

## Review of the Australasian Genera of Signal Flies (Diptera: Platystomatidae)

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**ABSTRACT.** The distribution patterns of platystomatid genera in the 12 recognized provinces of the Australasian Region are recorded. Notes are provided on biology and behaviour, including parasitism by fungi and strepsipterans, and mimicry of other insects and spiders. Means of separation from other acalyptrate families are provided. A key to Australasian genera is given. The subfamily Angitulinae is placed in synonymy of Platystomatinae. The subfamily classification is briefly discussed. The following new genera are described: *Aetha*, *Bama*, *Eumeke*, *Hysma*, *Par*, *Phlyax*, *Signa*, *Tarfa*, *Terzia*, *Tomeus*. *Gonga* and *Polimen* are new subgenera of *Naupoda* and *Bama* respectively. The genus *Lasioxiria* Hendel is a new synonym of *Atopognathus* Bigot. *Chaetostichia* Enderlein is a new synonym of *Scholastes* Loew. *Eopiara* Frey, described as a subgenus of *Piara* Loew, is raised to generic status. The genera *Angituloides* Hendel and *Giraffomyia* Sharp are reduced to subgenera of *Angitula* Walker. The following new species are described: *Aetha cowanae*, *Bama (Polimen) shinonagai*, *Eumeke hendeli*, *Hysma lacteum*, *Paryphodes hospes*, *Signa mouldsi*, *Tarfa bowleyae*, *Terzia saigusai*, *Tomeus wyliei*, *Zealandortalis gregi*. *Lule speiseri* de Meijere, 1914 is a new synonym of *Phasiamea metallica* Walker, 1849. New generic combinations are made as follows: *Angitula austeni* (Hendel, 1913) (*Angituloides*); *Angitula irregularis* (Malloch, 1940) (*Giraffomyia*); *Angitula regularis* (Malloch, 1940) (*Giraffomyia*); *Angitula solomonensis* (Malloch, 1940) (*Giraffomyia*); *Angitula willeyi* (Sharp, 1899) (*Giraffomyia*); *Atopognathus hirsutus* (Hendel, 1914a) (*Lasioxiria*); *Bama bipunctatum* (Hendel, 1914a) (*Euxestomoea*); *Bama papuanum* (Hennig, 1940b) (*Xiria*); *Bama strigatum* (Hennig, 1940b) (*Xiria*); *Chaetorivellia tarsalis* (Walker, 1861c) (*Ortalis*); *Cleitamoides trigonalis* (de Meijere, 1913) (*Cleitamia*); *Eopiara chrysoptera* (Frey, 1964) (*Piara*); *Eopiara elegans* (Frey, 1964) (*Lamprogaster*); *Lamprophthalma egregia* (de Meijere, 1924) (*Plagiostenopterina*); *Lamprophthalma medionotata* (de Meijere, 1924) (*Plagiostenopterina*); *?Microepicausta sangiensis* (de Meijere, 1916) (*Elassogaster*); *Neohemigaster fascifrons* (de Meijere, 1916) (*Pterogenia*); *Neohemigaster guttata* (Walker, 1856) (*Lamprogaster*, later in *Pterogenia*); *Par evitta* (Malloch, 1939a) (*Elassogaster*); *Phlyax simmondsi* (Bezzi, 1928) (*Naupoda*); *Scholastes aduncivena* (Enderlein, 1924) (*Chaetostichia*); *Xiriella lunaris* (de Meijere, 1916) (*Lule*).

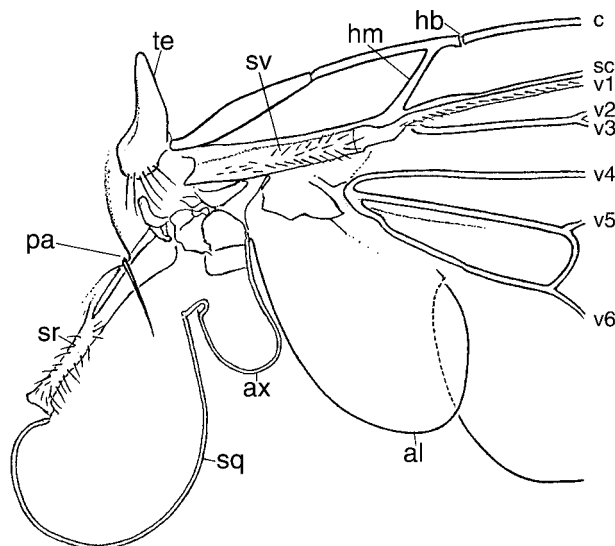
The Platystomatidae, recently termed signal flies, are probably among the four largest families of acalyptrate Schizophora in the Australasian Region, but in the Americas and in the Palaearctic Region the representation is comparatively small. There are about 119 known world genera and nearly 1200 described species. In the Australasian Region there are 54 recognized genera and c. 493 probably valid described species. At least 220 additional undescribed Australasian species have been sighted in collections, and I estimate that the total Australasian platystomatid fauna is unlikely to include less than 900 species.

