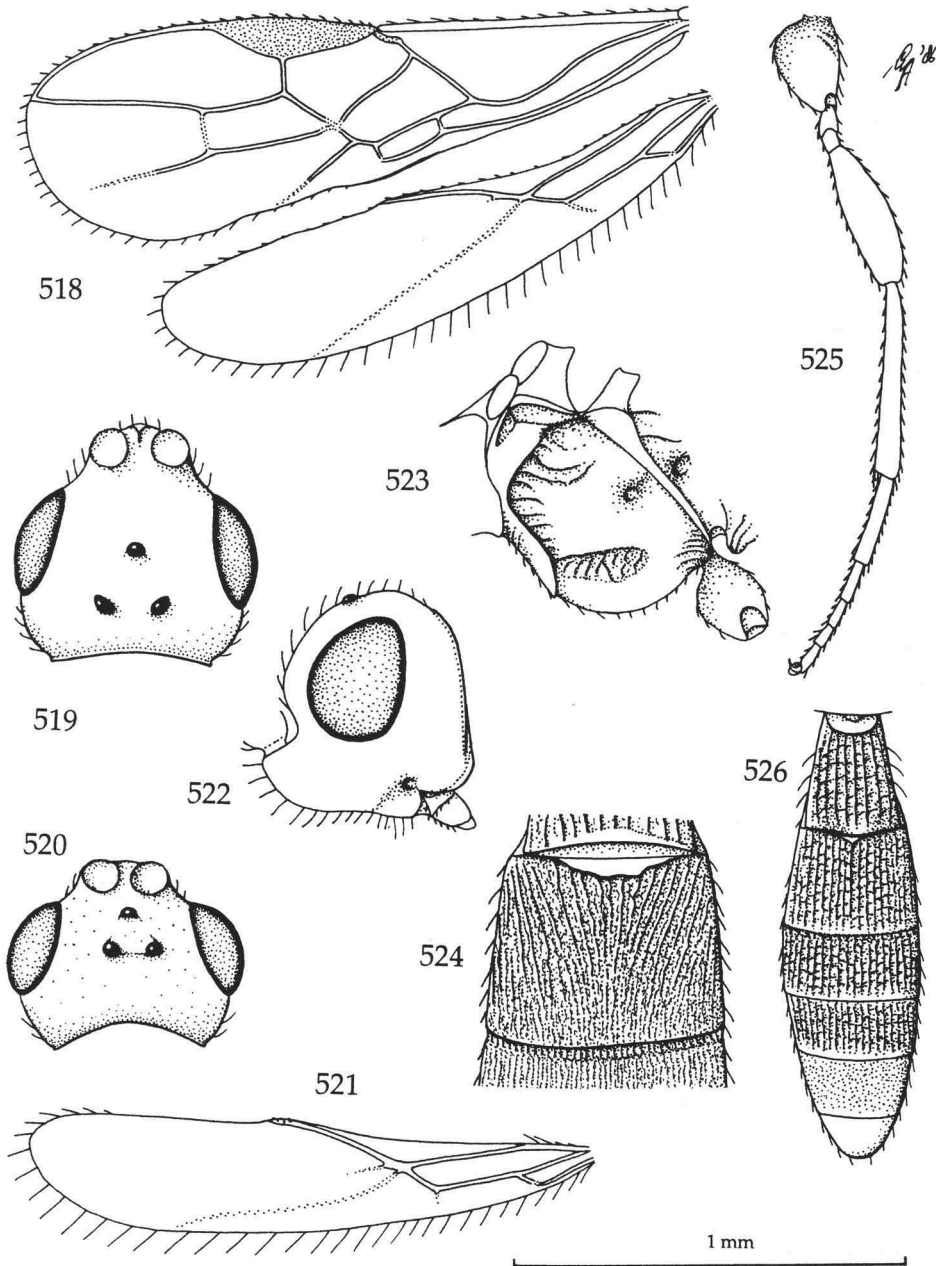
Figs 490-492, *Facitorus brevicornis* gen. nov. & spec. nov., ♀, holotype; fig. 493, *Betylobracon waterhousei* Tobias, ♀, Australia, Windsor Tablelands. 490, wings; 491, head, lateral aspect; 492, first-third metasomal tergites, dorsal aspect; 493, apex of fore wing. 490: 1.0 × scale-line; 491: 1.9 ×; 492, 493: 1.2 ×.



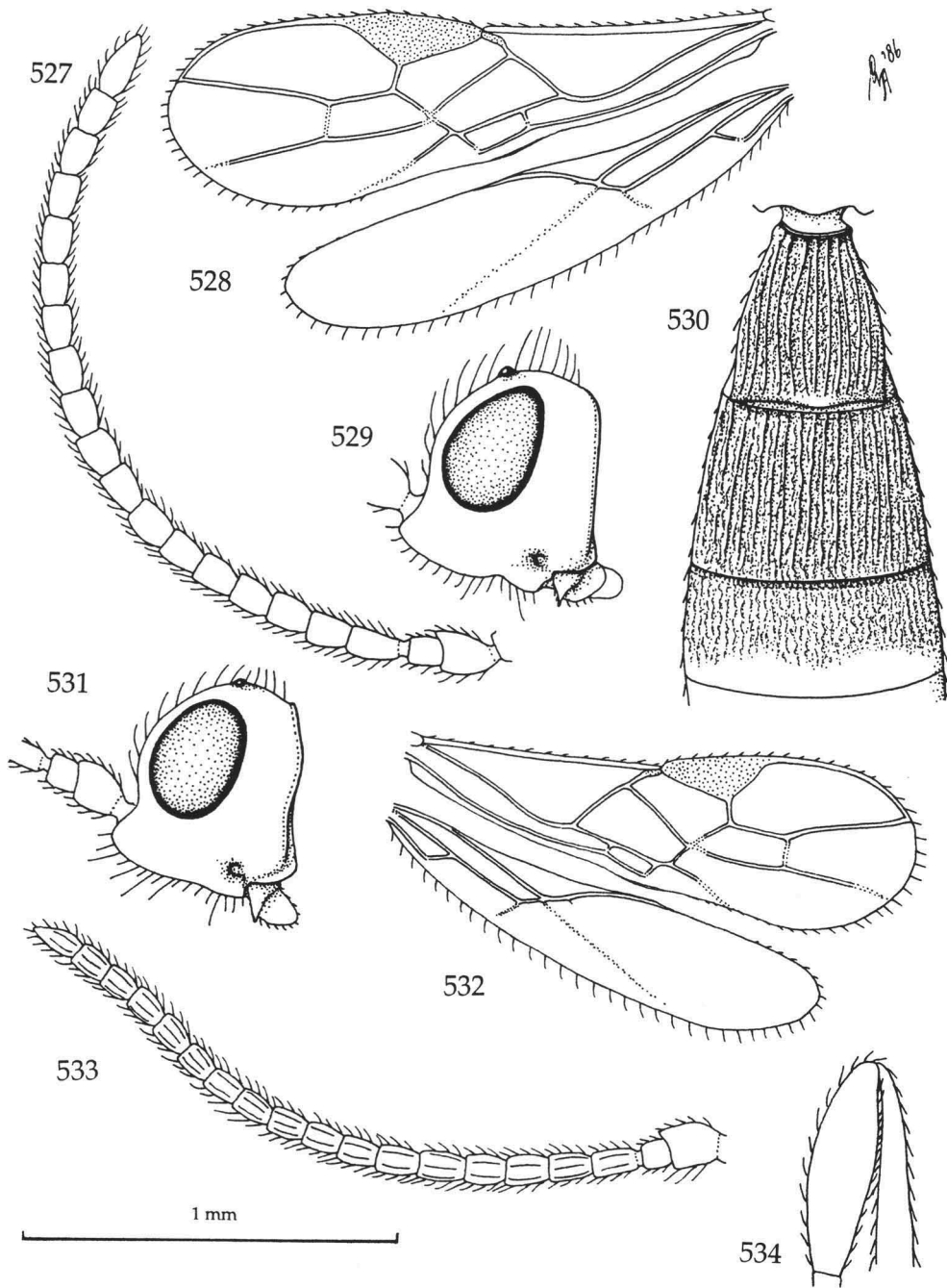
Figs 494-506, *Jannya brevitarsus* gen. nov. & spec. nov., ♀, holotype. 494, wings; 495, clypeus and mandible, antero-lateral aspect; 496, habitus, lateral aspect; 497, head, dorsal aspect; 498, apex of antenna; 499, head, frontal aspect; 500, fore tarsus, dorsal aspect; 501, fore leg; 502, hind leg; 503, outer hind claw; 504, middle tarsus, dorsal aspect; 505, mesosoma, dorsal aspect; 506, first-third metasomal tergites, dorsal aspect. 494, 496, 501, 502: 1.0 × scale-line; 495: 2.3 ×; 497, 499, 505, 506: 1.5 ×; 498, 500, 503, 504: 2.5 ×.



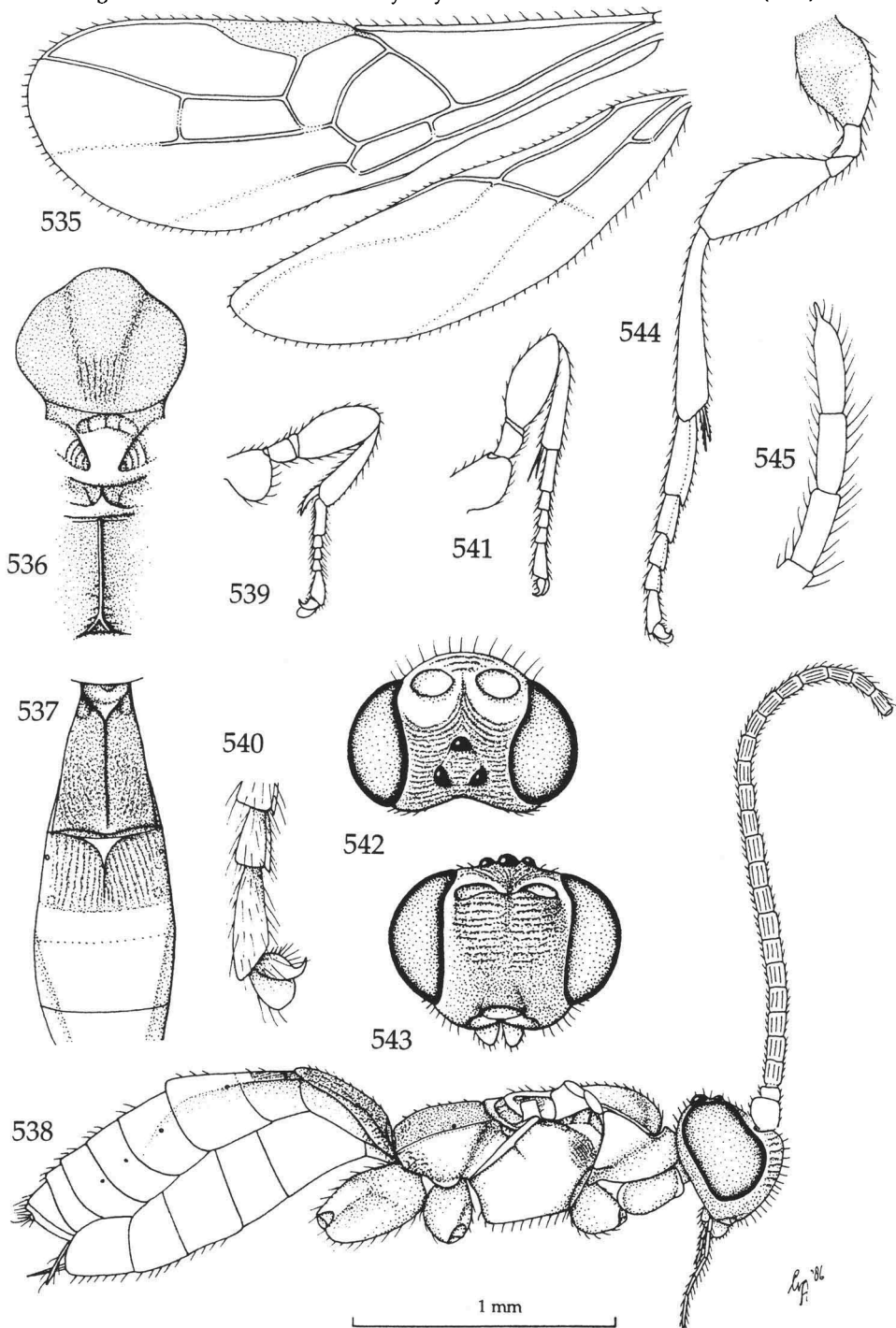
Figs 507-517, *Conobregma cometes* gen. nov. & spec. nov., ♀, holotype. 507, wings; 508, head, frontal aspect; 509, head, dorsal aspect; 510, habitus, lateral aspect; 511, mesosoma, dorsal aspect; 512, fore tarsus, lateral aspect; 513, apex of antenna; 514, middle tarsus, lateral aspect; 515, metasoma, dorsal aspect; 516, hind leg; 517, hind claw. 507, 510, 515, 516: 1.0 × scale-line; 508, 509, 511: 1.5 ×; 512-514, 517: 2.5 ×.



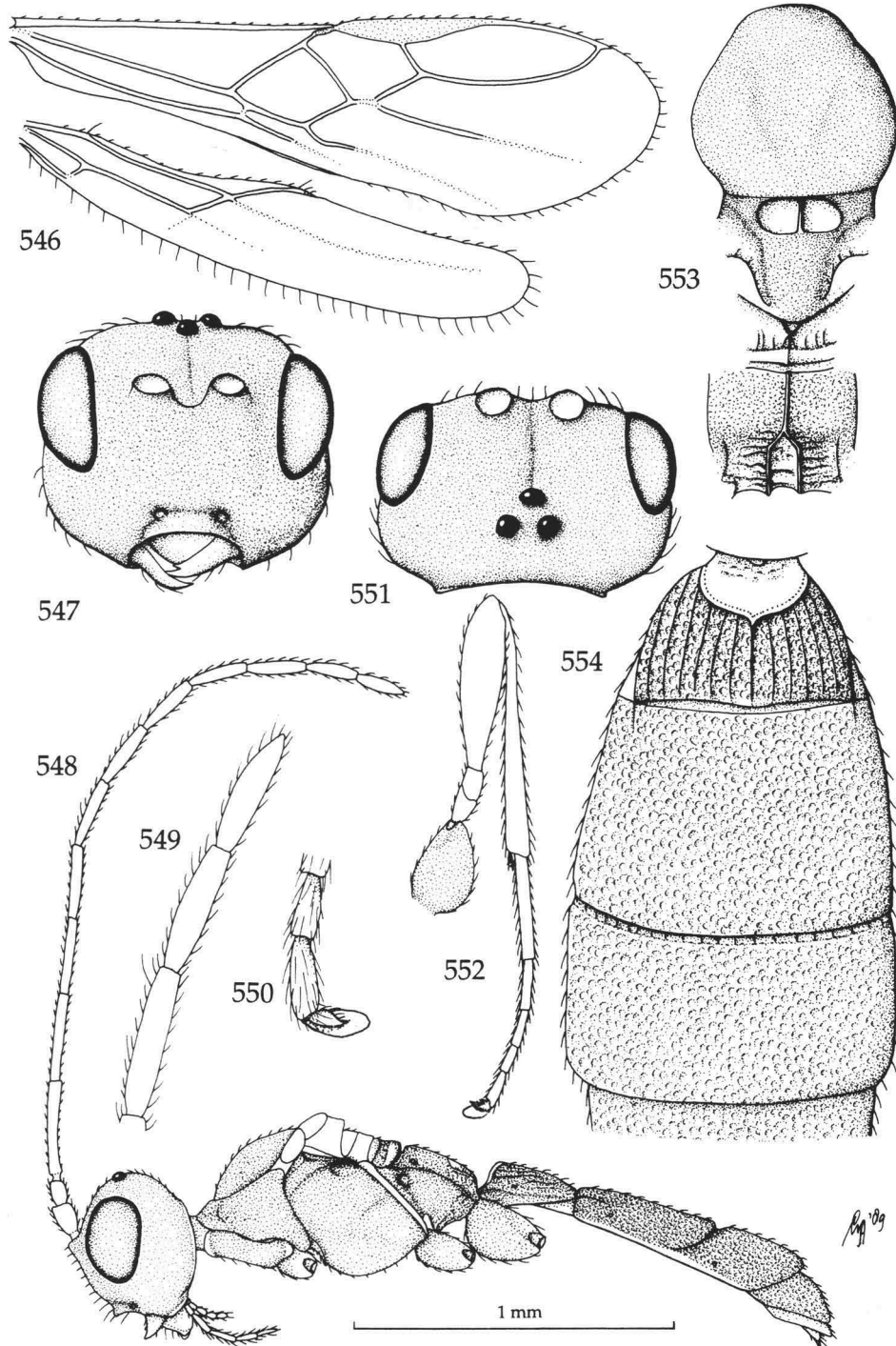
Figs 518-526, *Conobregma brevinervis* gen. nov. & spec. nov., ♀, holotype, but 520, 521 and 526 of ♂ paratype. 518, wings; 519, 520, head, dorsal aspect; 521, hind wing; 522, head, lateral aspect; 523, mesopleuron; 524, second metasomal tergite, dorsal aspect; 525, hind leg; 526, metasoma, dorsal aspect. 518, 521, 525, 526: 1.0 × scale-line; 519, 520, 522-524: 1.5 ×.



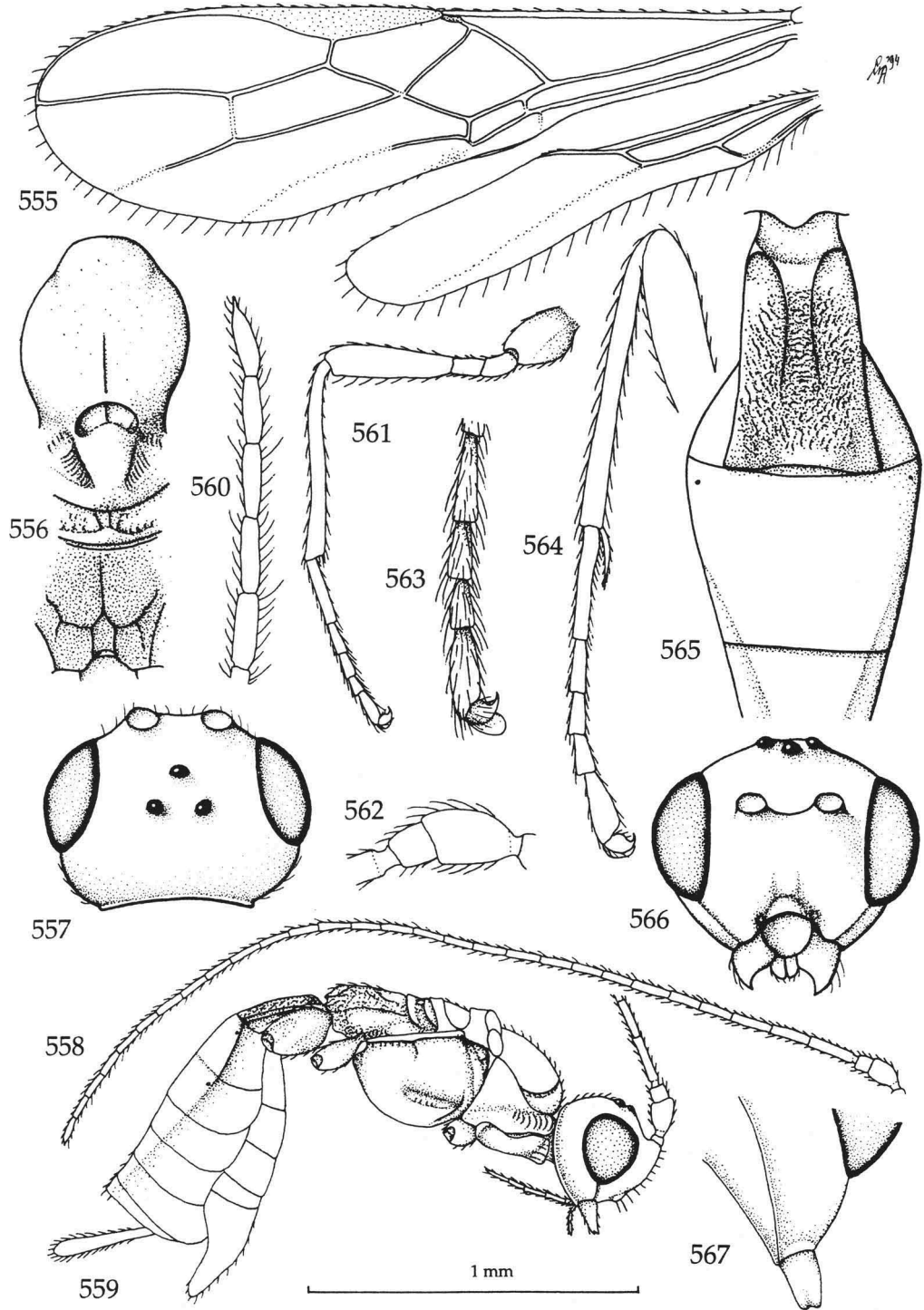
Figs 527-530, *Conobregma masneri* gen. nov. & spec. nov., ♀, holotype; figs 531-534, *C. stigmaticum* gen. nov. & spec. nov., ♀, holotype. 527, 533, antenna; 528, 532, wings; 529, 531, head, lateral aspect; 530, first-third metasomal tergites, dorsal aspect; 534, hind femur, lateral aspect. 527, 529-531, 533, 534: 1.5 × scale-line; 528, 532: 1.0 ×.