It is the main aim of this paper to provide means of identification and general basic information on the genera of Platystomatidae living in the Australasian Region, including the Oceanian Region, as delimited by Evenhuis (1989) and in the section on Geographic Distribution below.

### Methods and terminology

In general I follow a traditional system with minimal use of terms implying doubtful, unproved, or, for present purposes, irrelevant homologies. Details are given by McAlpine (1973a), with most terms also explained by Harrison (1959), Crosskey (1973), and Colless & McAlpine (1991). Paired bristles and other paired structures are described in the singular, except where the context makes this inappropriate. The antenna is treated as a six-segmented appendage and the segments are numbered consecutively from the base (Fig. 96). The greater part of the arista thus consists of segment 6 and the very short segment 4 may not be visible in dried specimens. The system of nomenclature of wing veins (Fig. 1) is the simplest possible for one not concerned with trans-ordinal homologies. Cell-4 index is defined as the ratio of the length of the antepenultimate section of vein 4 to the full length of the discal cell along vein 4.

In using the keys and descriptions particular care should



**Figure 1.** *Euprosopia tenuicornis* Macquart, base of wing of female. Abbreviations: al, alula; ax, axillary lobe; c, costa; hb, humeral break of costa; hm, humeral crossvein; pa, postalar callus bearing postalar bristle; sc, subcosta; sq, squama; sr, suprasquamal ridge; sv, stem vein (base of R); te, tegula (sexually dimorphic); v1–v6, veins one to six.

be taken in interpreting the terms **bristle**, **setula**, **hair**, **pubescence**, and **pruinescence** (see McAlpine, 1973a).

An effort has been made to make the key to genera workable for all dried adults in good condition, provided that a good stereo-microscope with magnifications up to  $\times 75$  is used. However, because of individual variation, great diversity in some genera, and incomplete knowledge of the fauna, it should not be too readily assumed that specimens which do not key out necessarily belong in unrecorded genera.

The following abbreviations refer to institutions housing specimens:

|      |                                                                 |
|------|-----------------------------------------------------------------|
| AM   | Australian Museum, Sydney                                       |
| AMST | Zoological Museum, Amsterdam                                    |
| ANIC | Australian National Insect Collection, CSIRO, Canberra          |
| BM   | The Natural History Museum, London                              |
| BPB  | Bernice P. Bishop Museum, Honolulu                              |
| CNC  | Canadian National Collection, Agriculture Canada, Ottawa        |
| DEI  | Deutsches Entomologisches Institut, Eberswalde                  |
| FRIL | Forest Research Institute, Lae                                  |
| HELS | Zoological Museum Helsinki                                      |
| KONE | Department of Agriculture and Livestock, Konedobu, Port Moresby |
| MNB  | Museum of Natural Science at Humboldt University, Berlin        |
| MNM  | Hungarian Natural History Museum, Budapest                      |
| NAT  | Natal Museum, Pietermaritzburg                                  |
| RMS  | Naturhistoriska Riksmuseet, Stockholm                           |
| NMWC | National Museum of Wales, Cardiff                               |
| NSMT | National Science Museum, Tokyo                                  |
| OX   | University Museum, Oxford                                       |
| PM   | Museum national d'Histoire naturelle, Paris                     |
| UQ   | University of Queensland Insect Collection, Brisbane            |
| USNM | National Museum of Natural History, Washington                  |
| WM   | Natural History Museum, Vienna                                  |
| ZMC  | Zoological Museum, Copenhagen                                   |

The following collectors' names are abbreviated to the initials: J.H. Barrett, D.J. Bickel, T.G. Campbell, G. Daniels, B.J. Day, A.L. Dyce, E.D. Edwards, J.L. Gressitt, G.A. Holloway, A. Hughes, J.W. Ismay, N.L. Krauss, D.K. McAlpine, B.J. Moulds, M.S. Moulds, H. Roberts, J. Sedlaček, M. Sedlaček, P. Shanahan, S. Shinonaga, B.J. Sinclair, H.A. Standfast, F.H. Taylor, A. Walford-Huggins, A.R. Wallace, T.A. Weir, F.R. Wylie.

### Geographic distribution

The Australasian Region, the area covered in this review, is the same as the Australasian and Oceanian Regions together, of Evenhuis (1989), who proposed no dividing line between the two. The Region is thus defined in the west by Weber's Line ("original" version of Merrill, 1945), in the north by the northernmost islands of Micronesia and in the east by the easternmost islands of Polynesia. To the south, I am not concerned with islands beyond Tasmania and the two main islands of New Zealand, as such islands probably harbour

no platystomatids. South Island, New Zealand, provides the southernmost recorded habitat of platystomatids, in view of their apparent absence from southern parts of South America.

On the basis of present knowledge, it appears that Australasia harbours the most diverse platystomatid fauna of any biogeographic region. New Guinea is likely to have a particularly large number of undiscovered species (see discussion in McAlpine, 1994). About 80% of the species sorted from New Caledonia remain undescribed, and it would not be surprising if some other island groups prove significant sources of new discoveries.

Of the Australasian genera 34 (64%) are endemic to the Region. These are: *Achias*, *Aetha*, *Angitula*, *Apactoneura*, *Apiola*, *Asyntona*, *Atopognathus*, *Bama*, *Brea*, *Chaetorivellia*, *Cleitamia*, *Cleitamoides*, *Duomyia*, *Eumeka*, *Euxestomoea*, *Guamomyia*, *Hysma*, *Inium*, *Laglaisia*, *Lenophila*, *Loriomyia*, *Loxoneuroides*, *Mesocenia*, *Montrouziera*, *Par*, *Pseudocleitamia*, *Pseudorichardia*, *Phlyax*, *Scotinosoma*, *Signa*, *Tarfa*, *Terzia*, *Tomeus*, *Zealandortalis*. Of the remaining 20 genera all except *Paryphodes* extend to the Oriental Region: *Antineura*, *Conicipithea*, *Elassogaster*, *Euprosopia*, *Lamprogaster*, *Lamprophthalma*, *Meringomeria*, *Microepicausta*, *Naupoda*, *Neohemigaster*, *Plagiostenopterina*, *Pogonortalis*, *Pseudepicausta*, *Pterogenia*, *Rhytidortalis*,

*Rivellia*, *Scholastes*, *Trigonosoma*, *Zygaenula*.

Eight of the Australasian genera are shared with the Afrotropical Region: *Elassogaster*, *Lamprophthalma*, *Naupoda*, *Paryphodes*, *Plagiostenopterina*, *Pseudepicausta*, *Rivellia*, *Scholastes*.

Five of the Australian genera are shared with the Palearctic Region: *Elassogaster*, *Euprosopia*, *Lamprophthalma*, *Rhytidortalis*, *Rivellia*.

Only one Australasian genus occurs naturally in the Americas (both Nearctic and Neotropical Regions), the almost cosmopolitan *Rivellia*. However, an Australian species of *Pogonortalis* is introduced in California. *Duomyia* was erroneously recorded from Chile on the basis of a mislabelled specimen (see McAlpine, 1973a).

For the purpose of recording generic distributions, I divide Australasia into 12 provinces as indicated in Fig. 2. Delimitation of these follows natural barriers and a degree of convenience, rather than national boundaries. Thus the biogeographically diffuse areas covered by the terms Indonesia, Papua New Guinea, and Kiribati have no place in this system. The boundaries between Micronesia and Polynesia have been simplified, because ethnic zones are not relevant to platystomatid distributions, and because these zones are little known and probably largely depauperate in platystomatids.



**Figure 2.** Provinces of Australasia which harbour platystomatids. 1, Micronesia. 2, Moluccas. 3, New Guinea. 4, Bismarck Archipelago. 5, Solomon Archipelago. 6, Vanuatu. 7, New Caledonia. 8, Fiji. 9, Australia. 10, Norfolk Island. 11, New Zealand. 12, Tropical Polynesia. 13, excluded (Oriental Region).

The platystomatid faunas of many Australasian provinces are still poorly collected and studied. Many of my statements about distribution, diversity, and relationships may need some revision as new data become available.

1. **MICRONESIA.** The four genera recorded for this province are: *Guamomyia*, *Pogonortalis*, *Scholastes* (all from Guam, Malloch, 1942), and *Pseudorichardia* (Tuvalu, in AM). No endemic genus is known, but the fauna may be considerably richer than indicated by the immediately available data.

2. **MOLUCCAS.** For present purposes this province covers only the islands between Weber's and Lydekker's Lines, the latter given as "Weber's Line (modified)" by Merrill (1945), and Aru is definitely excluded. It is thus not coextensive with the Indonesian province of Maluku. The 17 recorded genera are: *Angitula*, *Antineura*, *Asyntona*, *Atopognathus*, *Brea*, *Chaetorivellia*, *Elassogaster*, *Euprosopia*, *Lamprogaster*, *Lamprophthalma*, *Plagiostenopterina*, *Pseudepicausta*, *Pterogenia*, *Rivellia*, *Scholastes*, *Trigonosoma*, *Zygaenula*. None of these is endemic to the province.

This province provides the western limit for the ranges of *Angitula*, *Asyntona*, *Atopognathus*, *Brea*, and *Chaetorivellia*, all genera restricted to less remote tropical parts of the Australasian Region. The placement of this province at the western limit of the Region therefore has a degree of biogeographic justification. The Oriental genera *Lamprophthalma*, *Trigonosoma*, and *Zygaenula* penetrate no further eastwards than this province.