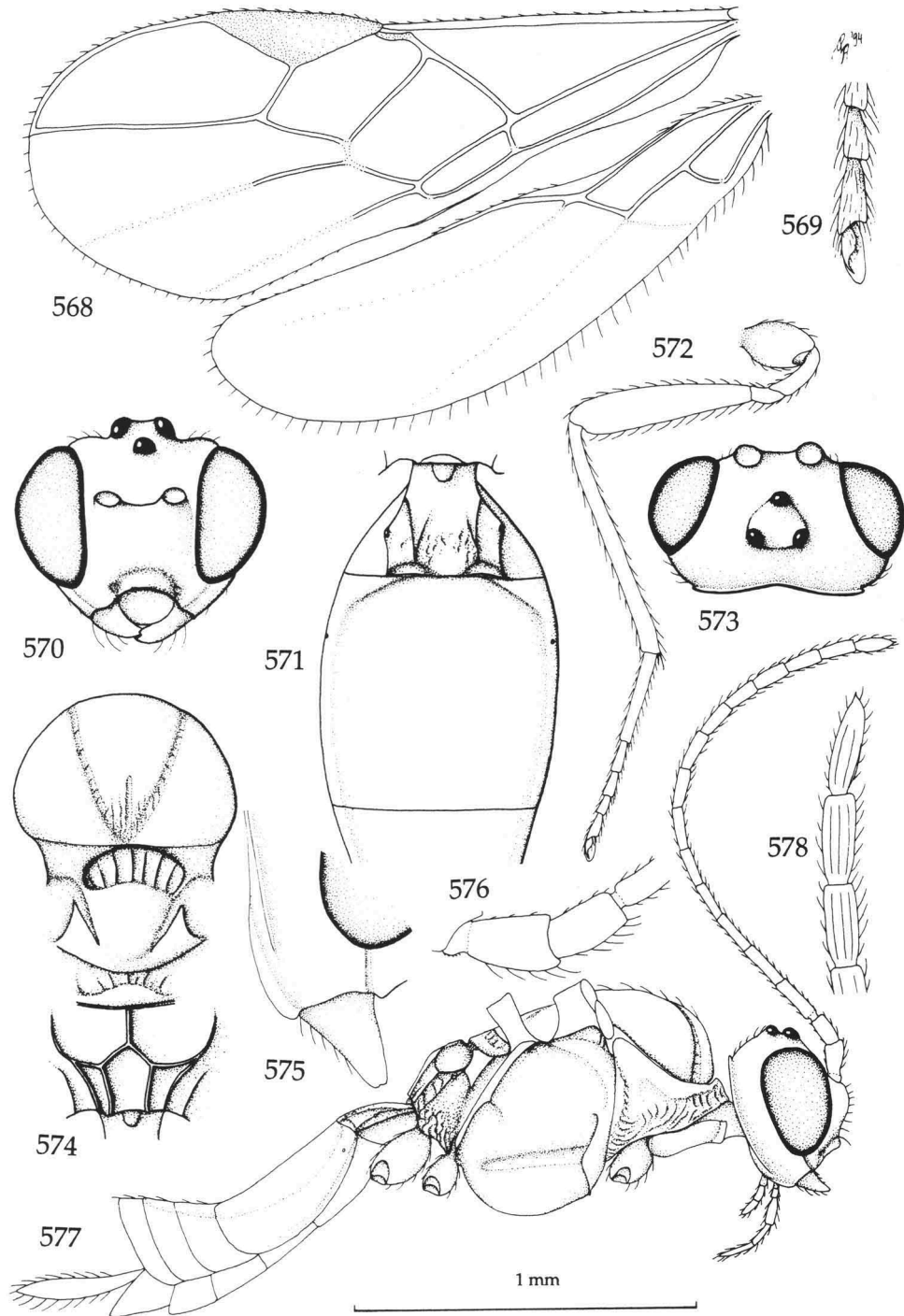
Figs 535-545, *Bulborogas compressifemur* gen. nov. & spec. nov., ♀, paratype (Brazil, Bahia), but 545 of holotype. 535, wings; 536, mesosoma, dorsal aspect; 537, first-third metasomal tergites, dorsal aspect; 538, habitus, lateral aspect; 539, fore leg; 540, inner hind claw; 541, middle leg; 542, head, dorsal aspect; 543, head, frontal aspect; 544, hind leg; 545, apex of antenna. 535, 538, 539, 541, 544: 1.0 × scale-line; 536, 537, 542, 543: 1.4 ×; 540: 2.5 ×; 545: 2.7 ×.



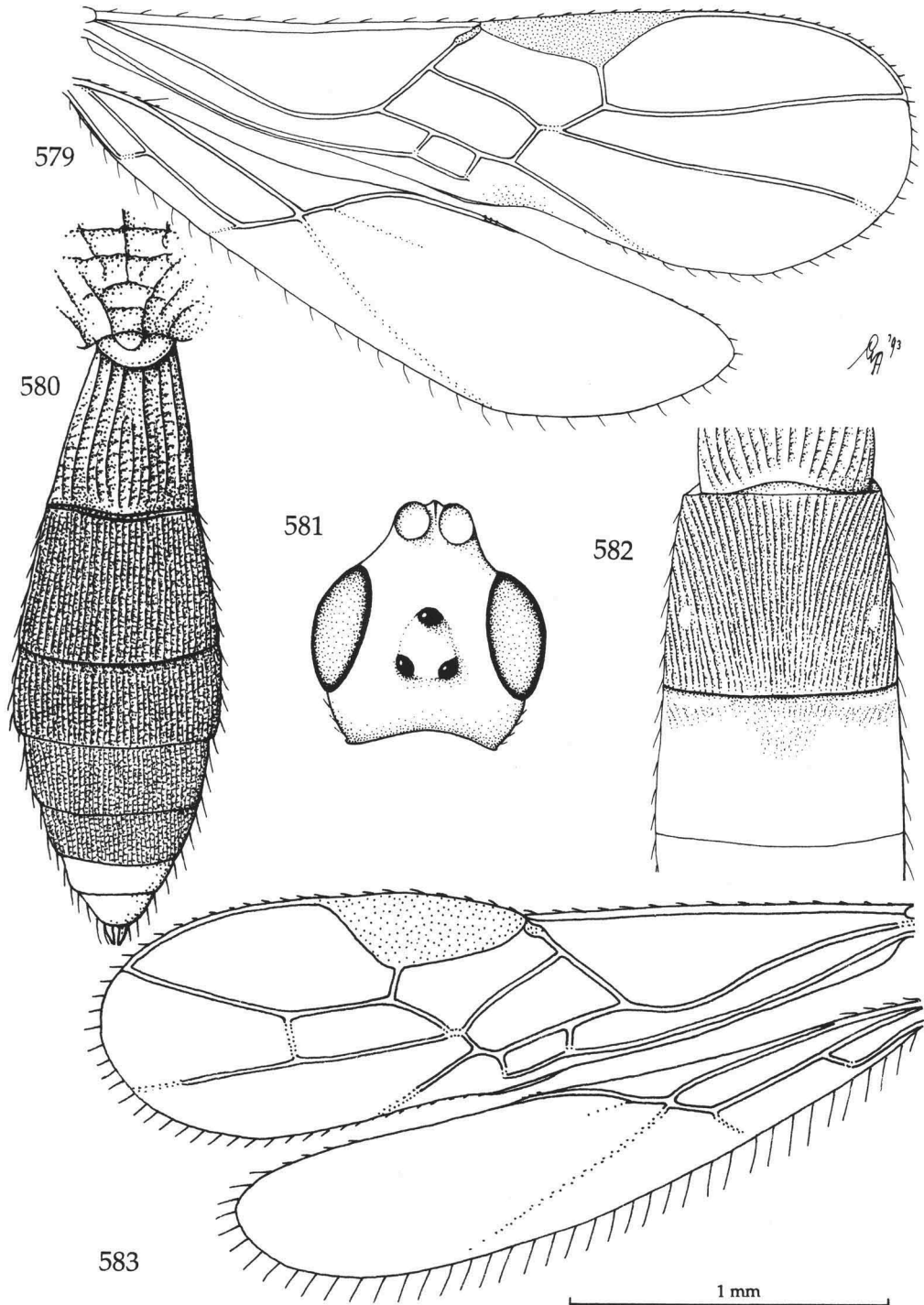
Figs 546-554, *Polystenidea parksi* Viereck, ♂, holotype. 546, wings; 547, head, frontal aspect; 548, habitus, lateral aspect; 549, apex of antenna; 550, outer hind claw; 551, head, dorsal aspect; 552, hind leg; 553, mesosoma, dorsal aspect; 554, first-third metasomal tergites, dorsal aspect. 546, 548, 552: 1.0 × scale-line; 547, 550, 551, 553, 554: 1.5 ×; 549, 550: 2.5 ×.



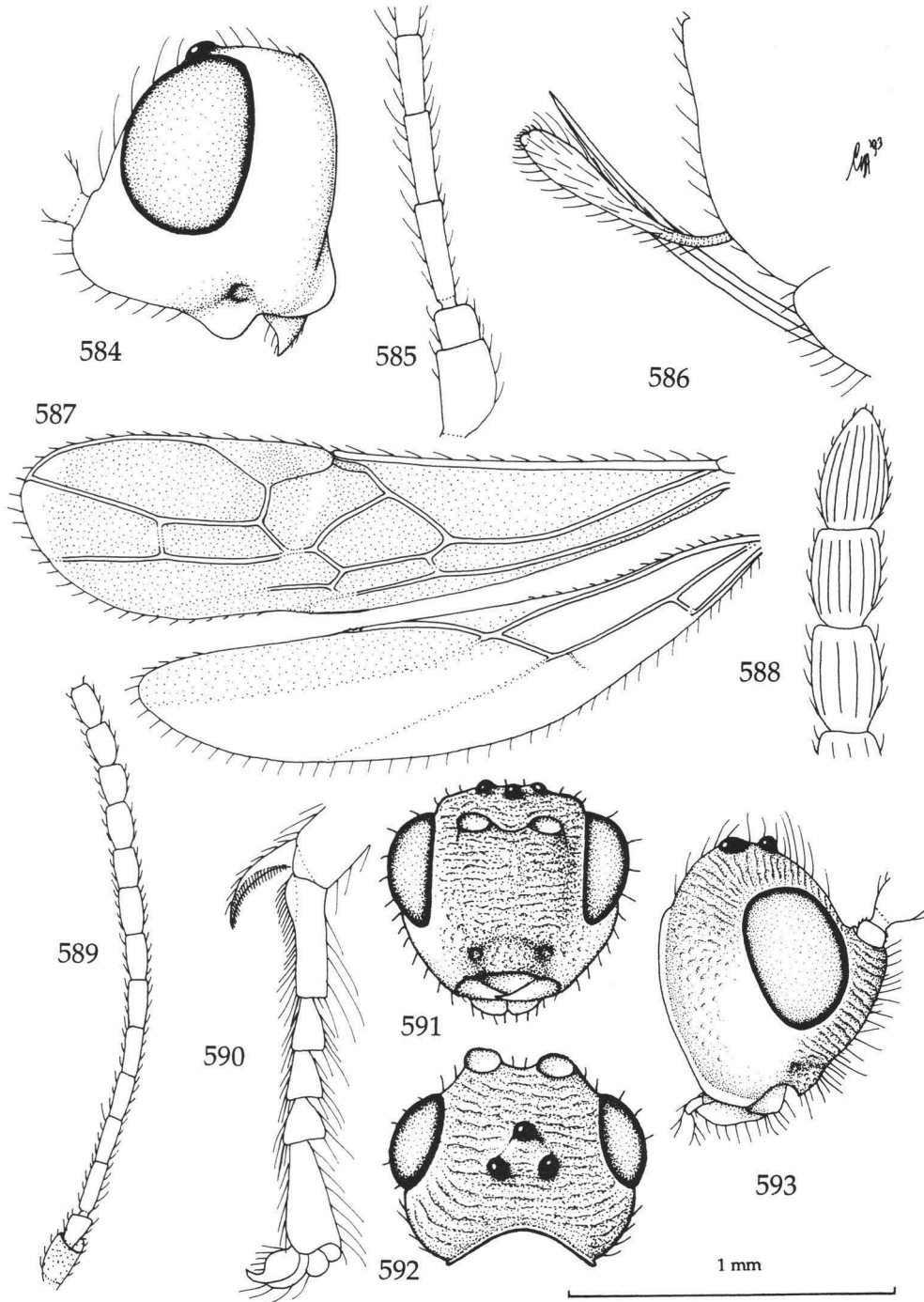
Figs 555-567, *Neoavga pilosa* Belokobylskij, ♀, paratype. 555, wings; 556, mesosoma, dorsal aspect; 557, head, dorsal aspect; 558, antenna; 559, habitus, lateral aspect; 560, apex of antenna; 561, hind leg; 562, detail of scapus and pedicellus, lateral aspect; 563, outer hind claw; 564, fore leg; 565, first-third metasomal tergites, dorsal aspect; 566, head, frontal aspect; 567, detail of ventral part of occipital carina. 555, 558, 559, 561: 1.0 × scale-line; 556: 1.4 ×; 557, 566: 1.7 ×; 560, 562-565, 567: 2.5 ×.



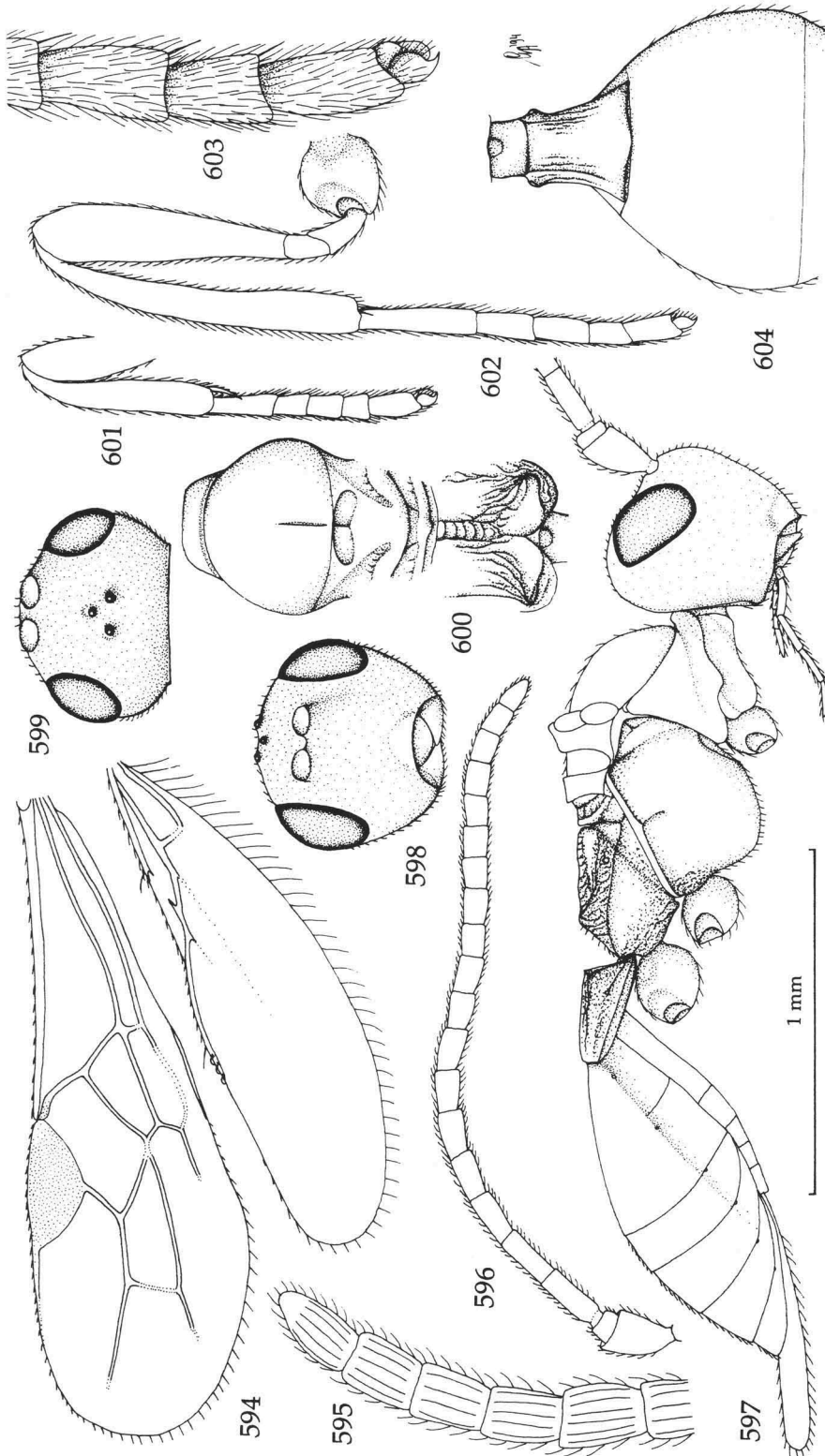
Figs 568-578, *Hormius (Anhormius) propodealis* (Belokobylskij), ♀, holotype. 568, wings; 569, outer hind claw; 570, head, frontal aspect; 571, first-third metasomal tergites, dorsal aspect; 572, hind leg; 573, head, dorsal aspect; 574, mesosoma, dorsal aspect; 575, detail of ventral part of occipital carina; 576, base of antenna; 577, habitus, lateral aspect; 578, apex of antenna. 568, 572, 577: 1.0 × scale-line; 570, 571, 573, 574: 1.1 ×; 569, 575, 576, 578: 2.5 ×.