3. **NEW GUINEA.** I have previously discussed the platystomatid fauna of this province (McAlpine, 1982). The province includes the large island of New Guinea and the following minor islands or groups: Aru, Waigeo, Salawati, islands of Geelvink Bay, D'Entrecasteaux Group, Trobriand Group, Woodlark, Louisiade Group. The inclusion of Aru with New Guinea rather than Moluccas is justified by the fact that its recorded platystomatids all belong in typical New Guinea genera, and many of its species are shared with mainland New Guinea.

The 31 recorded genera are: *Achias*, *Angitula*, *Antineura*, *Asyntona*, *Atopognathus*, *Bama*, *Brea*, *Chaetorivellia*, *Cleitamia*, *Cleitamoides*, *Elassogaster*, *Eumeka*, *Euprosopia*, *Euxestomoea*, *Guamomyia*, *Hysma*, *Laglaisia*, *Lamprogaster*, *Loriomyia*, *Mesoctenia*, *Microepicausta*, *Naupoda*, *Neohemigaster*, *Paryphodes*, *Plagiostenopterina*, *Pseudepicausta*, *Pseudocleitamia*, *Pterogenia*, *Rivellia*, *Scholastes*, *Tomeus*. The following seven genera are endemic to this province: *Bama*, *Cleitamia*, *Cleitamoides*, *Laglaisia*, *Loriomyia*, *Pseudocleitamia*, *Tomeus*. The more widely distributed genera *Atopognathus*, *Euprosopia*, and *Lamprogaster* have very substantial specific representation in New Guinea, and c. 95% of species of the large genus *Achias* live in New Guinea.

I stated (McAlpine, 1973a) that New Guinea has the greatest number of platystomatid species of any part of the world of comparable area. Subsequent work (including

McAlpine, 1994, and much unpublished work) has strengthened this view.

The record of *Lenophila* from New Guinea (McAlpine, 1982) was based on a misidentification.

4. **BISMARCK ARCHIPELAGO.** This province includes the islands of the New Britain, New Ireland, and Manus (Admiralty) districts of Papua New Guinea. The 18 recorded genera are: *Achias*, *Angitula*, *Atopognathus*, *Brea*, *Elassogaster*, *Eumeka*, *Euprosopia*, *Euxestomoea*, *Guamomyia*, *Lamprogaster*, *Mesoctenia*, *Microepicausta*, *Par*, *Plagiostenopterina*, *Pseudepicausta*, *Pterogenia*, *Rivellia*, *Scholastes*. Only *Par* is endemic to the province.

The Bismarcks provide the eastern limit for the genera *Achias*, *Brea*, *Euxestomoea*, and *Mesoctenia*, and are in this respect an eastern extension of the New Guinea province.

5. **SOLOMON ARCHIPELAGO.** This province includes the Bougainville district of Papua New Guinea and the islands forming the present nation of Solomon Islands, including the Santa Cruz Group. The 14 recorded genera are: *Angitula*, *Asyntona*, *Atopognathus*, *Elassogaster*, *Euprosopia*, *Lamprogaster*, *Microepicausta*, *Naupoda*, *Plagiostenopterina*, *Pseudepicausta*, *Pterogenia*, *Rivellia*, *Scholastes*, *Terzia*. The genus *Terzia* is endemic to the province.

The platystomatid fauna has been reviewed by Curran (1936) and Malloch (1940).

6. **VANUATU.** The platystomatids of this group of mostly small islands are perhaps too little known for profitable discussion. The two recorded genera are *Euprosopia* and *Pseudorichardia*. Though both have wide distributions, this is the only province known to harbour both genera.

7. **NEW CALEDONIA.** This province includes the main island of New Caledonia, with its small satellites, and the more removed Loyalty Islands. The seven recorded genera are: *Eumeka*, *Lamprogaster*, *Montrouzieria*, *Rivellia*, *Scholastes*, *Signa*, *Tarfa*. *Montrouzieria*, *Signa*, and *Tarfa* are endemic, but, whereas *Signa* is so far known only from the main island, *Montrouzieria* and *Tarfa* are perhaps restricted to the Loyalty Islands. The proportion of endemic genera (43%) is greater than that of any other Australasian province.

Though the number of genera is only half that recorded for the Solomon Archipelago, the preliminary species count (material studied by me) is about as great, despite the much smaller land area of New Caledonia. *Lamprogaster* (at least 14 species) and *Signa* (at least 10 species) are the genera with largest representation, these species being all endemic to the province, and perhaps to the main island. Most of them remain undescribed. New Caledonia is already recognized as a significant botanical hot spot (Jaffre *et al.*, 1998). Preliminary evidence indicates that it is also a hot spot for platystomatid diversity.

8. **FIJI.** The Fijian platystomatids were reviewed by Bezzi (1928), but some emendments to generic placement are now made. The five recorded genera are *Meringomeria*, *Phlyax*, *Pseudorichardia*, *Rivellia*, and *Scholastes*. Only *Phlyax* is

endemic. The genera *Duomyia*, *Lamprogaster*, and *Naupoda* have been recorded from Fiji in error, the first two from mislabelled Australian material (see McAlpine, 1973a), and *Naupoda* from generic misplacement of the type species of *Phlyax* (q.v.).

The presence of *Meringomeria* and *Phlyax* is of unusual interest. *Meringomeria*, which appears to have at least two endemic Fijian species, is otherwise represented only in the Oriental Region. *Phlyax*, though endemic to Fiji, is the only Australasian genus of the subfamily Trapherinae. There is no record of either *Meringomeria* or the Trapherinae from any other province of the Australasian Region.

**9. AUSTRALIA.** For purposes of this review, this province includes the six Australian states, the Northern Territory, Torres Strait Islands, and Lord Howe Island. The 26 genera are: *Achias*, *Aetha*, *Asyntona*, *Atopognathus*, *Brea*, *Duomyia*, *Elassogaster*, *Eumeka*, *Euprosopia*, *Euxestomoea*, *Guamomyia*, *Hysma*, *Inium*, *Lamprogaster*, *Lenophila*, *Loxoneuroides*, *Mesoctenia*, *Microepicausta*, *Naupoda*, *Plagiostenopterina*, *Pogonortalis*, *Pterogenia*, *Rhytidortalis*, *Rivellia*, *Scotinosoma*, *Zealandortalis*.

The following six genera are endemic to the province: *Aetha*, *Duomyia*, *Inium*, *Lenophila*, *Loxoneuroides*, probably *Scotinosoma*. *Duomyia* is much the largest of the endemic genera with at least 106 species.

The platystomatid fauna of Tasmania is an extension of that of mainland Australia, with no known endemic taxa. The seven recorded genera are: *Duomyia*, *Euprosopia*, *Lamprogaster*, *Lenophila*, *Microepicausta*, *Rhytidortalis*, *Rivellia*.

Lord Howe Island harbours the genera *Duomyia*, *Guamomyia*, *Naupoda*, *Pogonortalis*, and *Rivellia*. The species of *Duomyia* and *Pogonortalis* are very closely related to mainland Australian species. *Naupoda nudiseta* (Bezzi) is endemic to the island. *Guamomyia*, represented by one species endemic to the island, is known elsewhere only from northern Micronesia, New Guinea, and Bismarck Archipelago.

**10. NORFOLK ISLAND.** The only recorded genera are *Pogonortalis* and *Rivellia*, each with one species. This is a quite small island with, understandably, a minuscule platystomatid fauna. The *Rivellia* sp. is very similar to some Australian species of its genus, but the endemic *Pogonortalis hians* Schneider & McAlpine is not very close to congeneric species of the Australian mainland and Lord Howe Island.

**11. NEW ZEALAND.** This province can be interpreted broadly to include the Kermadec, Chatham, and more southerly island groups, but only the two main islands (North and South) are known to harbour platystomatids. The only recorded genus is *Zealandortalis* (see Harrison, 1959). This was thought to be endemic, but an Australian species is now described in the genus (see below).

**12. TROPICAL POLYNESIA.** I include in this province all the main island groups of the central-eastern Pacific, from Tokelau, Samoa, and Tonga in the west to French Polynesia and the Pitcairn Group in the east, and the Hawaiian Chain in the north. The six genera recorded from the province are: *Apactoneura*, *Apiola*, *Plagiostenopterina*, *Pseudorichardia*,

*Rivellia*, *Scholastes*. *Apactoneura* and *Apiola* are endemic.

The two endemic genera are recorded only from the Samoan Islands, which harbour all six genera (Malloch, 1930b). Only *Pseudorichardia* and *Scholastes* seem to have a wide distribution through the province (Malloch, 1932).

## Biology

The flies of the family Platystomatidae, are biologically diverse, particularly in the larval stages. Summaries of their biology are given by McAlpine (1973a, 1998, 1999). The most complete treatment of larval biology is that of Ferrar (1988). Some additional biological and habitat data are recorded below under generic headings. In particular, parasitism of adults by Strepsiptera is mentioned under *Paryphodes*, parasitism by laboulbenian fungi under *Rivellia*, and possible larval association with roots of *Acacia* under *Rivellia*. Possible Batesian mimicry of blowflies (Calliphoridae) is mentioned below under *Lamprogaster*, of braconid or ichneumonid wasps under *Tarfa*, of ants (Formicidae) under *Inium*, of pompilid wasps under *Antineura* and *Eumeka*, of vespid wasps under *Achias* and *Lamprogaster*, of chrysomelid beetles under *Phlyax*, and of jumping spiders (Salticidae) under *Atopognathus* and *Lenophila*. In general, these mimicry hypotheses need testing by field observations, as effective mimicry often depends on behaviour as well as morphology. No flightless forms with reduced wings are known in the Platystomatidae, but it should be noted that the family is apparently unrepresented on far southern islands, which harbour such forms in other dipterous families.