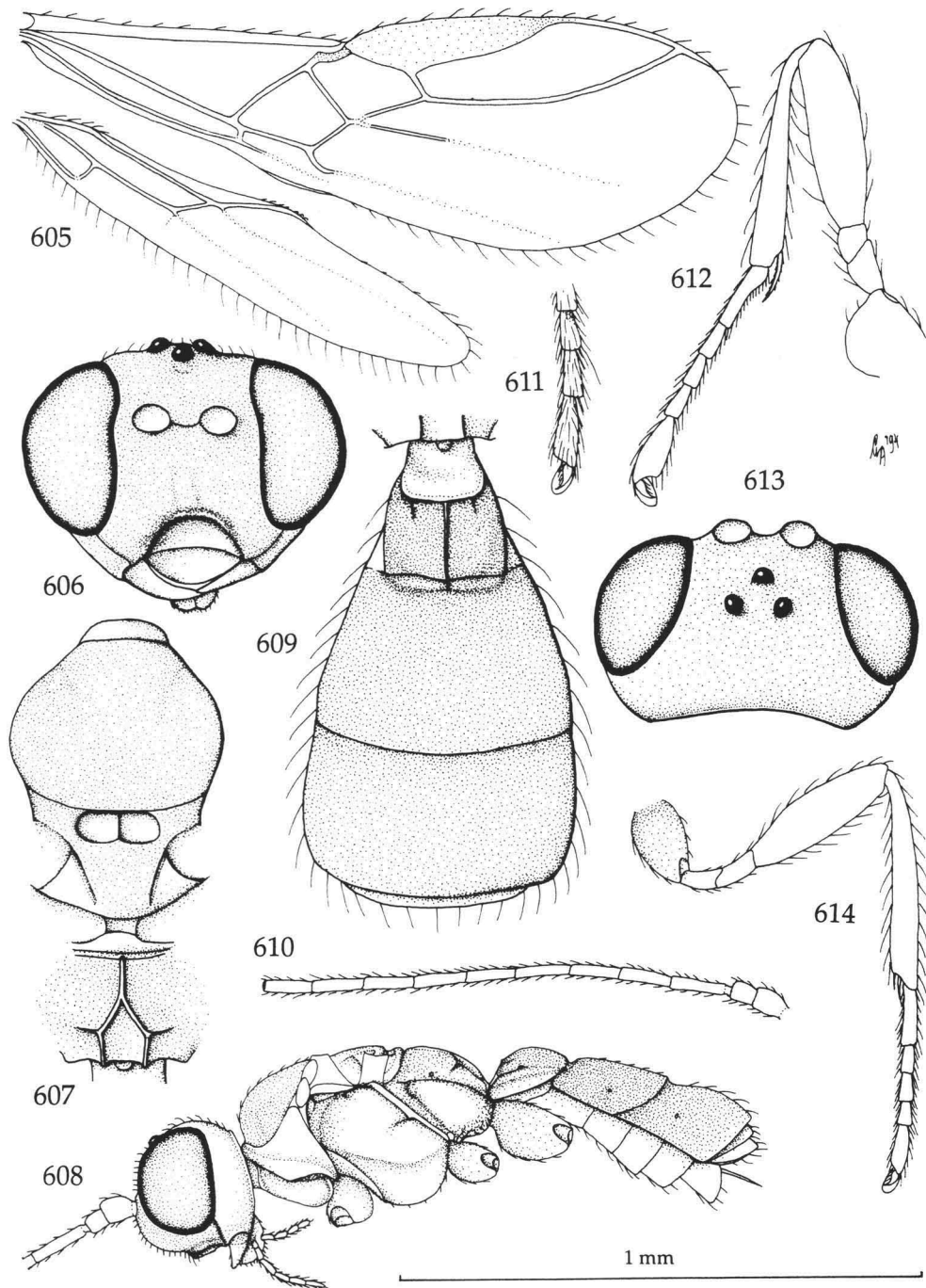
Figs 579, 581, 582, *Jannya nigriceps* gen. nov. & spec. nov., ♀, holotype; figs 580, 583, *Conobregma brevistigmus* gen. nov. & spec. nov., ♀, holotype. 579, 583, wings; 580, metasoma, dorsal aspect; 581, head, dorsal aspect; 582, second and third metasomal tergites, dorsal aspect. 579: 1.0 × scale-line; 580, 583: 1.4 ×; 581, 582: 1.5 ×.



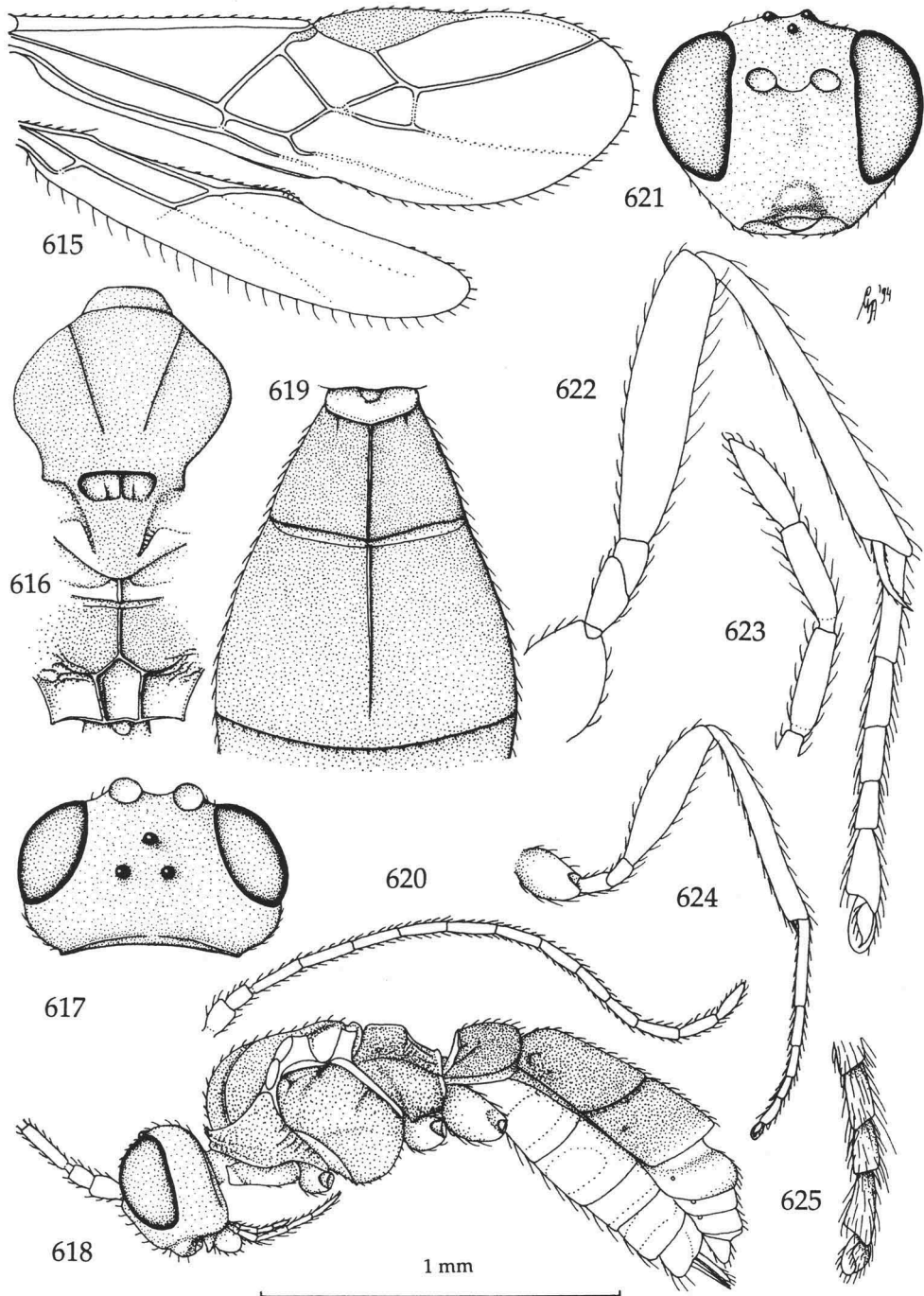
Figs 584, 585, *Conobregma brevistigmus* gen. nov. & spec. nov., ♀, holotype; fig. 586, *Hormiitis elliptivalva* spec. nov., ♀, holotype; figs 587-593, *Promesocentrus tricolor* gen. nov. & spec. nov., ♀, holotype. 584, 593, head, lateral aspect; 585, base of antenna; 586, ovipositor and ovipositor sheath, lateral aspect; 587, wings; 588, apex of antenna; 589, antenna; 590, fore tarsus, lateral aspect; 591, head, frontal aspect; 592, head, dorsal aspect. 584, 585, 588, 590, 593: 2.3 × scale-line; 586: 1.5 ×; 587, 589: 1.0 ×; 591, 592: 1.3 ×.



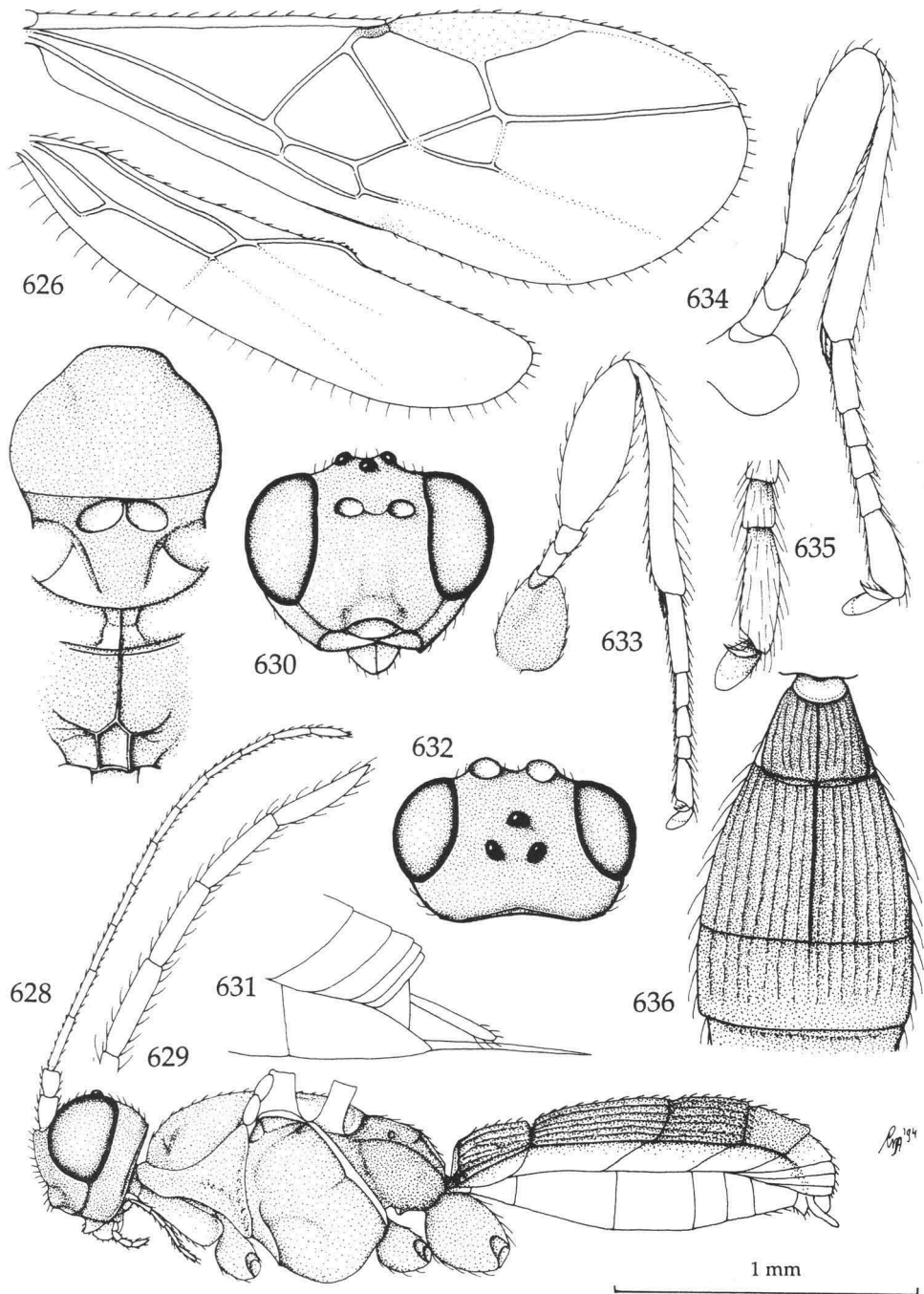
Figs 594-604, *Emholbracon brevisigmus* gen. nov. & spec. nov., ♀, holotype. 594, wings; 595, apex of antenna; 596, habitus, lateral aspect; 597, habitus, lateral aspect; 598, head, frontal aspect; 599, head, dorsal aspect; 600, mesosoma, dorsal aspect; 601, fore tibia and tarsus, dorsal aspect; 602, hind leg; 603, outer hind claw; 604, first-third metasomal tergites, dorsal aspect. 594, 596-602, 604: 1.0 × scale-line; 595, 603: 2.5 ×.



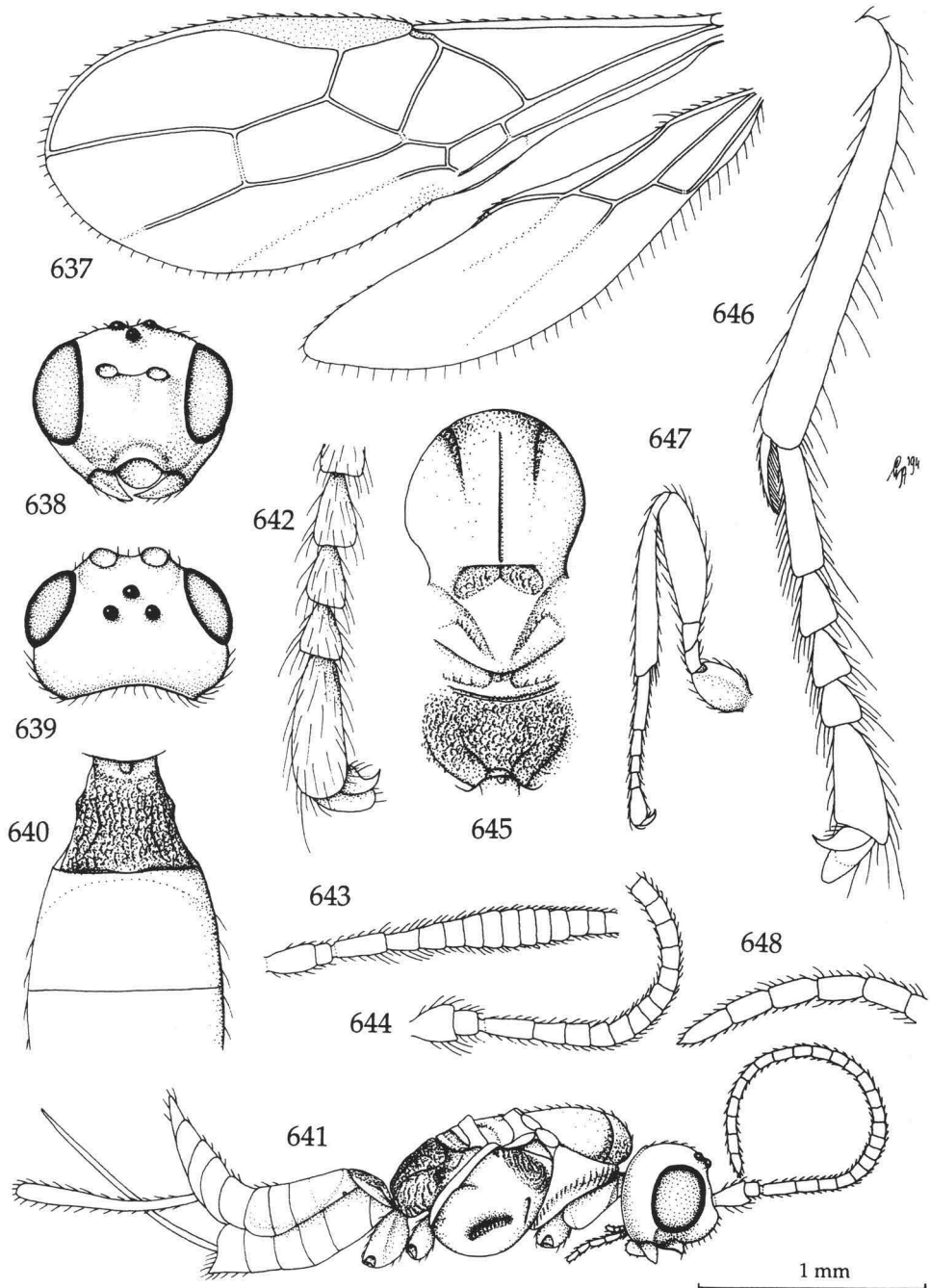
Figs 605-614, *Choreborogas minutus* spec. nov., ♀, paratype. 605, wings; 606, head, frontal aspect; 607, mesosoma, dorsal aspect; 608, habitus, lateral aspect; 609, metasoma, dorsal aspect; 610, antenna; 611, outer hind claw; 612, fore leg; 613, head, dorsal aspect; 614, hind leg. 605, 608, 610, 614: 1.0 × scale-line; 606, 607, 609, 611-613: 1.5 ×.



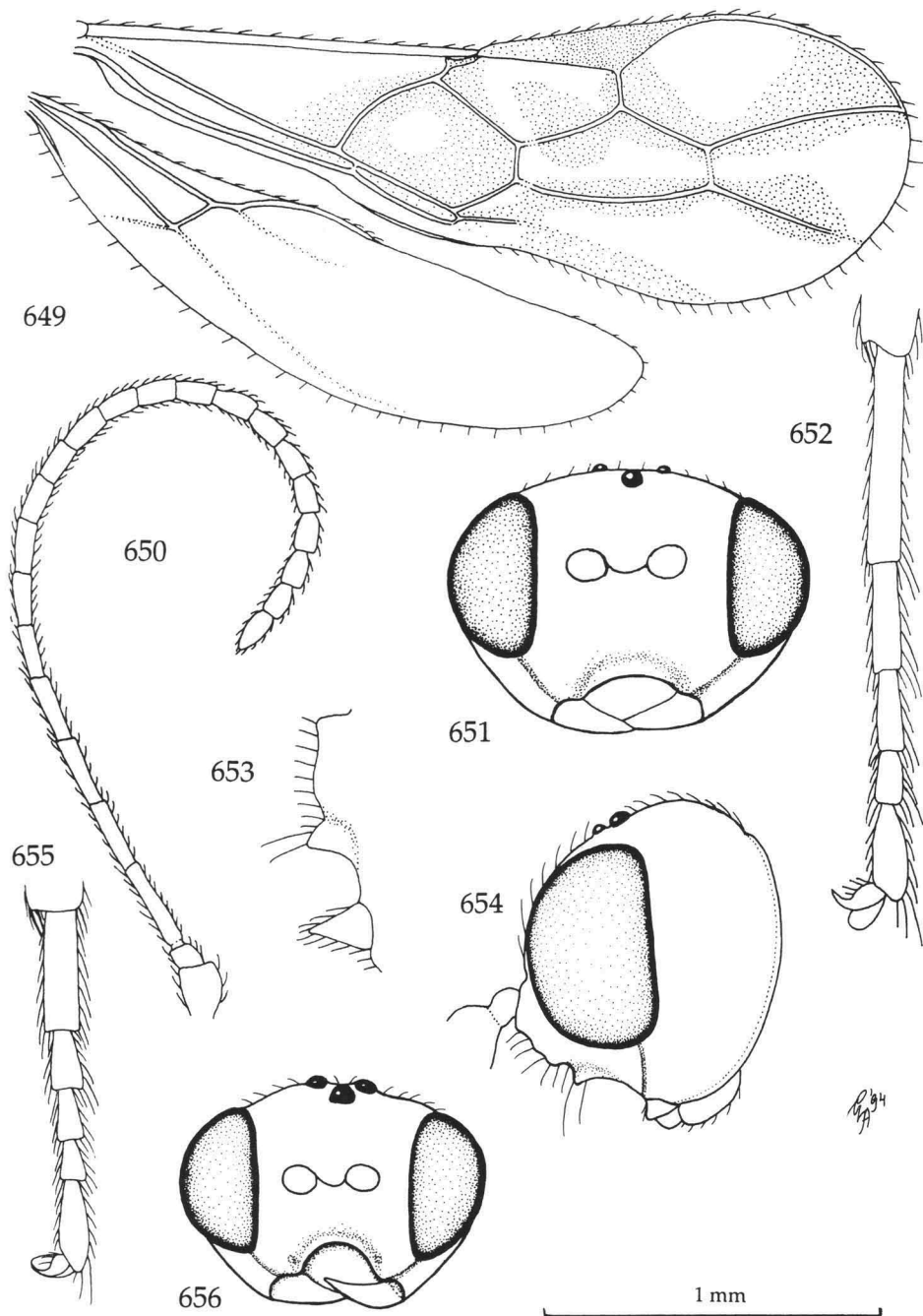
Figs 615-625, *Stiropius huggerti* spec. nov., ♀, holotype. 615, wings; 616, mesosoma, dorsal aspect; 617, head, dorsal aspect; 618, habitus, lateral aspect; 619, first and second metasomal tergites, dorsal aspect; 620, antenna; 621, head, frontal aspect; 622, fore leg, lateral aspect; 623, apex of antenna; 624, hind leg; 625, outer hind claw. 615, 618, 620, 624: 1.0 × scale-line; 616, 617, 619, 621: 1.5 ×; 622, 623, 625: 2.5 ×.



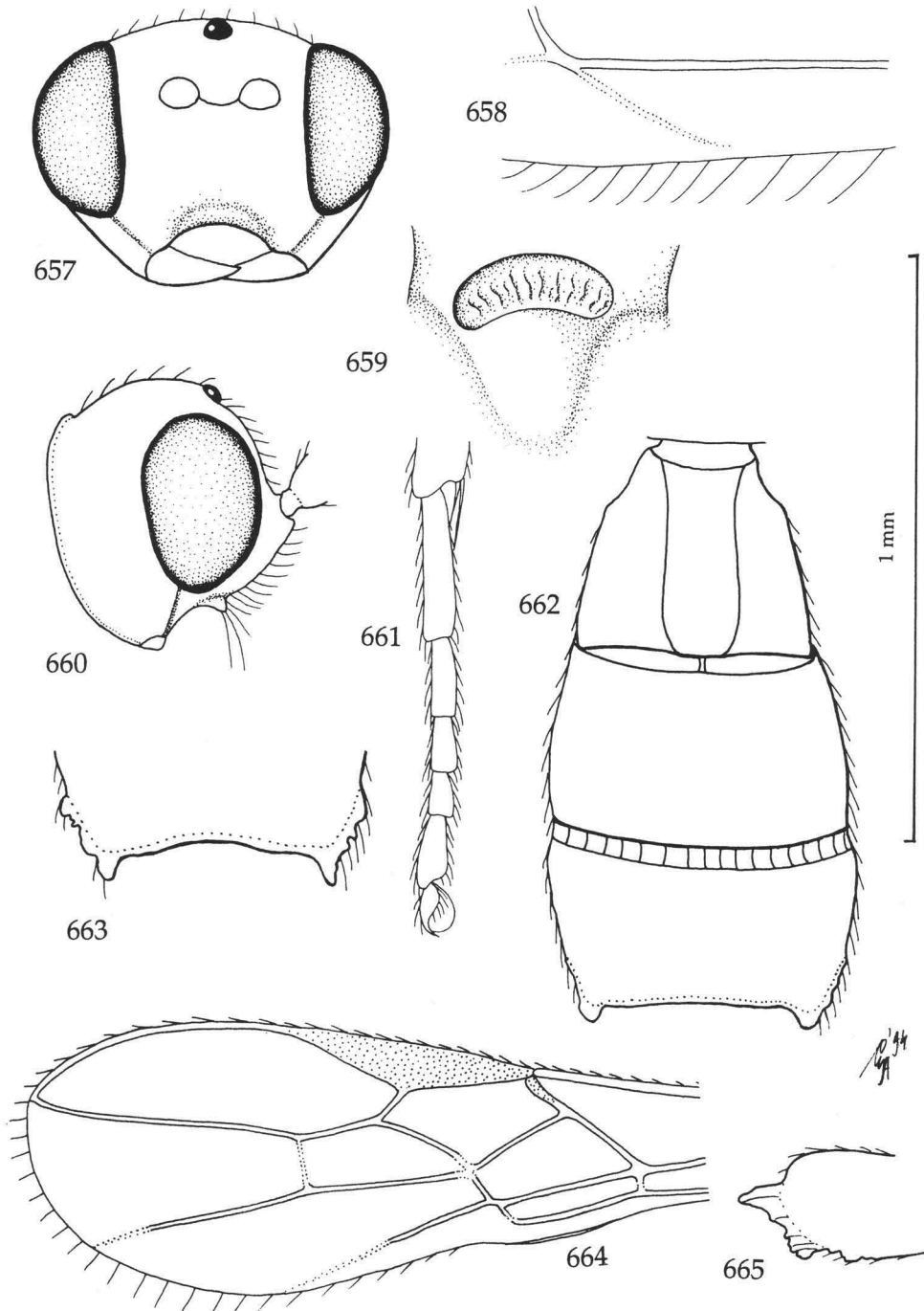
Figs 626-636, *Stiropius prunicola* (Whitfield), ♂, paratype, but 631 of ♀. 626, wings; 627, mesosoma, dorsal aspect; 628, habitus, lateral aspect; 629, apex of antenna; 630, head, frontal aspect; 631, apex of metasoma (with ovipositor exerted), lateral aspect; 632, head, dorsal aspect; 633, hind leg; 634, fore leg; 635, outer hind claw; 636, first-third metasomal tergites, dorsal aspect. 626, 628, 633: 1.0 × scale-line; 627, 630, 632: 1.5 ×; 629, 635: 2.5 ×; 634: 1.7 ×; 636: 1.1 ×; 631 after Whitfield, 1988.



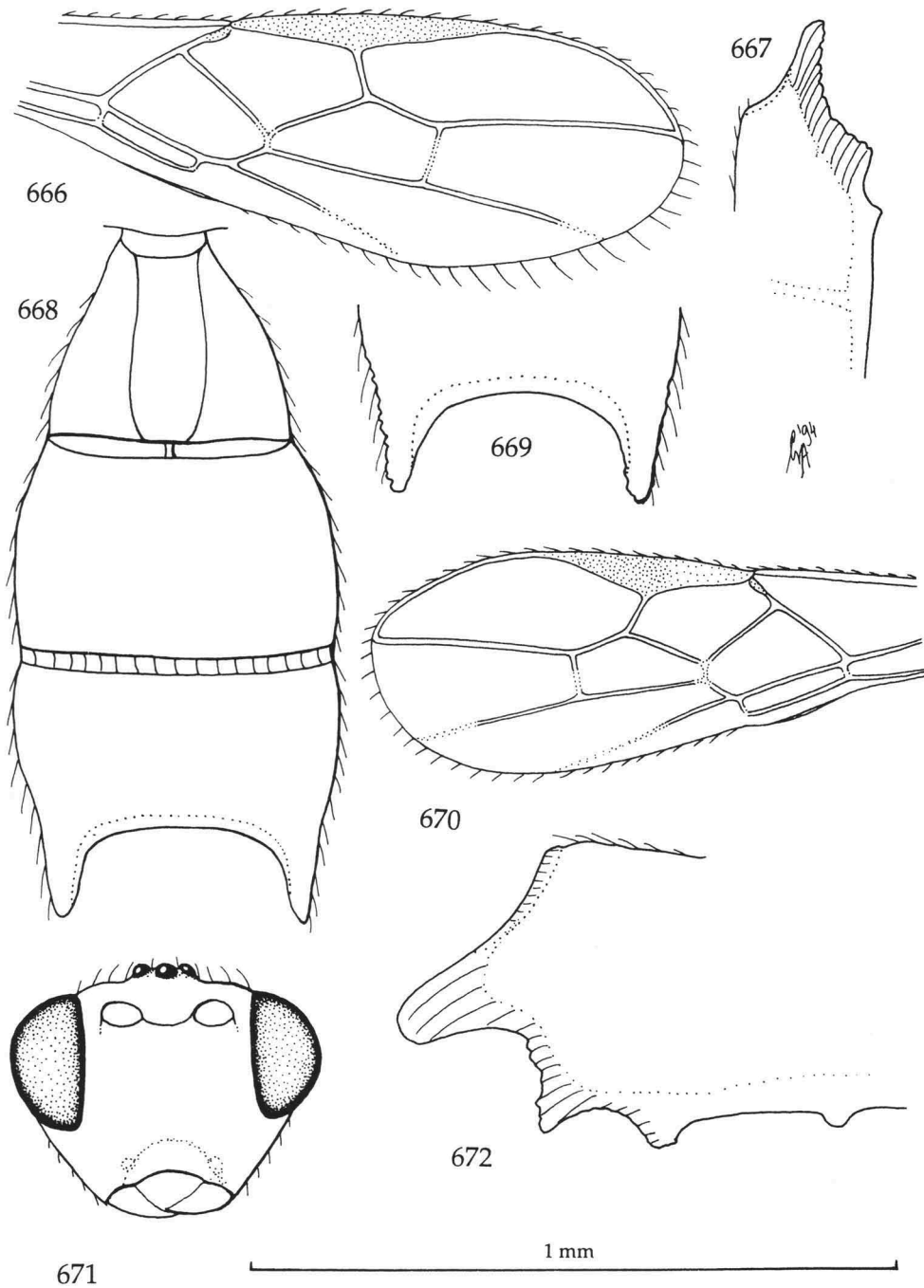
Figs 637-648, *Canberria rieki* Belokobylskij, ♀, holotype. 637, wings; 638, head, frontal aspect; 639, head, dorsal aspect; 640, first-third metasomal tergites, dorsal aspect; 641, habitus, lateral aspect; 642, outer hind claw; 643, basal half of antenna, dorsal aspect; 644, id., but lateral aspect; 645, mesosoma, dorsal aspect; 646, fore tibia and tarsus, lateral aspect; 647, hind leg; 648, apex of antenna. 637, 641, 647: 1.0 × scale-line; 638-640, 643-645: 1.5 ×; 642, 646: 3.4 ×; 648: 2.5



Figs 649-653, *Austrohormius maculipennis* Belokobylskij, ♀, holotype; figs 654-656, *A. similis* Belokobylskij, ♀, paratype. 649, wings; 650, antenna; 651, 656, head, frontal aspect; 652, 655, hind tarsus, lateral aspect; 653, clypeus, lateral aspect; 654, head, lateral aspect. 649: 1.0 × scale-line; 650: 1.3 ×; 651: 1.8 ×; 652: 3.0 ×; 653: 2.5 ×; 654, 655: 2.3 ×; 656: 1.5 ×.



Figs 657-661, *Austrohormius sculpturator* Belokobylskij, ♀, paratype; figs 662-665, *Acanthormius brevidentatus* spec. nov., ♂, holotype. 657, head, frontal aspect; 658, detail of vein m-cu of hind wing; 659, scutellar sulcus; 660, head, lateral aspect; 661, hind tarsus, lateral aspect; 662, head, dorsal aspect; 663, apex of third tergite, postero-dorsal aspect; 664, fore wing; 665, apex of third tergite, lateral aspect. 657, 660: 1.0 × scale-line; 658, 661: 1.3 ×; 659: 1.5 ×; 662-664: 1.1 ×; 665: 1.2 ×.



Figs 666-669, *Acanthormius yasirae* spec. nov., ♂, holotype; figs 670-672, *A. sabahensis* spec. nov., ♀, holotype. 666, 670, fore wing; 667, 672, apex of third tergite, lateral aspect; 668, metasoma, dorsal aspect; 669, apex of third tergite, postero-dorsal aspect; 671, head, frontal aspect. 666, 671: 1.0 × scale-line; 667-669: 1.5 ×; 670: 0.6 ×.

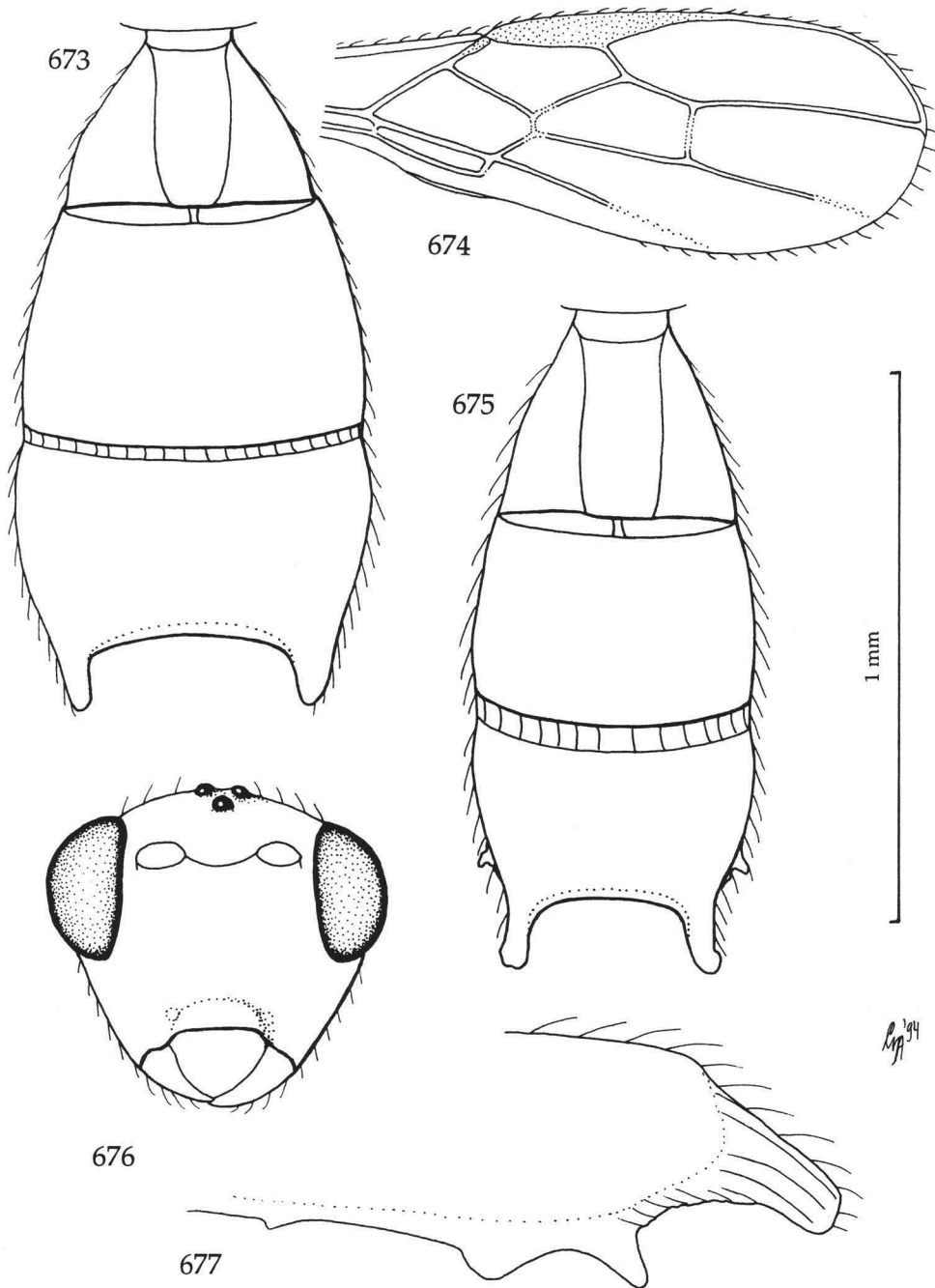
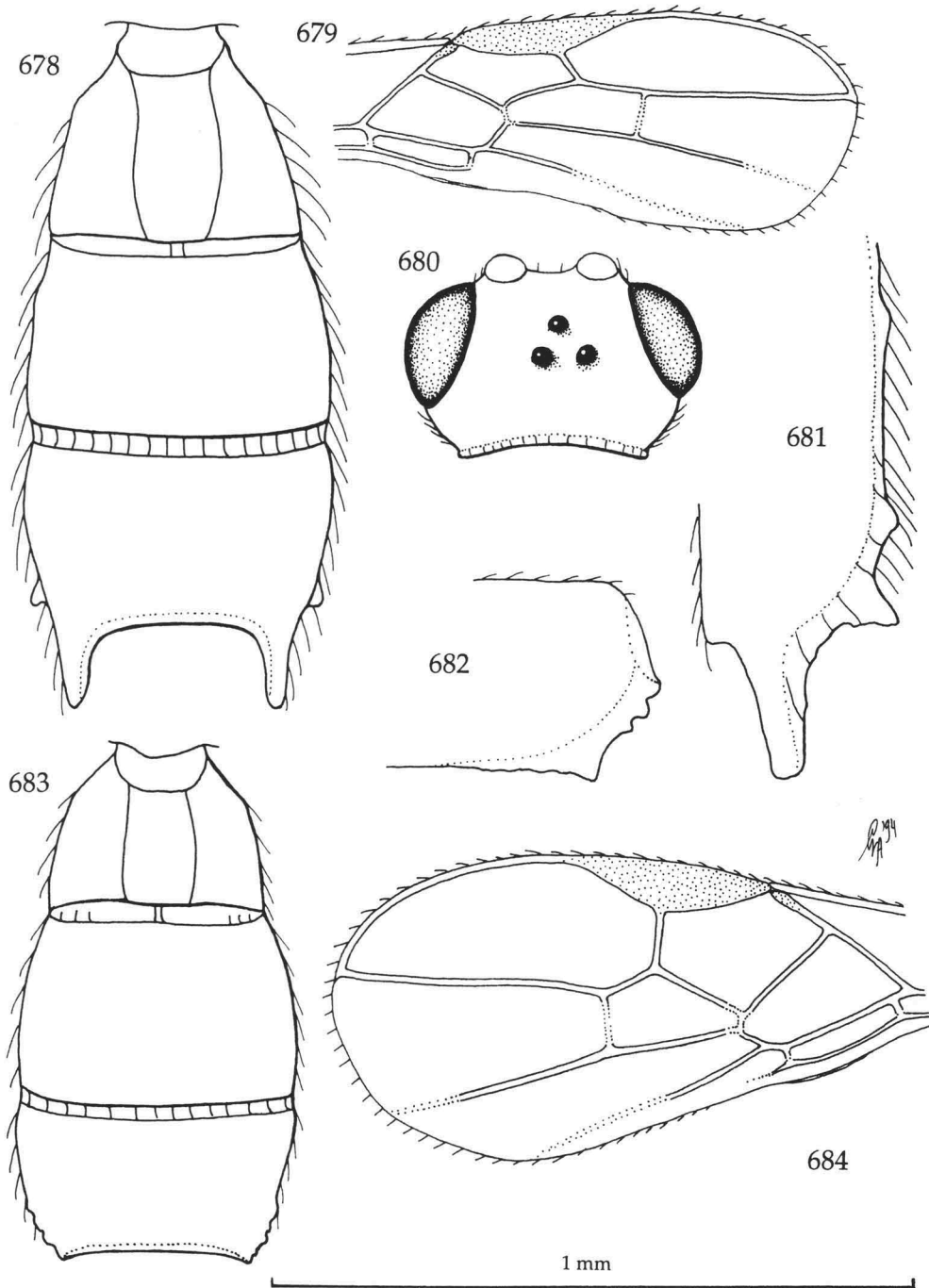
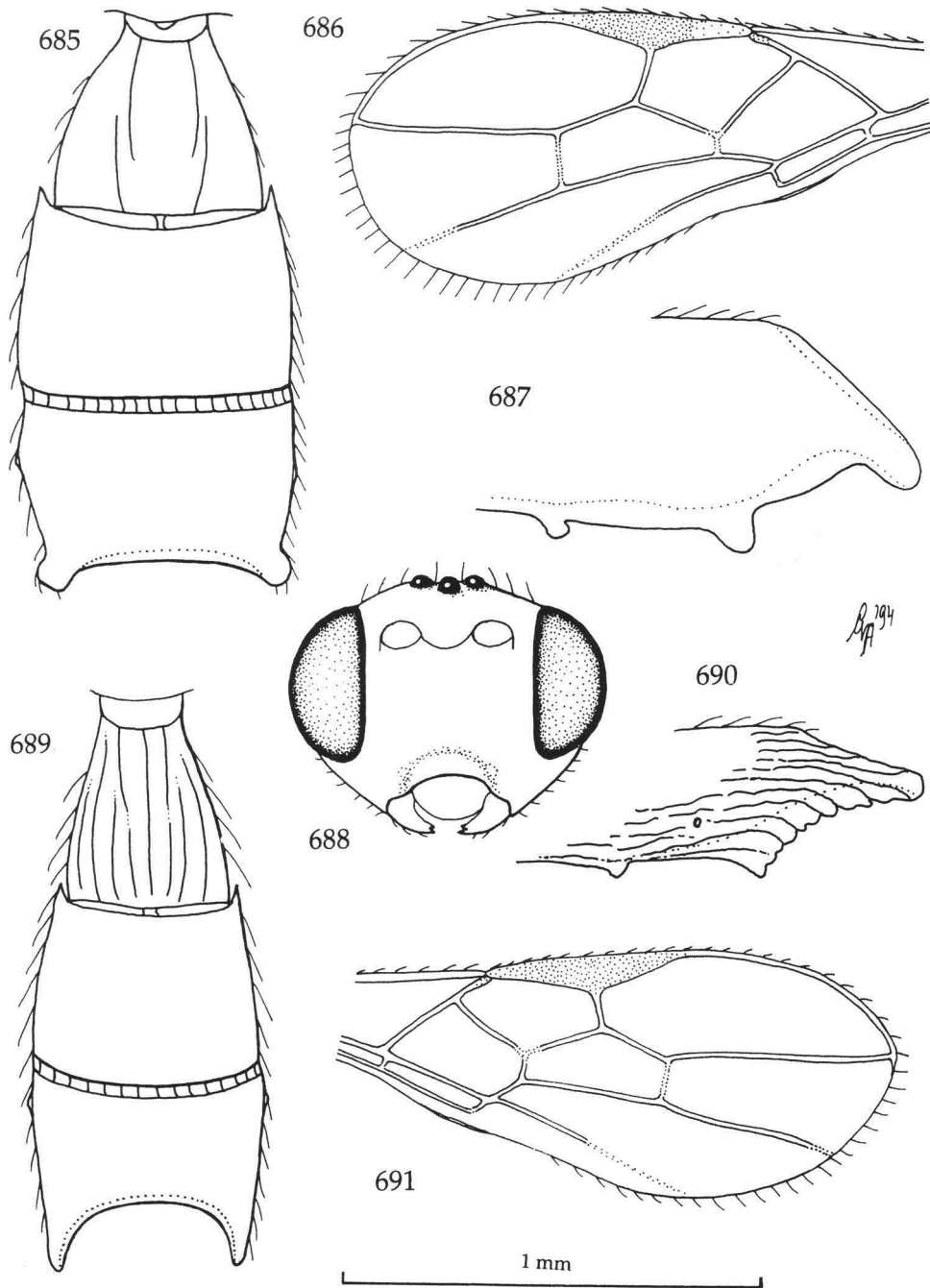