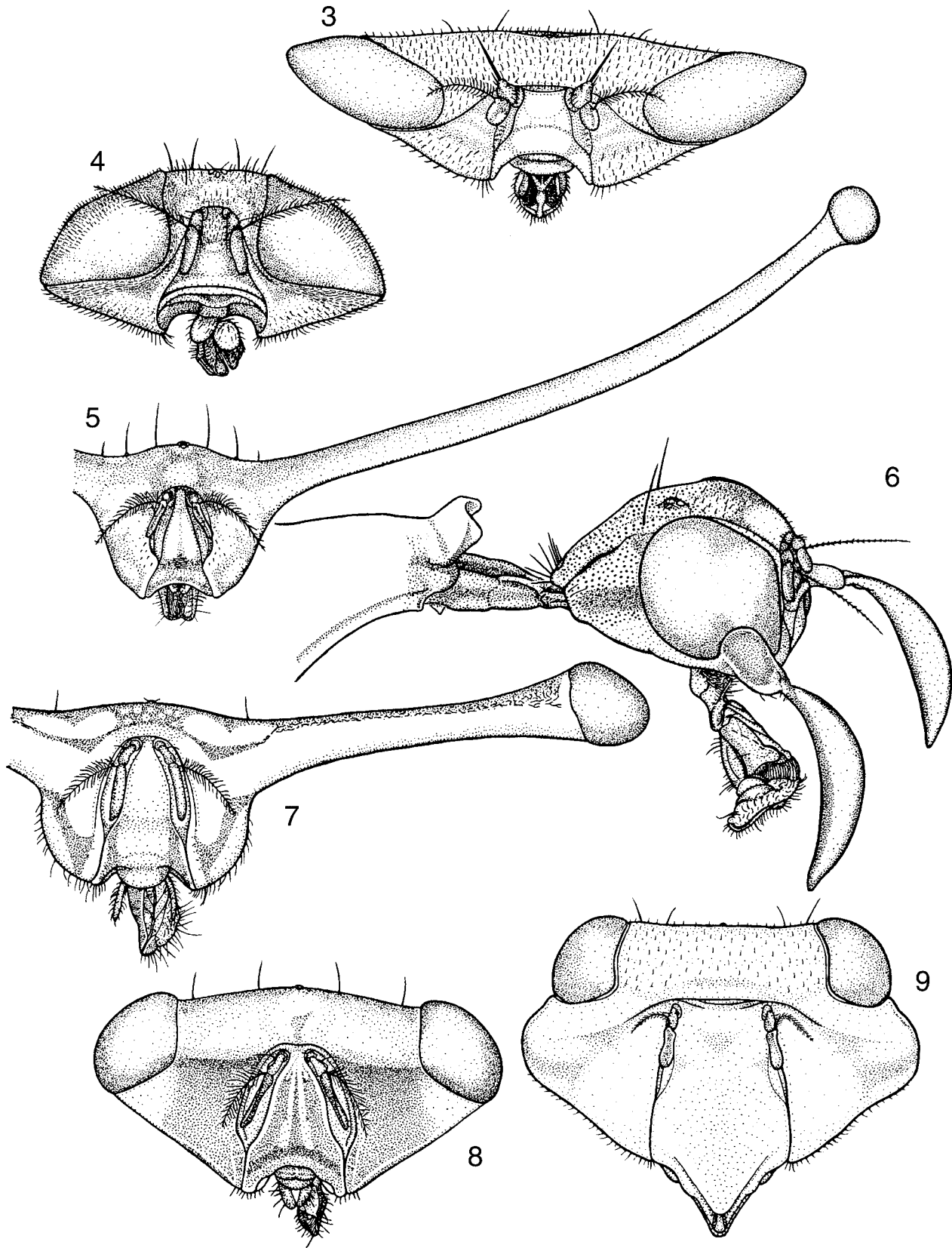
Sexual dimorphism, other than that in the organs of copulation and oviposition, is very diverse in platystomatids, a summary being given by McAlpine (1998), with additional data by McAlpine (2000). Some functional aspects of sexual dimorphism are considered by McAlpine (1973b, 1975, 1979, 2000). Further mention of sexual dimorphism is made below under the numerous genera in which it has been observed. A range of head modifications in male platystomatids is shown in Figs. 3–9.