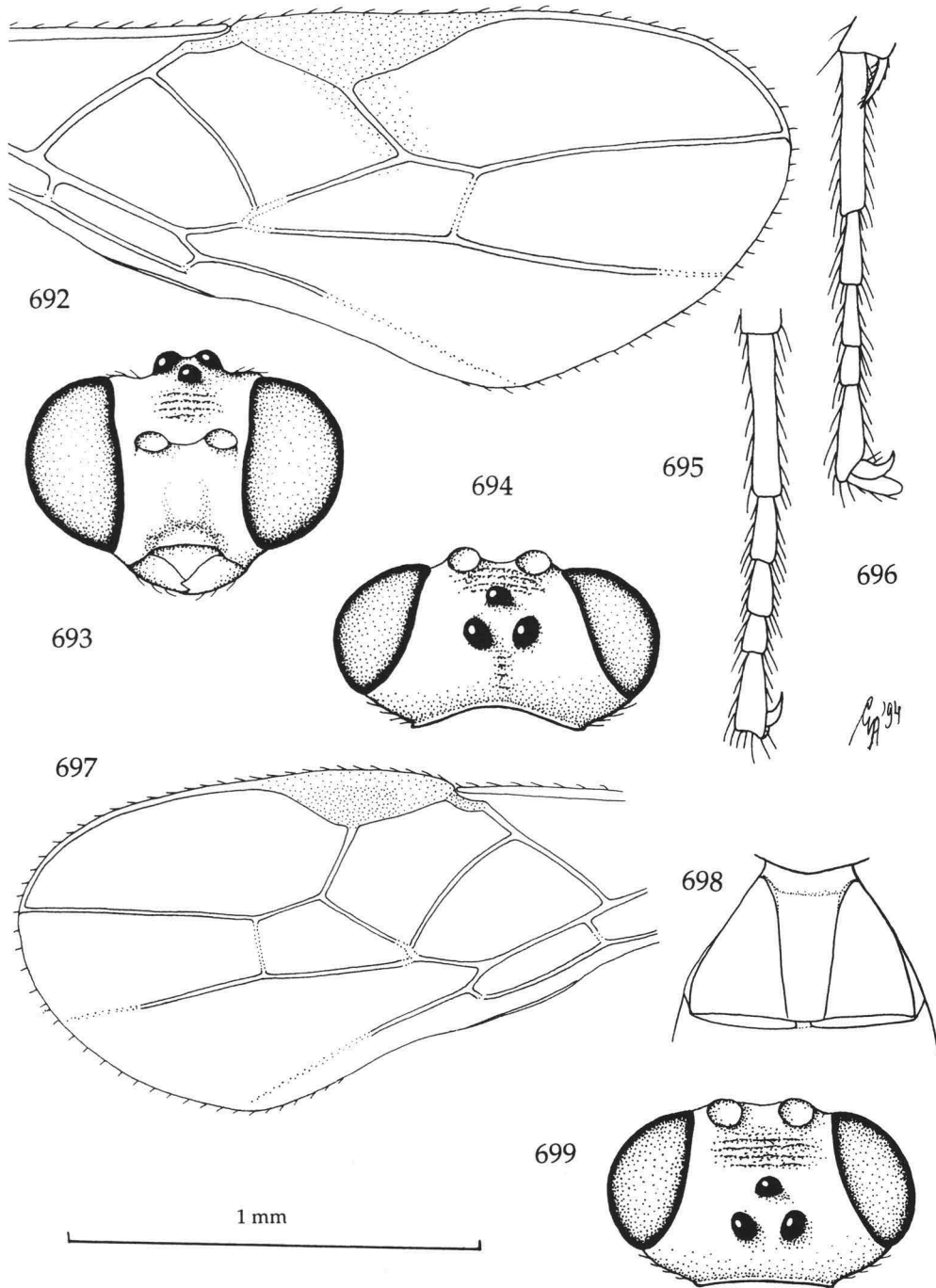
Fig. 673, *Acanthormius sabahensis* spec. nov., ♀, holotype; figs 674-677, *A. kabaenensis* spec. nov., ♀, holotype. 673, 675, metasoma, dorsal aspect; 674, fore wing; 676, head, frontal aspect; 677, apex of third tergite, lateral aspect. 673, 675: 1.0 × scale-line; 674: 0.8 ×; 676: 1.2 ×; 677: 1.8 ×.



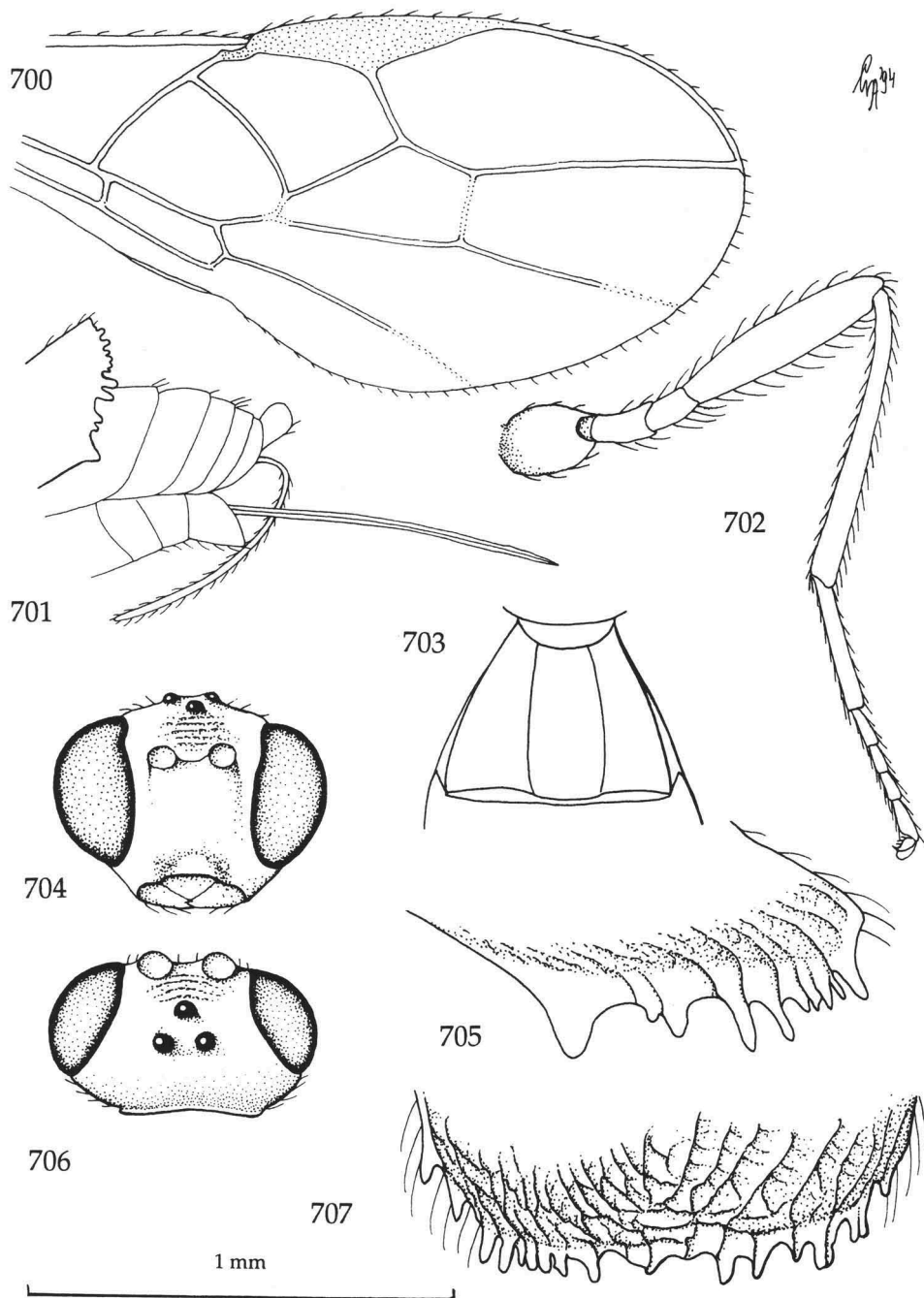
Figs 678-681, *Acanthormius royi* spec. nov. ♀, holotype; figs 682-684, *A. malayensis* Watanabe, ♀, Malaysia, Sabah, Sipitang. 678, 683, metasoma, dorsal aspect; 679, 684, fore wing; 680, head, dorsal aspect; 681, 682, apex of third tergite, lateral aspect; 683, metasoma, dorsal aspect. 678, 680, 684: 1.0 × scale-line; 679, 683: 1.1 ×; 681: 1.5 ×; 682: 1.7 ×.



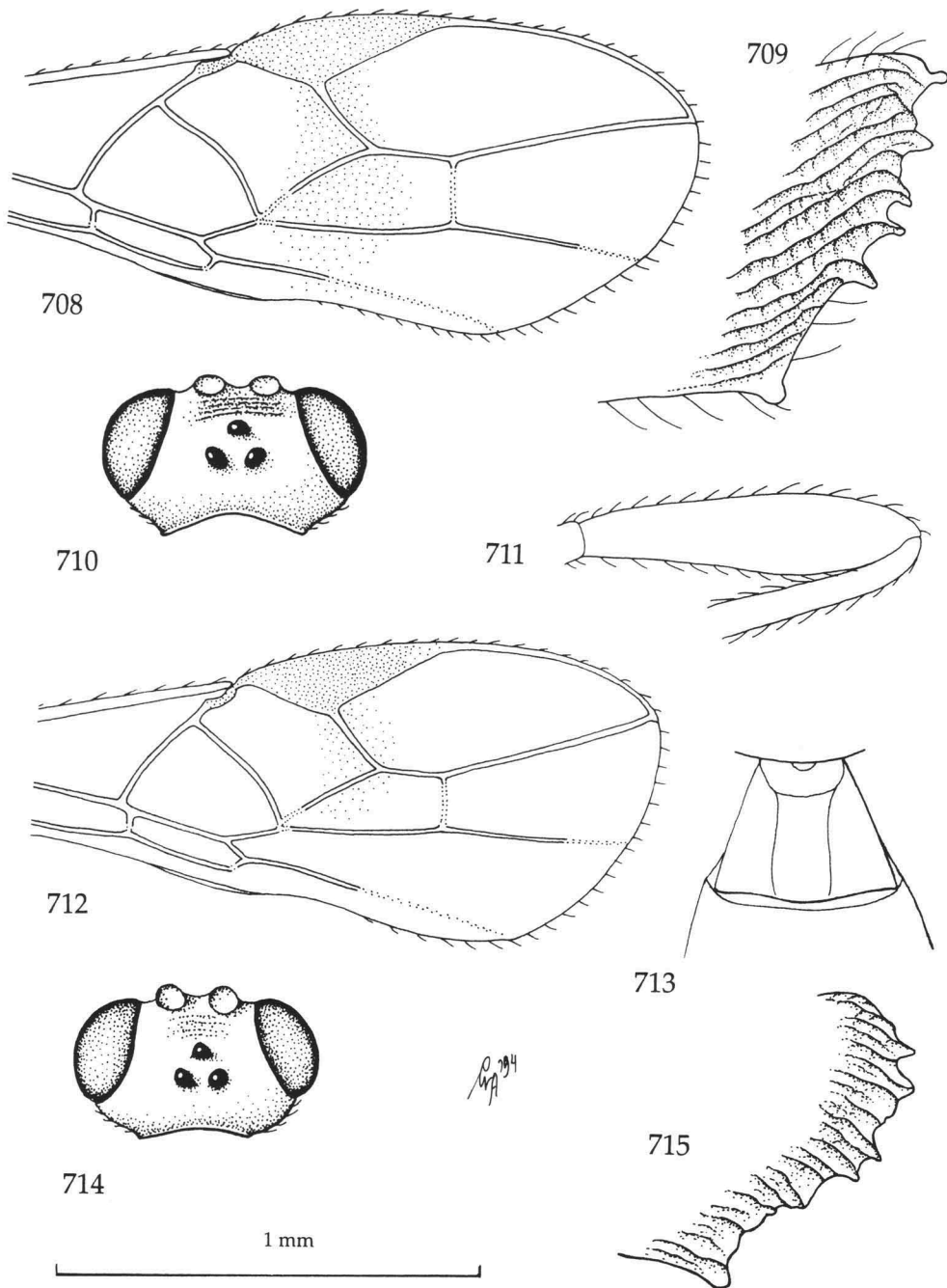
Figs 685-688, *Acanthormius curvidentatus* spec. nov., ♀, holotype; figs 689-691, *A. dentifer* spec. nov., ♂, holotype. 685, 689, metasoma, dorsal aspect; 686, 691, fore wing; 687, 690, apex of third tergite, lateral aspect; 688, head, frontal aspect. 685, 688, 689: 1.5 × scale-line; 686, 691: 1.0 ×; 687, 690: 2.3 ×.



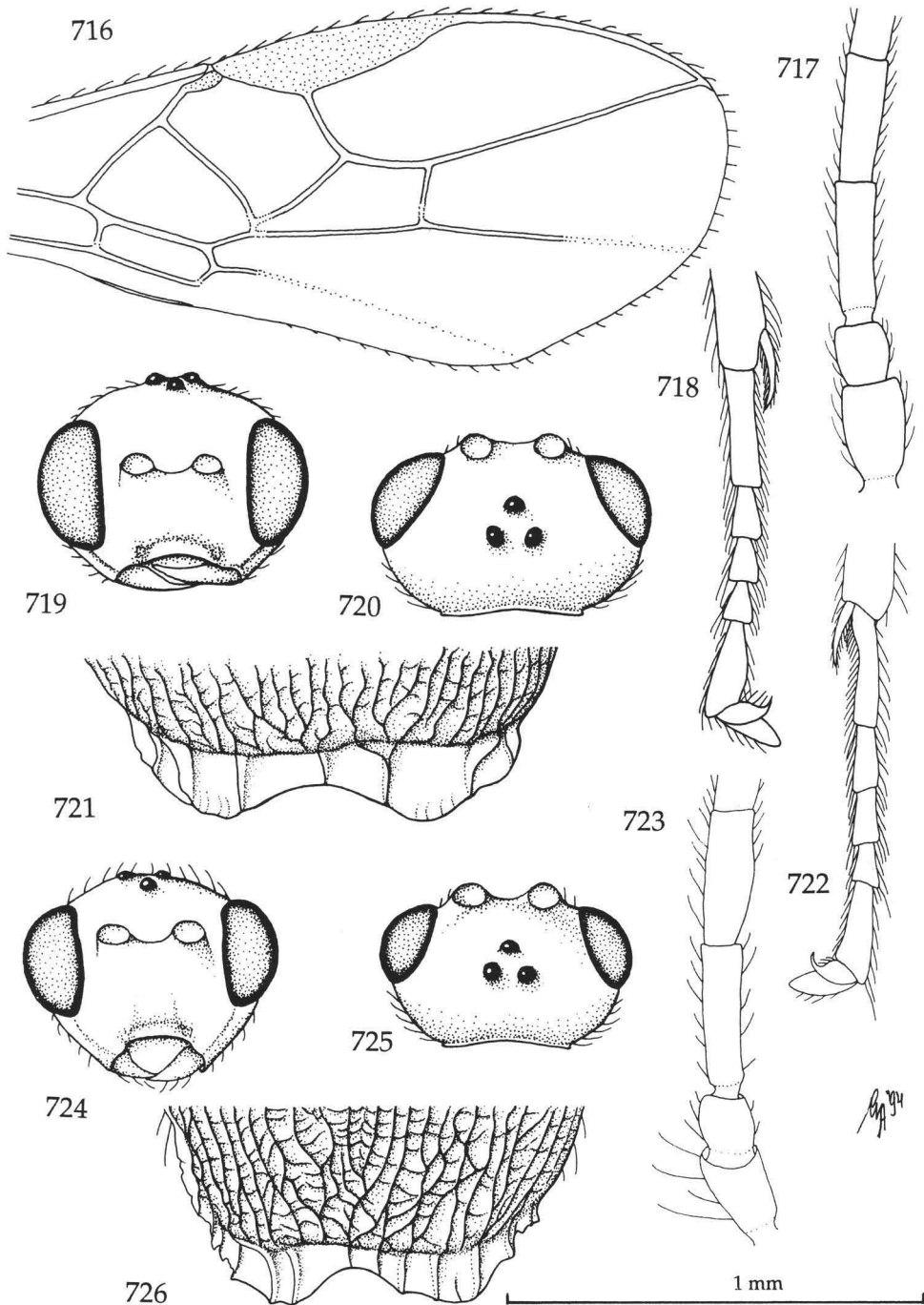
Figs 692-696, *Aulosaphes wellsae* spec. nov., ♀, holotype; figs 697-699, *A. convergens* spec. nov., ♀, holotype. 692, 697, fore wing; 693, head, frontal aspect; 694, 699, head, dorsal aspect; 695, fore tarsus, dorsal aspect; 696, fore tarsus, lateral aspect; first tergite, dorsal aspect. 692-694: 1.0 × scale-line; 695, 696: 2.0 ×; 697, 698: 0.8 ×; 699: 0.9 ×.



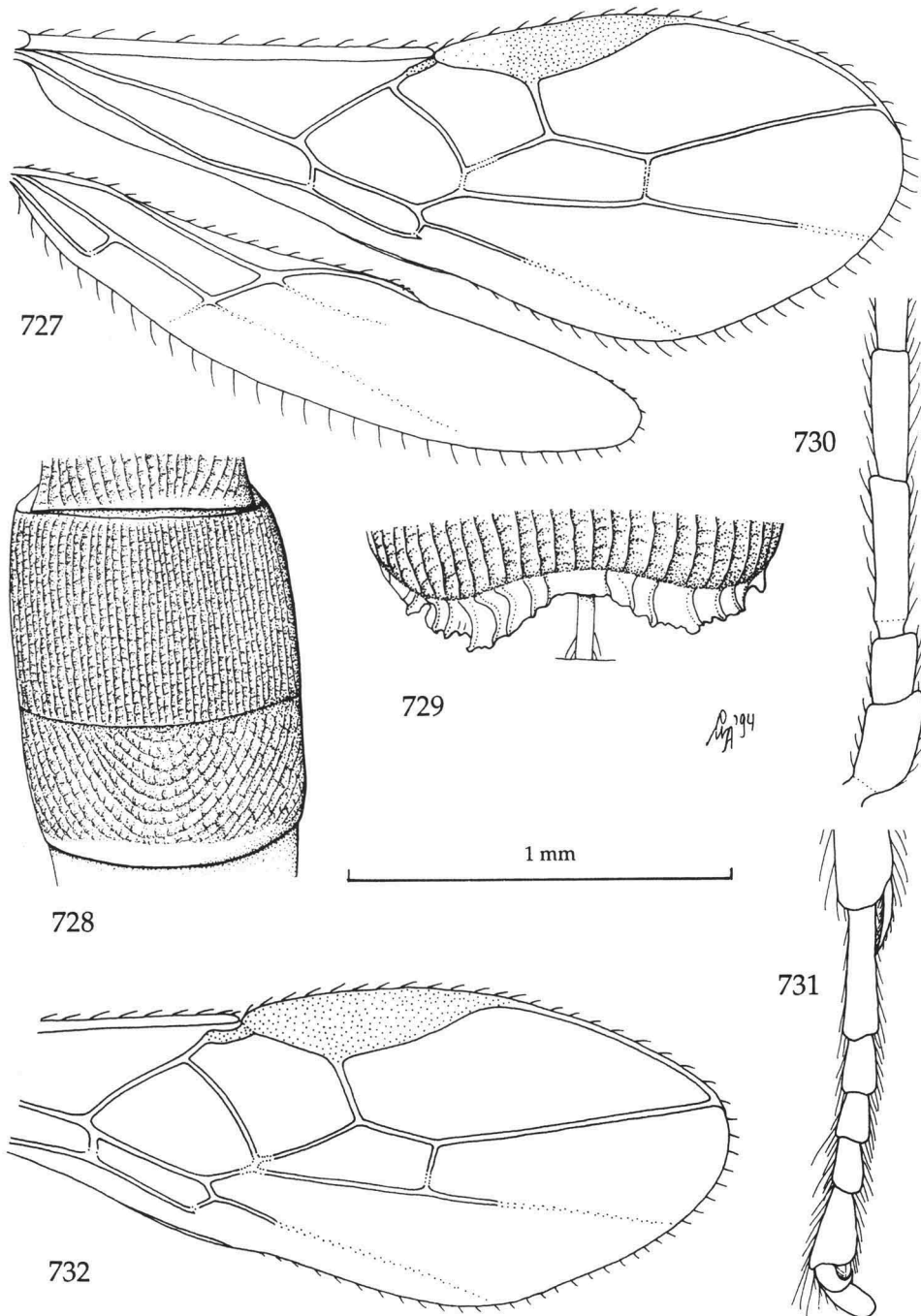
Figs 700-707, *Aulosaphes rasuli* spec. nov., ♀, holotype. 700, fore wing; 701, apex of metasoma, lateral aspect; 702, hind leg; 703, first tergite, dorsal aspect; 704, head, frontal aspect; 705, apex of third tergite, lateral aspect; 706, head, dorsal aspect; 707, apex of third tergite, postero-dorsal aspect. 700, 702-704, 706: 1.0 × scale-line; 701: 0.8 ×; 705: 2.3 ×; 707: 1.5 ×.



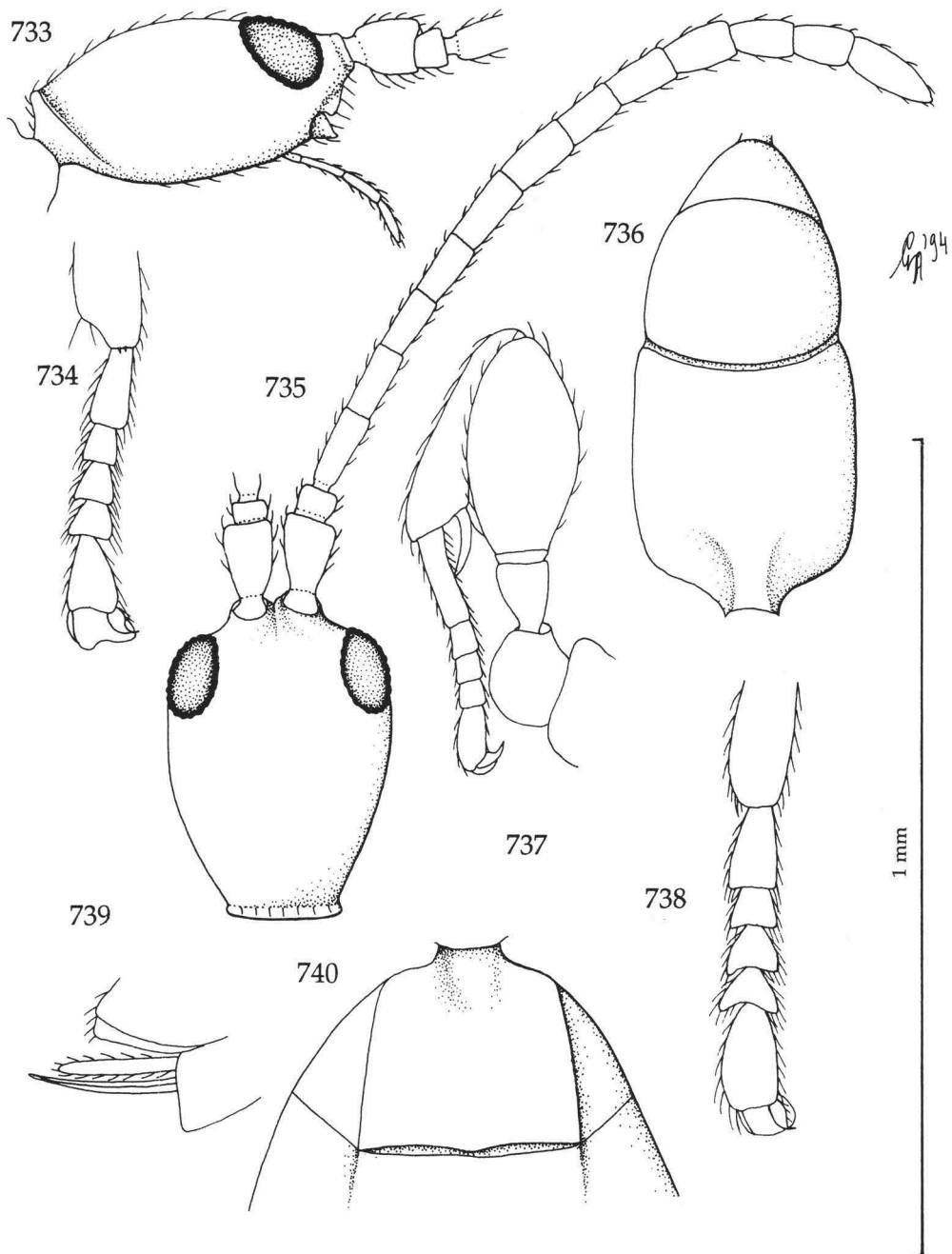
Figs 708-711, *Aulosaphes semifasciatus* spec. nov., ♀, holotype; figs 712-715, *A. vechti* spec. nov., ♀, holotype. 708, 712, fore wing; 709, 715, apex of third tergite, lateral aspect; 710, 714, head, dorsal aspect; 711, hind femur; 713, first tergite, dorsal aspect. 708, 710, 712-714: 1.0 × scale-line; 709: 1.8 ×; 711: 1.2 ×; 715: 2.3 ×.



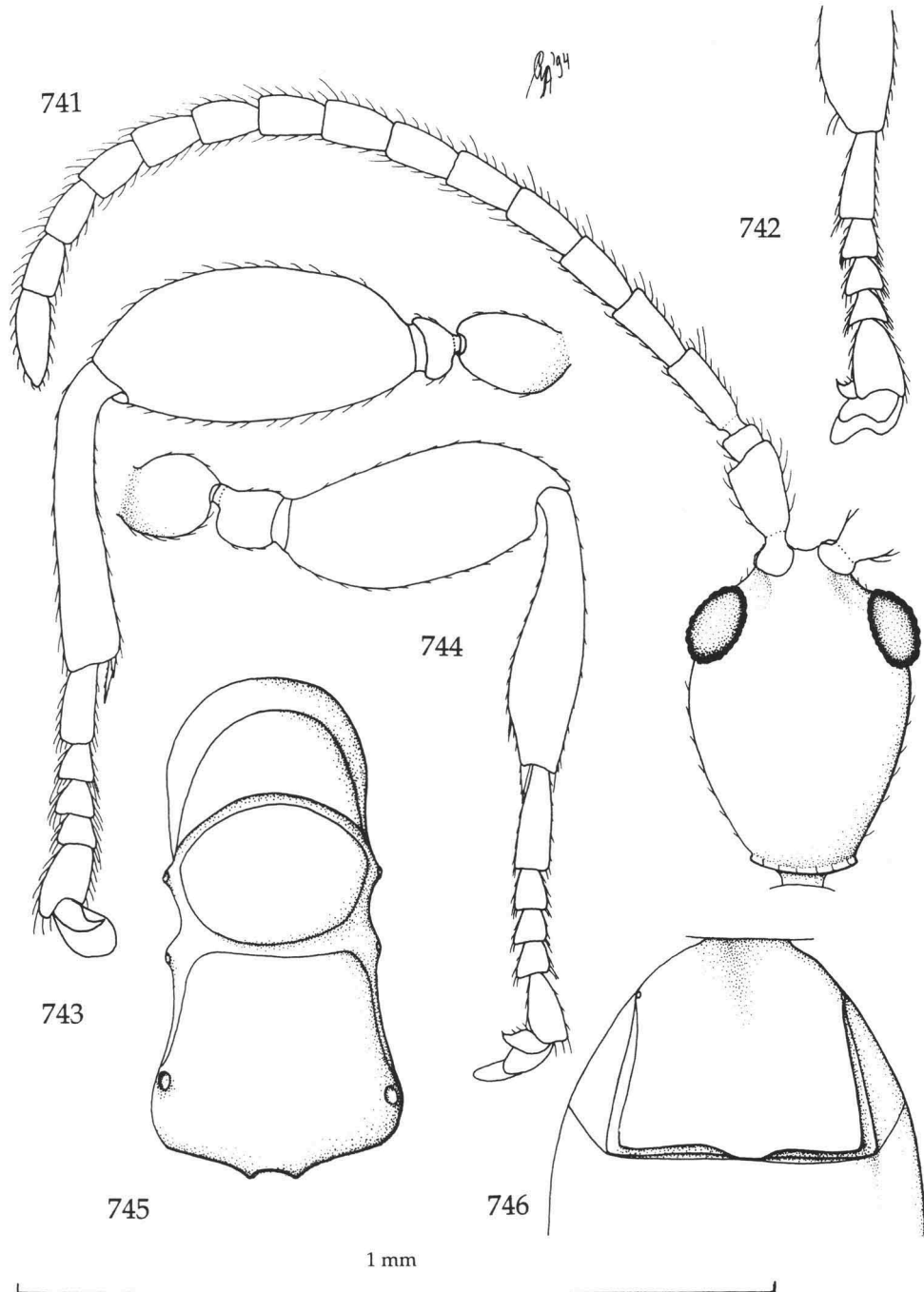
Figs 716-721, *Aulosaphoides breviceps* gen. nov. & spec. nov., ♀, holotype; figs 722-726, *A. robberti* gen. nov. & spec. nov., ♀, holotype. 716, 719, 720, 724, 725: 1.0 × scale-line; 717, 718, 721-723, 726: 1.8 ×.



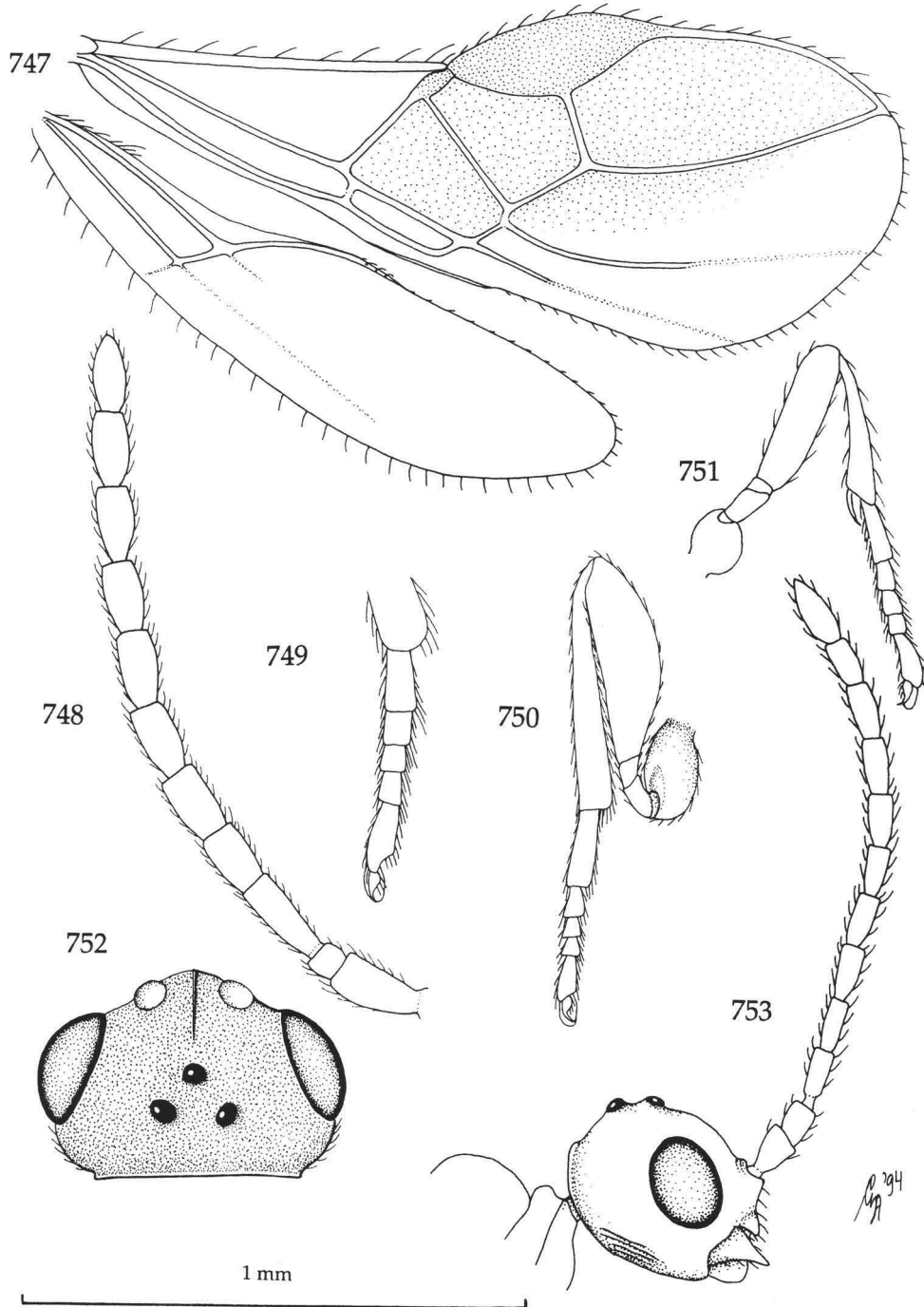
Figs 727, 729-731, *Aulosaphoides lampas* (Nixon), ♀, paratype; fig. 728, *Lysitermoides transversus* gen. nov. & spec. nov., ♀, holotype; fig. 732, *Aulosaphoides roberti* gen. nov. & spec. nov., ♀, holotype. 727: 1.0 × scale-line; 728: 1.3 ×; 729: 1.5 ×; 730, 731: 2.0 ×; 732: 1.1 ×.



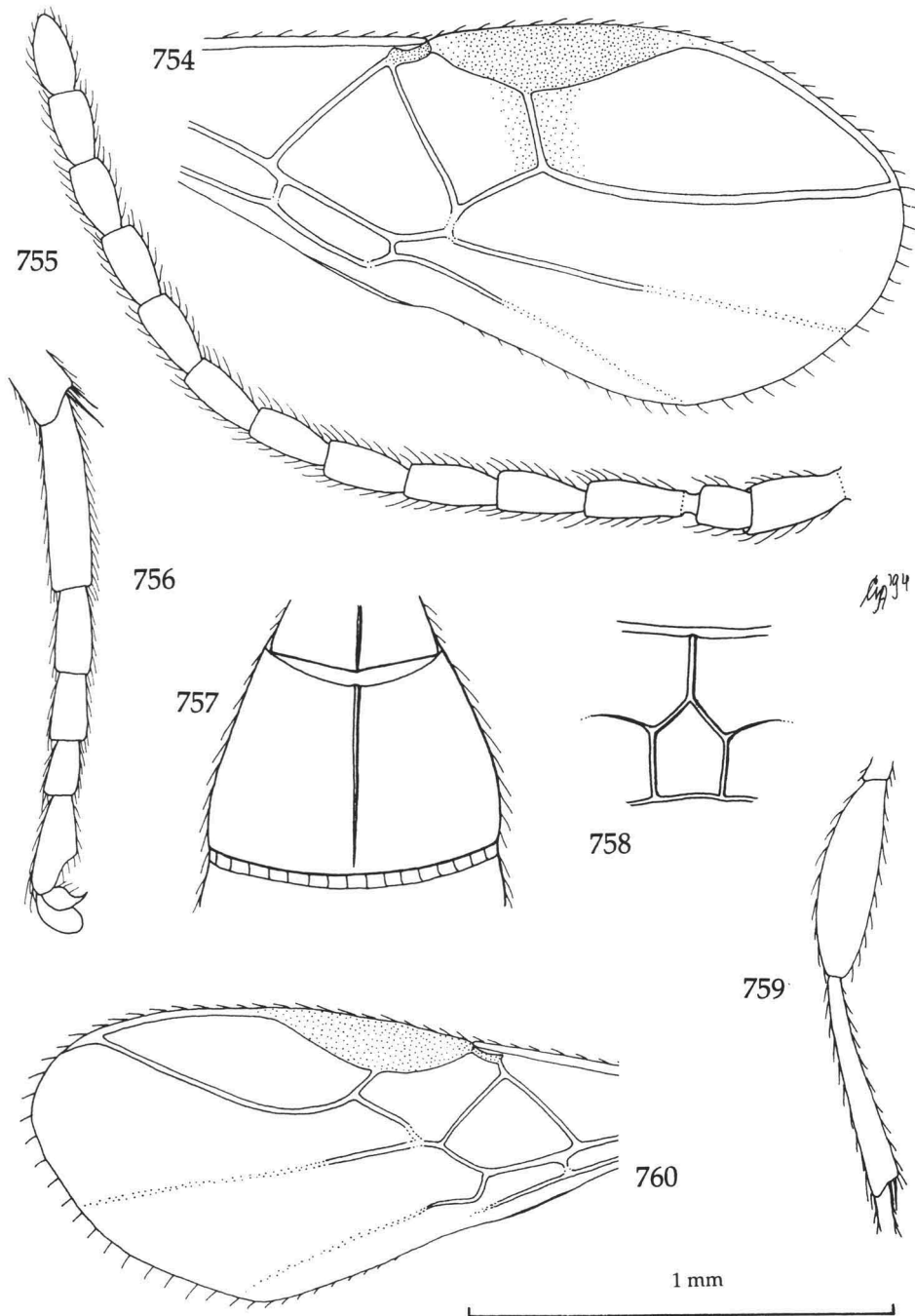
Figs 733-740, *Masona similis* gen. nov. & spec. nov., ♀, holotype, but 734 and 738 of paratype. 733, head, lateral aspect; 734, fore tarsus, dorsal aspect; 735, head and antenna, dorsal aspect; 736, mesosoma, dorsal aspect; 737, fore leg, lateral aspect; 738, hind tarsus, dorsal aspect; 739, apex of metasoma, lateral aspect; 740, first tergite, dorsal aspect. 733, 735, 736, 740: 1.1 × scale-line; 734, 738: 1.3 ×; 737, 739: 1.0 ×.