## Family identification

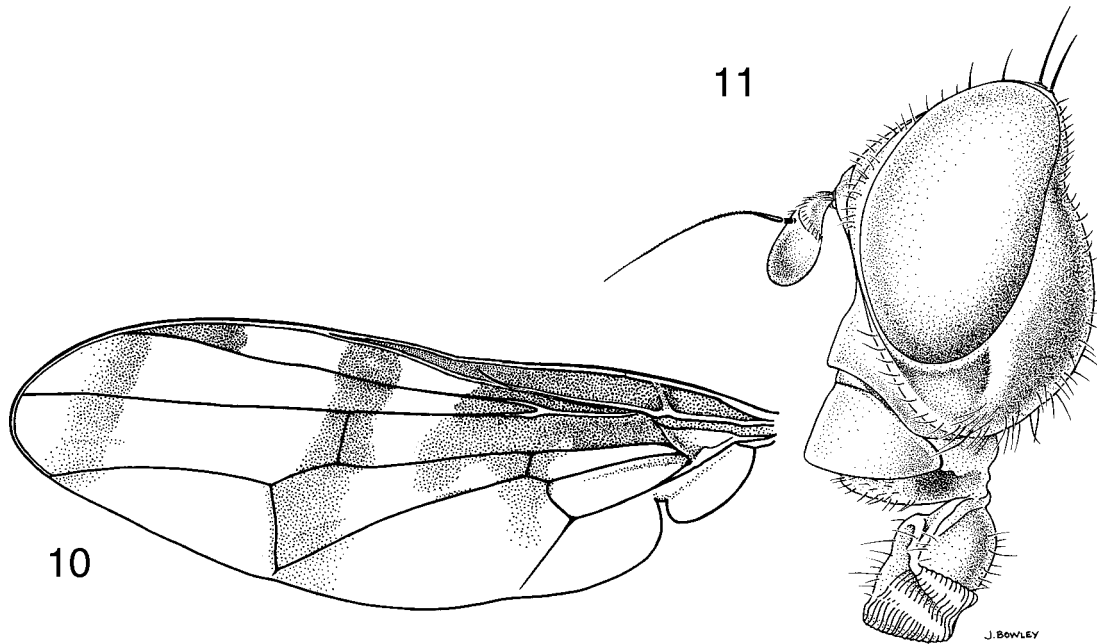
Platystomatid adults may generally be identified by use of the keys to families of Diptera given by Colless & McAlpine (1991) or Oosterbroek (1998). Unfortunately platystomatid larvae are so little known that it is unlikely that larval characters diagnostic for the family will be recognized in the foreseeable future.

For those desiring a more rigorous method of sorting to family level, without going through an unnecessary priming, I offer the four not necessarily simple steps for adult flies suspected as belonging in the Platystomatidae.

**Step 1: Segregation of the higher Diptera.** Platystomatid flies have the general features of the division (or series) Schizophora or “higher Diptera.” Flies of this division usually have three stout antennal segments (the first or basal one shortest), and the large third segment has a fine bristle-like structure, the arista, arising from near the base of its



**Figures 3–9.** Modified head capsules of male platystomatids. 3, *Asyntona* “sp. A” (Bougainville, AM). 4, *Atopognathus goniceps* (Hendel). 5, *Laglaisia* “sp. 1” (Sewan, West New Guinea, AM). 6, *Angitula* (*Giraffomyia*) “sp. A” (New Britain, AM). 7, *Achias furcatus* Hendel. 8, *Achias wallacei* McAlpine. 9, *Mesoctenia* “sp. 1” (Bainyik, Papua New Guinea, AM).



Figures 10–11. *Hysma lacteum* n.sp. 10, wing. 11, head of female.

dorsal surface (Fig. 96); also they generally have a curved slit, the ptilinal fissure (Fig. 68, pt), on the head, immediately above the sockets of the antennae. In the Schizophora the number of wing veins and their branches is normally not above that shown in Fig. 10.

**Step 2: Identifying the setulose vein 1.** The Platystomatidae are one of the few families of Schizophora which have a series of many setulae (macrotrichia) on the dorsal surface of vein 1 of the wing, extending from approximately the level of the humeral crossvein to the distal end of this vein where it merges with the costa (Fig. 1). These setulae are **distinctly larger** than the microtrichia or pubescence—very fine hair-like processes that clothe much of the surface of the wing membrane and the veins, but do not tend to form a linear series on veins. Failure to appreciate the difference between setulae and microtrichia sometimes leads elementary students to classify *Strongylophthalmyia* spp. (family Tanypezidae) as platystomatids. The only other Australasian schizophoran families with such an extensive series of setulae on vein 1 are the Tephritidae (true fruit flies) and Pyrgotidae (nocturnal scarab-killing flies), except on islands to the south of New Zealand, where platystomatids are absent

The small flies of the family Lonchopteridae also have a series of dorsal setulae on vein 1, but lonchopterids, which do not belong among the Schizophora, have no ptilinal fissure and the arista arises from the apex of antennal segment 3. The genus *Herina* Robineau-Desvoidy (family Otitidae) also has a series of dorsal setulae on vein 1 but these are restricted to the distal part of the vein; *Herina* has a well developed, isolated proepisternal (propleural) bristle, which is always absent in Platystomatidae.