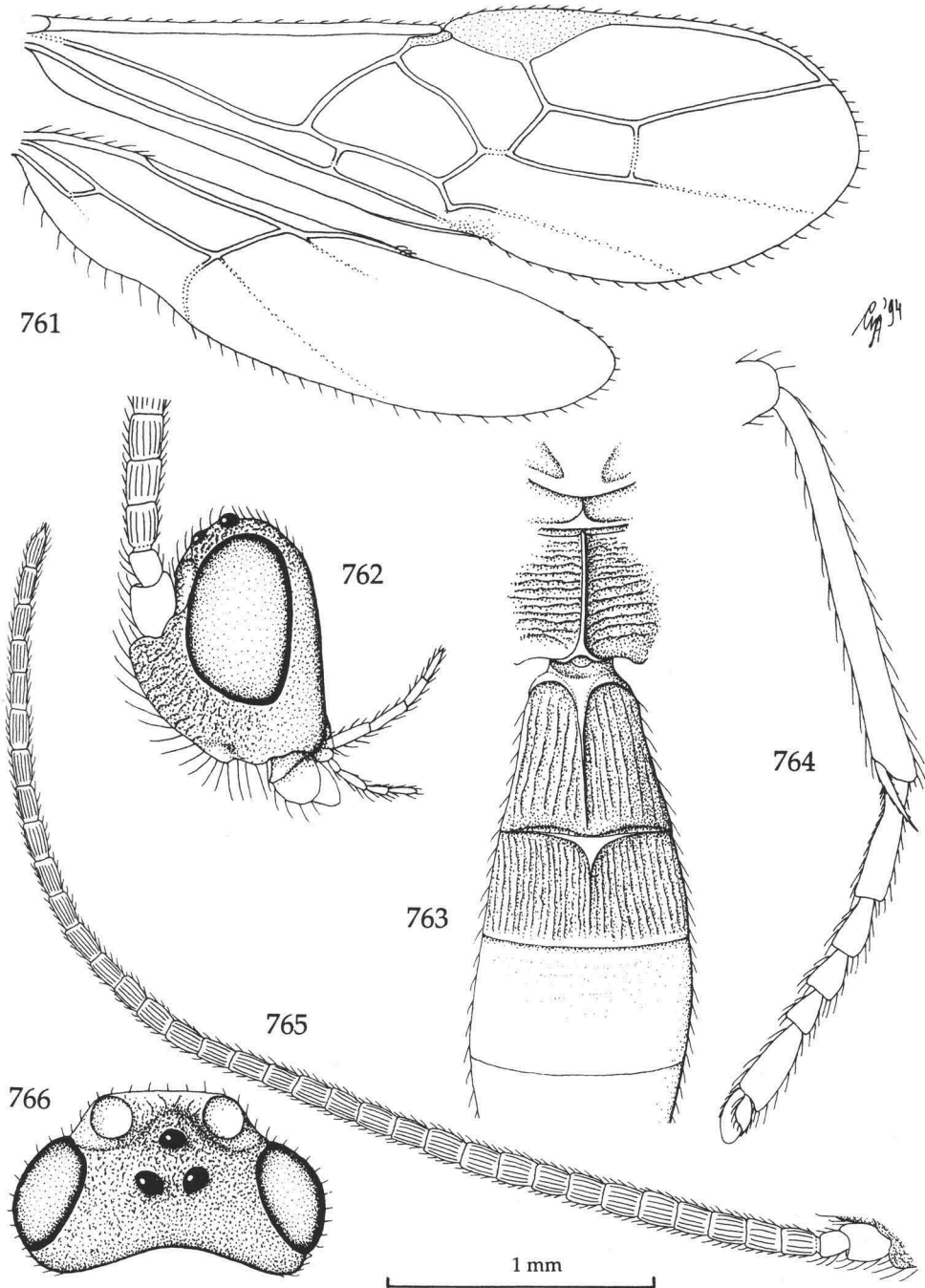
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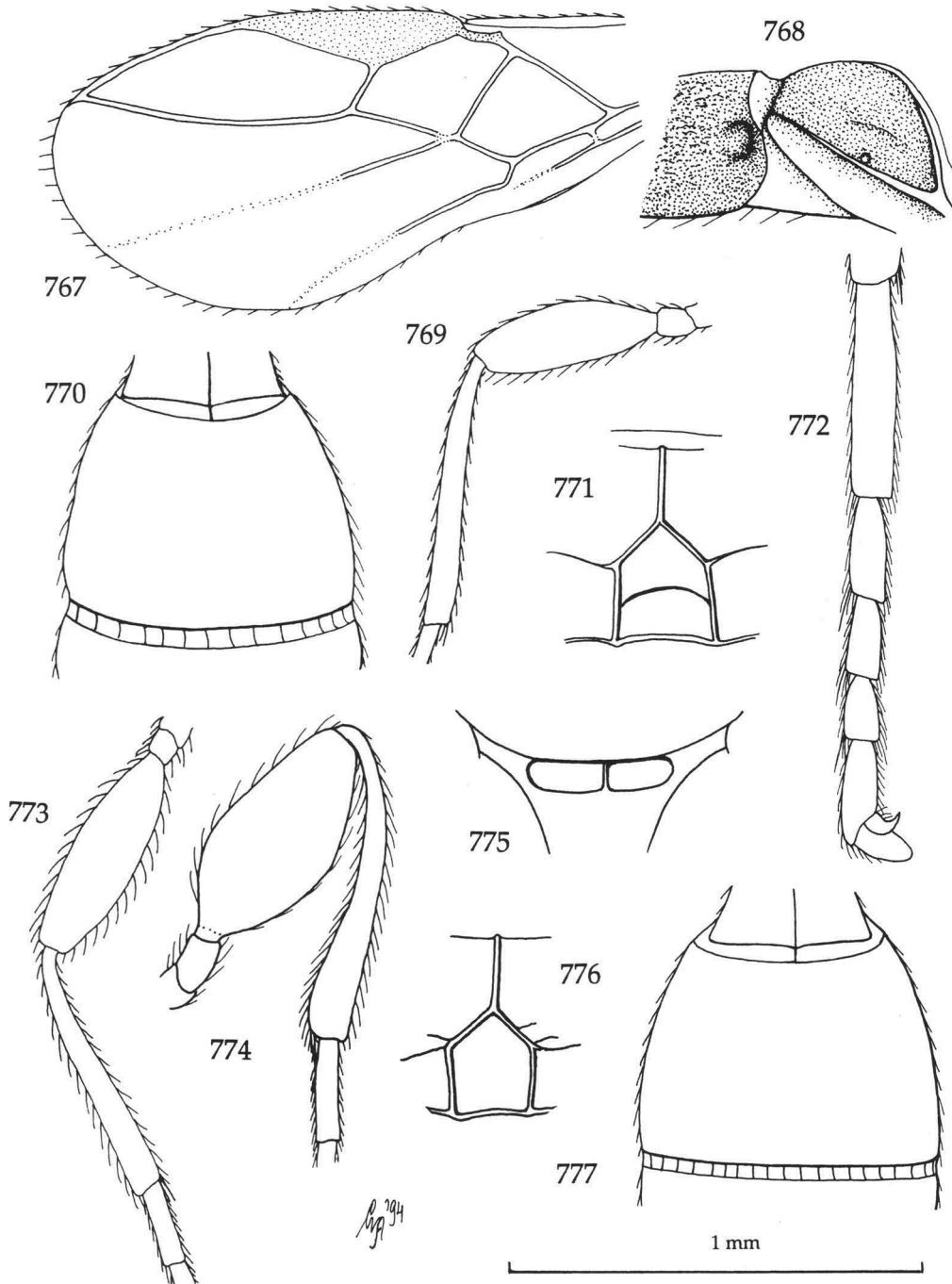
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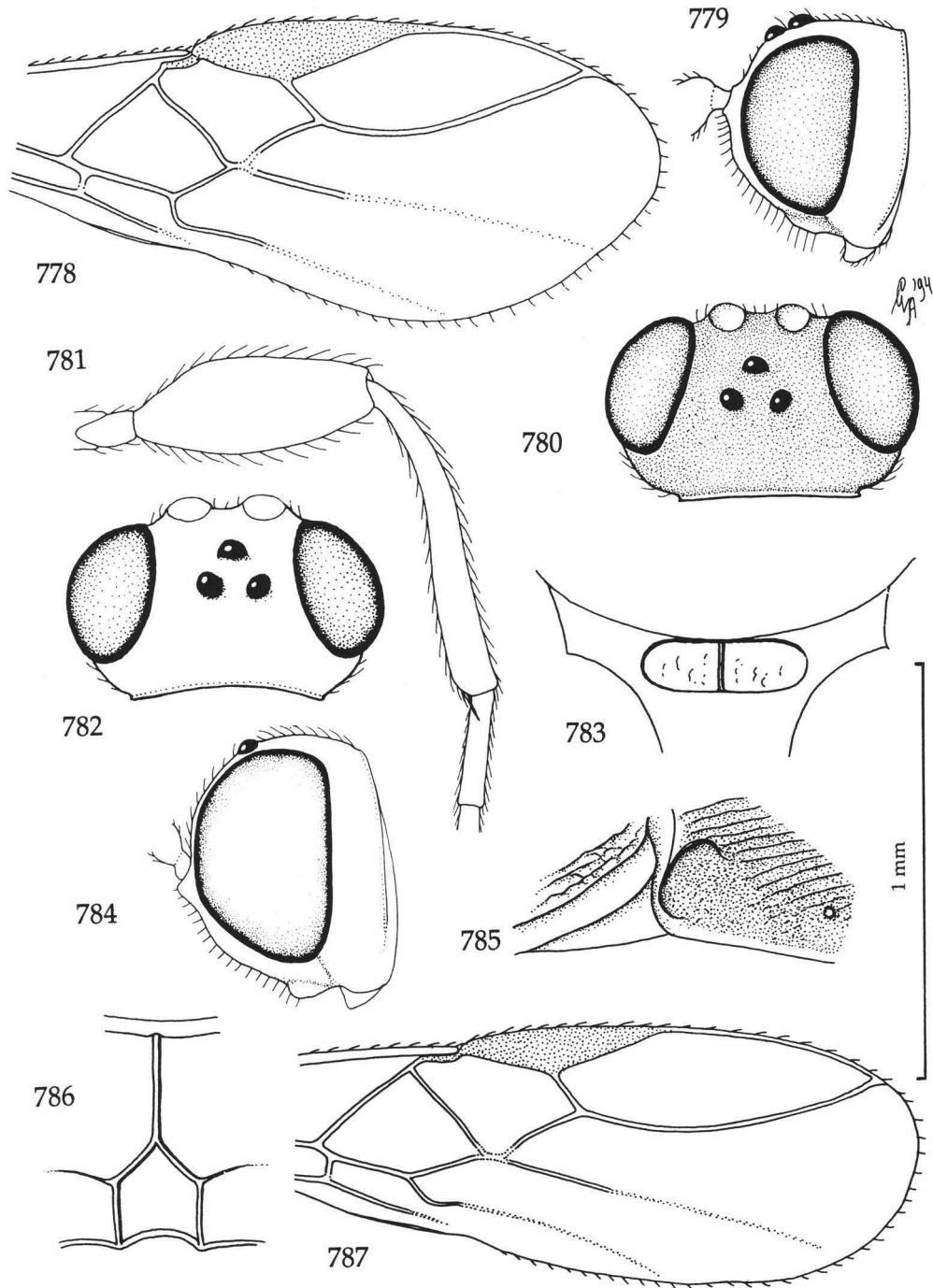
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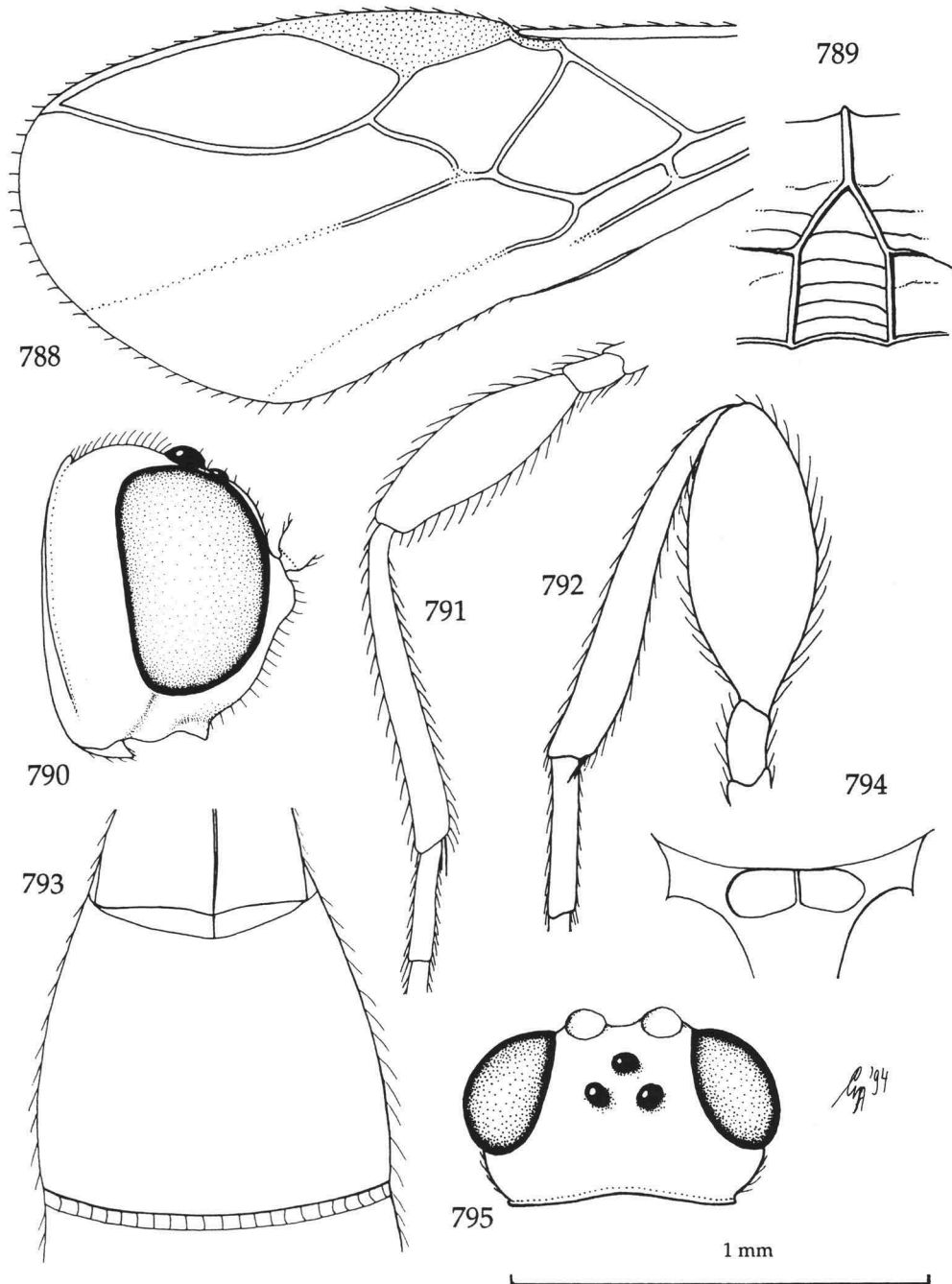
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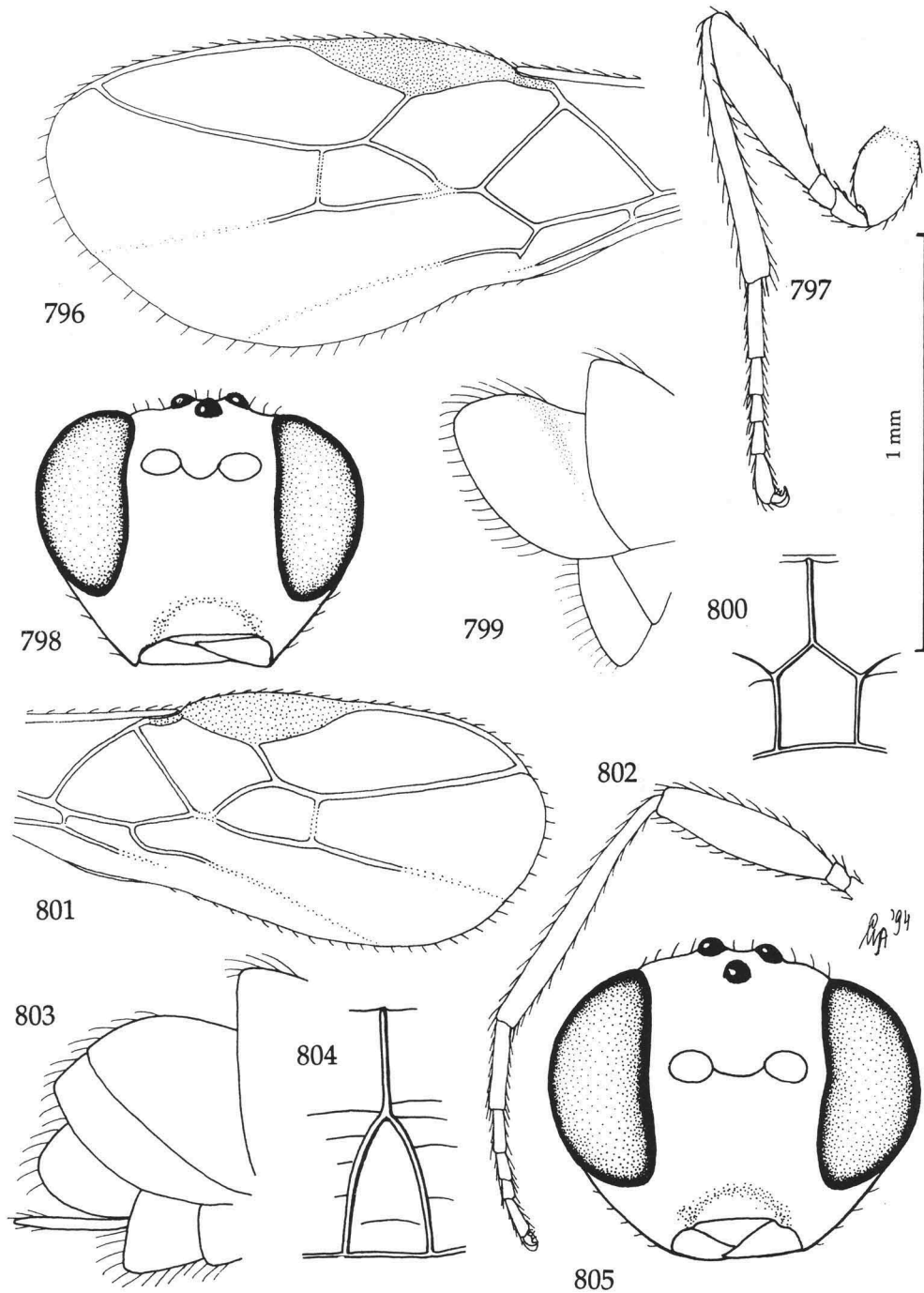
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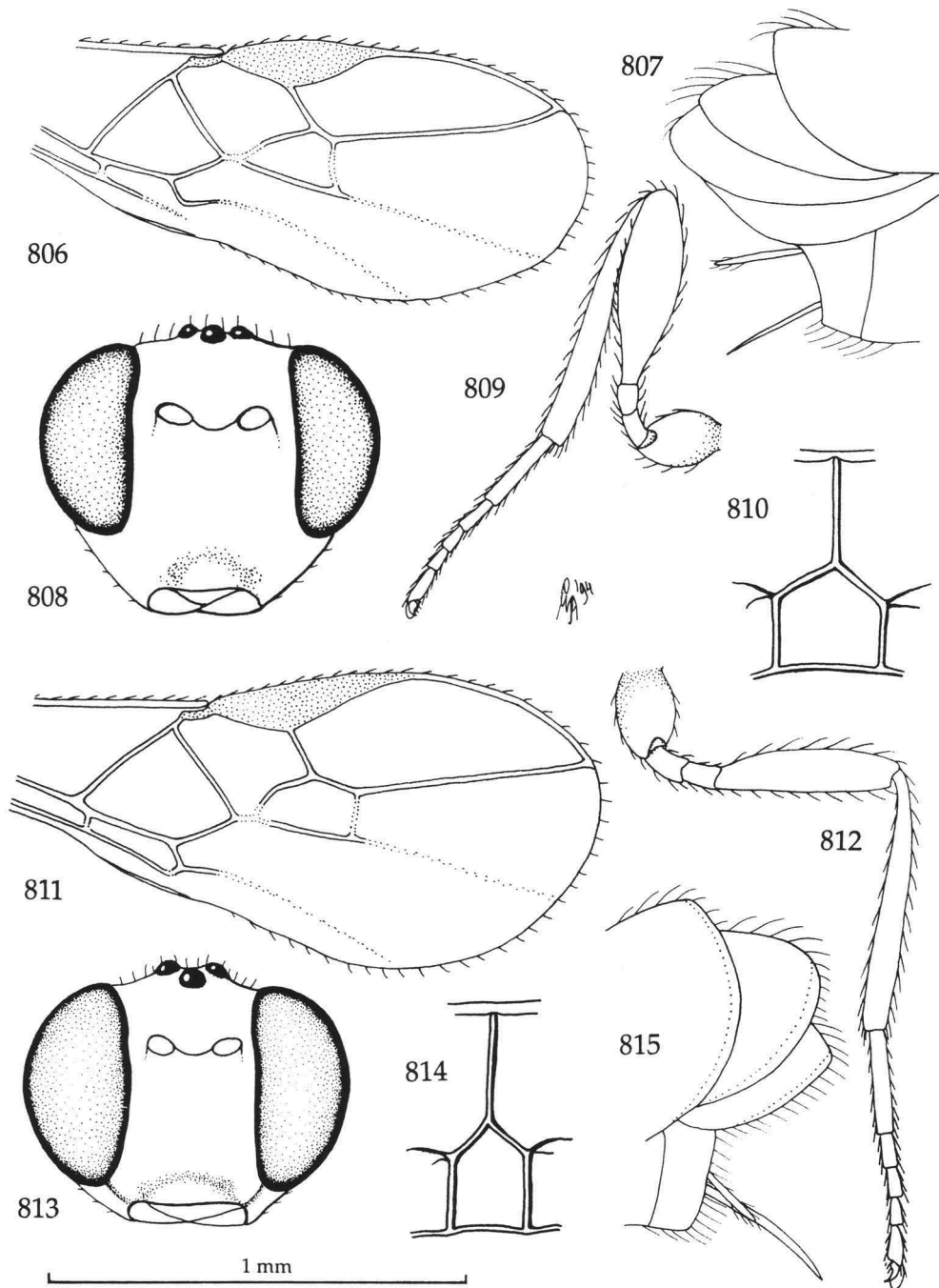
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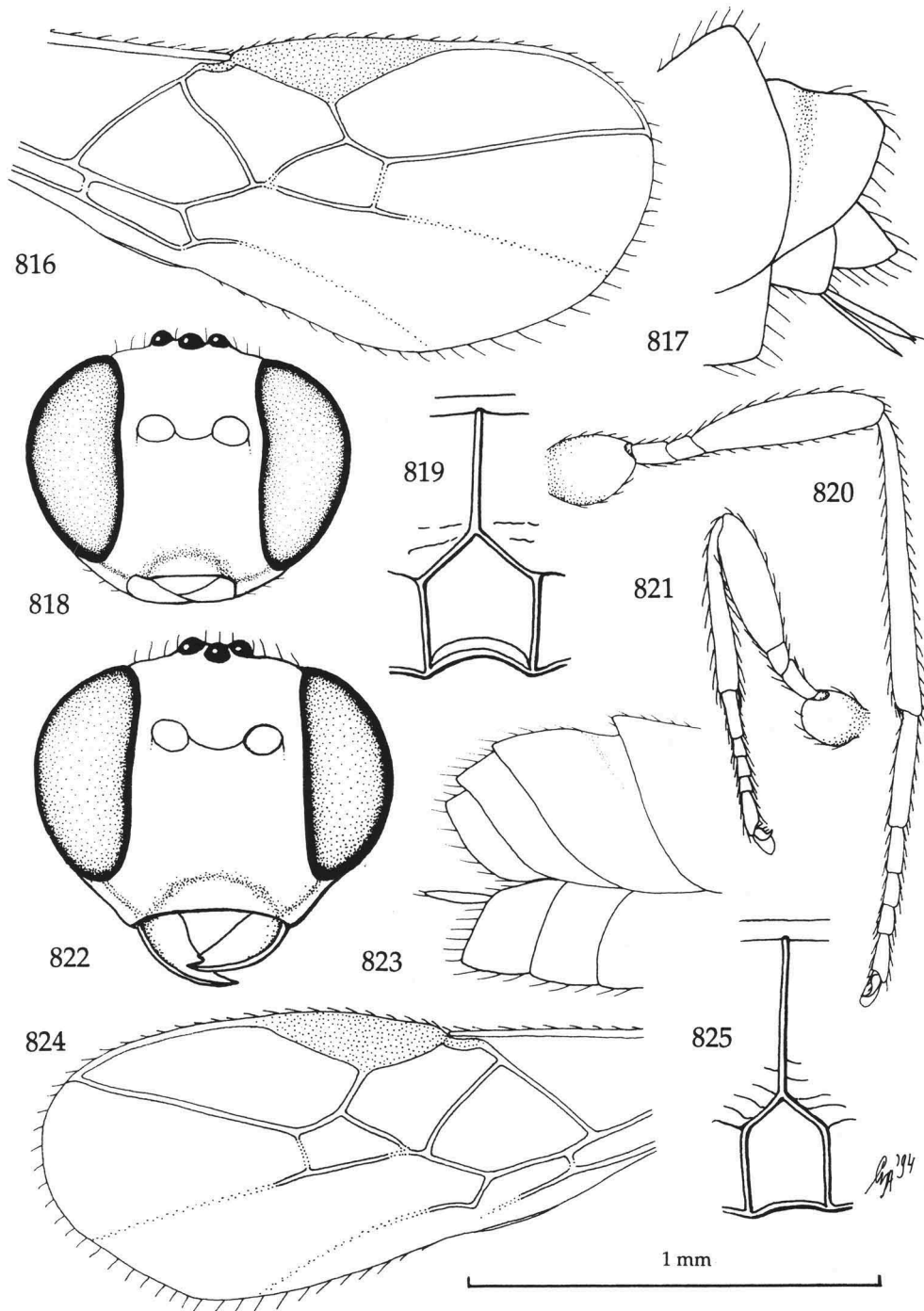
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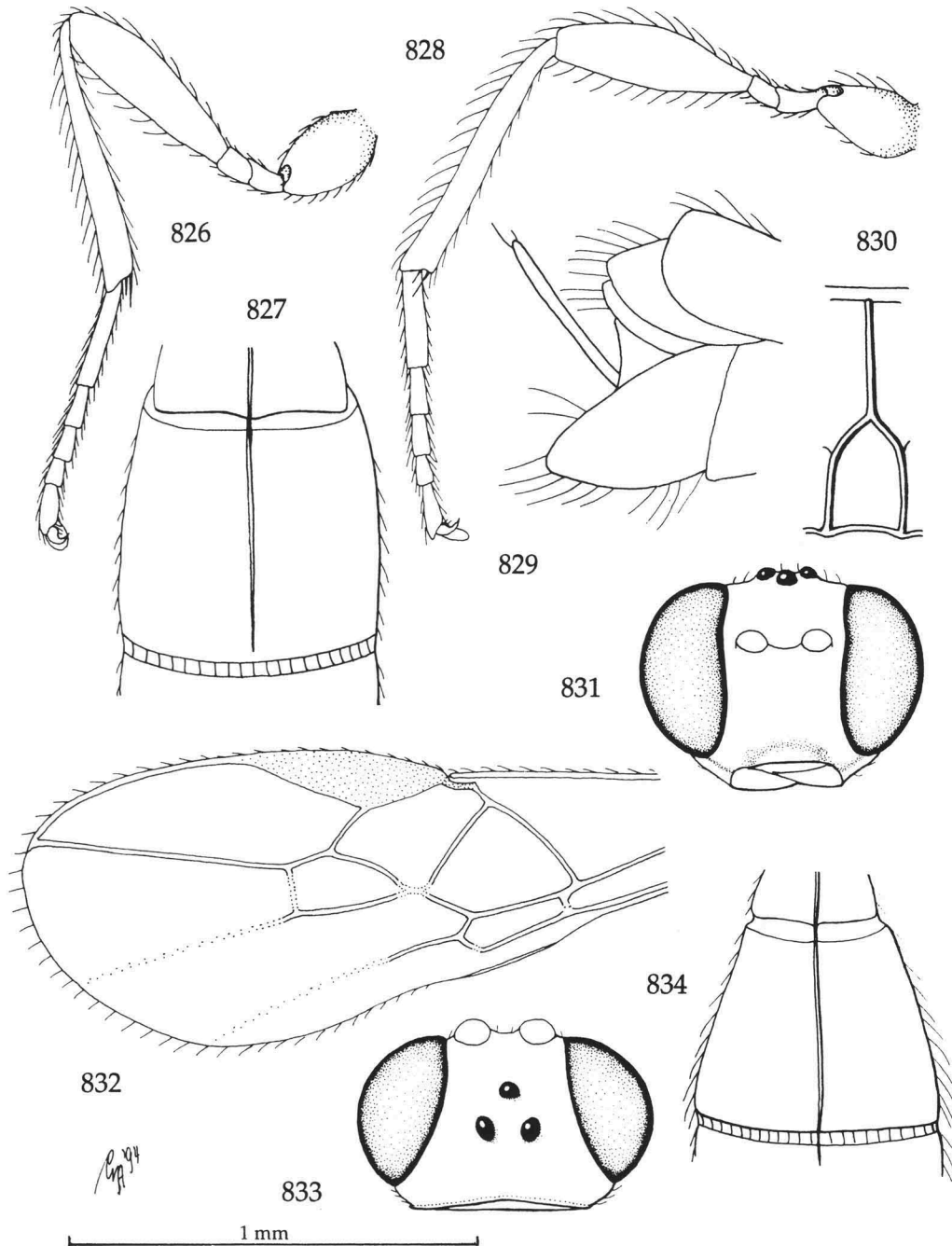
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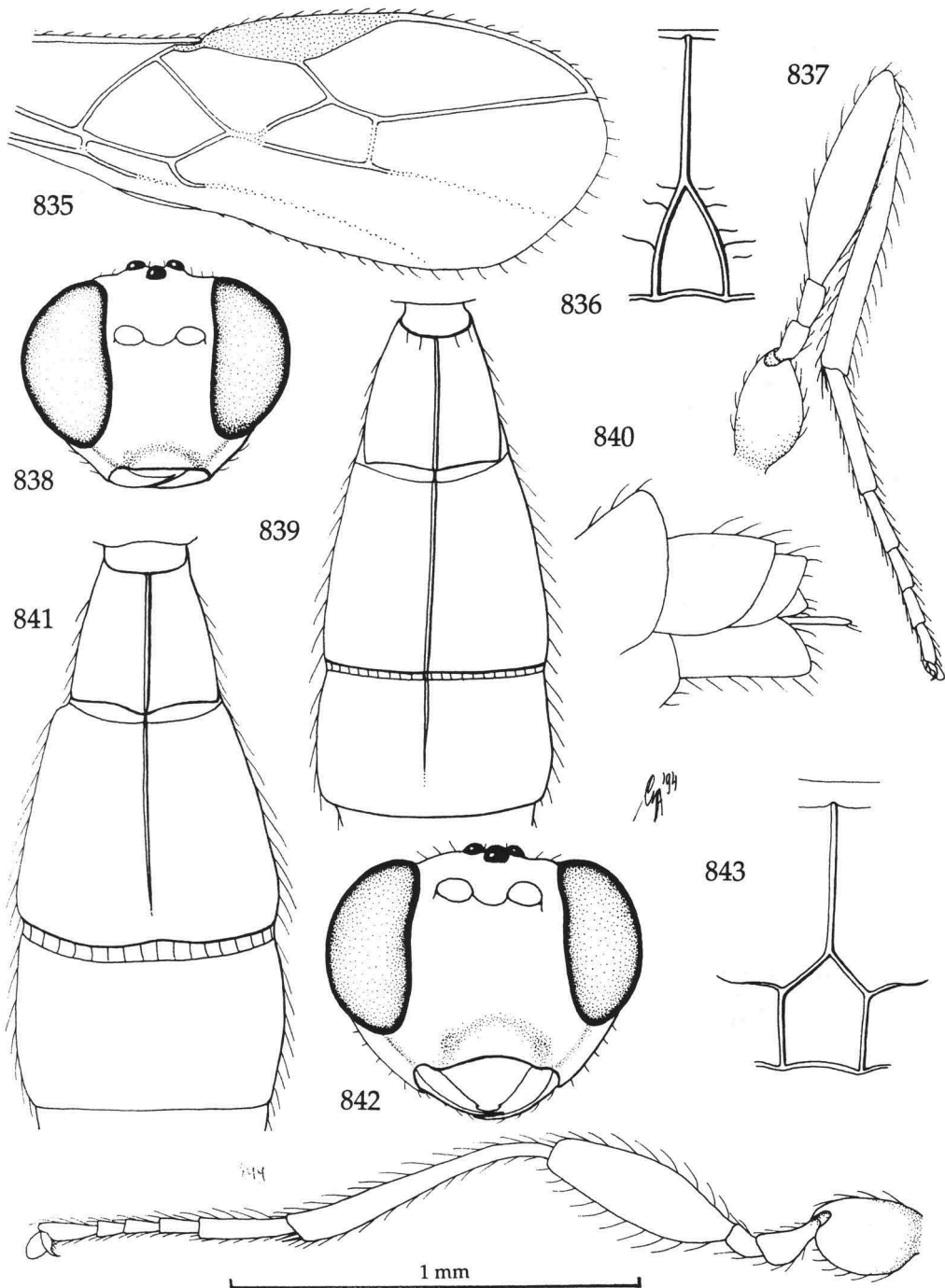
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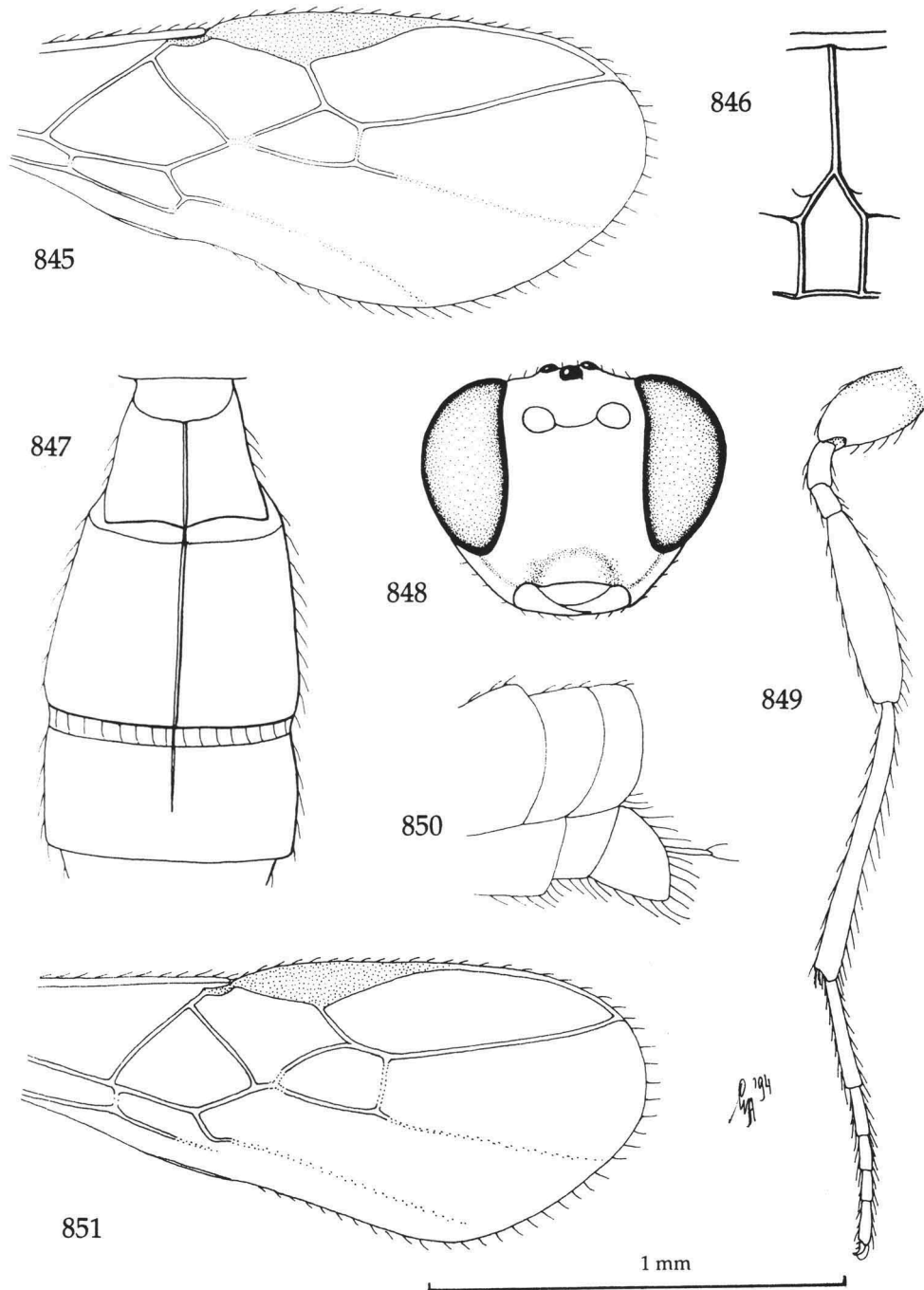
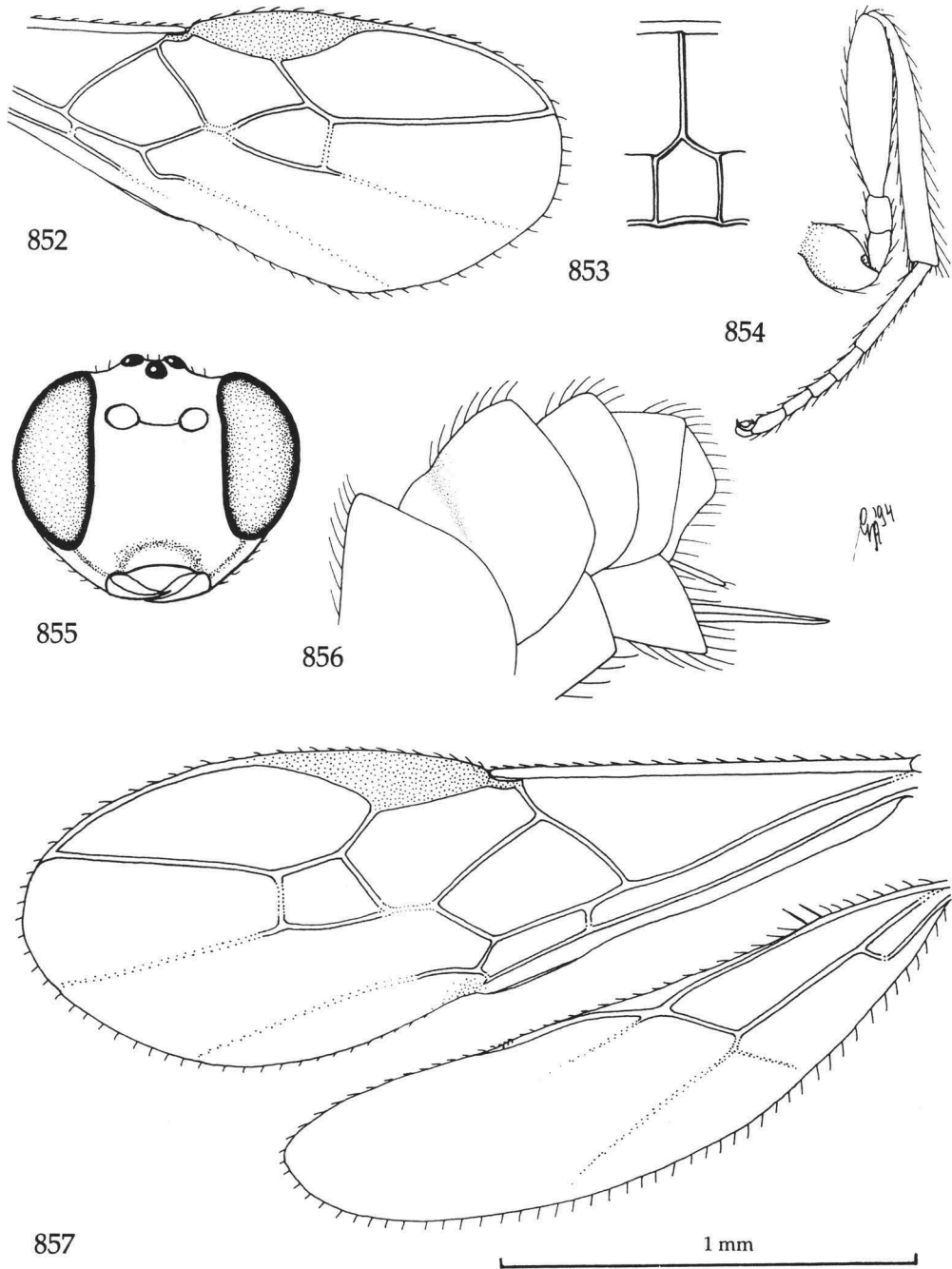


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