### Step 3: Sorting platystomatids from tephritids.

Platystomatids consistently have no break, or incision in the costa at the point where the subcosta meets it; the costa is quite continuously developed and sclerotised through this point, though there is usually a visible break indicating a flexible point in the costa a little beyond the level of the humeral crossvein (humeral break, see Fig. 1). Tephritids, on the other hand, do have a break or incision in the costa at the distal end of the subcosta (usually in addition to the humeral break) which can be detected by using an appropriately high magnification, carefully positioning the wing, and using transmitted light. The great majority of tephritids have one or more pairs of incurved lower fronto-orbital bristles in front of the usual upper fronto-orbital bristles nearer the inner vertical bristles. These paired bristles are well differentiated by their size, thickness, or regular placement, from any irregular covering of hairs or setulae on the postfrons. Platystomatids have no incurved lower fronto-orbital bristles, but one to three upper fronto-orbital bristles of diverse inclination may be present just in front of the inner vertical bristle on each side of the postfrons, often on a differentiated fronto-orbital plate. The vast majority of tephritid species have the anal crossvein (free transverse section of vein  $CuA$  or  $CuA_2$ ) strongly indented so that the anal cell is acutely produced posterodistally. In the platystomatids the anal crossvein is straight, simply curved (e.g., Fig. 10), or strongly reflexed (Fig. 79), but it is only strongly indented and tephritid-like in the rarely collected genus *Loriomyia* Kertész (Fig. 85). In a few platystomatids (e.g., *Lenophila achilles* McAlpine & Kim) the anal crossvein has slight sigmoid curvature and the anal cell is posterodistally acute, but the crossvein is scarcely indented.

**Step 4: Sorting platystomatids from pyrgotids.** The Pyrgotidae are a large and morphologically diverse family having much in common with the Platystomatidae, including the extent of dorsal setulae on vein 1. Most Australasian pyrgotids have the first two abdominal sternites fused into a single plate, though a transverse line of demarcation may still be visible; but all known platystomatids have these sternites separated by a distinct membranous zone. A significant proportion of Australasian pyrgotids have no distinct ocelli on the head; all known Australasian platystomatids have well-developed ocelli. Thus, most pyrgotids can be distinguished from platystomatids by having either sternites 1 and 2 fused or no visible ocelli. Many pyrgotids also have the anal crossvein indented, approximately as in the Tephritidae. The residue of pyrgotid species that have separate sternites 1 and 2 as well as distinct ocelli is very small and these species, so far as I am aware, are distinguishable from platystomatids by having a break in the costa at the end of the subcosta (even though the majority of other pyrgotids have no such break). Female platystomatids generally have tergite 6 of the abdomen very short and capable of being withdrawn underneath the margin of tergite 5, or absent. Thus at most only four tergal (dorsal) abdominal plates are visible in front of the ovipositor sheath (the first two tergites being fused). By contrast, female pyrgotids have tergite 6 well developed and resembling tergite 5, though much shorter. Very few Australasian platystomatid species have female tergite 6 permanently exposed (*Apiola*, some *Angitula* spp., one *Duomyia* sp.). The first two of these have characteristic wings (Figs. 123, 88), and the latter localised species is unlikely to be encountered before otherwise closely similar species are seen.

While there are numerous other morphological features of the Platystomatidae that can help to distinguish the family, these may be largely dispensable to those simply wishing to sort material. Reference may be made to the more detailed work of McAlpine (1973a) if required.

#### Subfamily classification

A classification of the Platystomatidae into five subfamilies was proposed by McAlpine (1973a). Some aspects of this classification seem unsatisfactory in the light of morphological study of additional taxa.

Freidberg (1994, only printed abstract published) seems to have raised once again the possibility of relationship between "Phytalmiini (Tephritidae), [and] Angitulinae (Platystomatidae)". Hennig (1940a) disposed of this supposed alliance as convergence, and our more recent studies (McAlpine & Schneider, 1978) confirm the tephritid affinities of the Phytalmiini, without revealing any evidence of polyphyly for the Tephritidae.

In characterising Platystomatinae and Angitulinae as separate subfamilies (McAlpine, 1973a), I inclined to regard the relatively well-developed female tergite 6 as a plesiomorphy in the ground plan of Angitulinae, and the greater reduction of this tergite in Platystomatinae as a unifying apomorphy (probable autapomorphy) for the latter (though it is shared with the Scholastinae and

Plastotephritinae). Hence, with reference to the well defined autapomorphies of Angitulinae, both could be treated as probably monophyletic groups. Further study convinces me that, even if the better developed tergite 6 is a groundplan condition for the *Angitula* alliance, it is unlikely to represent a plesiomorphy relative to the groundplan for Platystomatinae (sensu McAlpine, 1973a).

In relation to this problem, consideration of variation in female tergite 6 in the genus *Duomyia* is instructive. I have examined females of c. 90 of the species of this genus. With one exception, all species seen have a much reduced tergite 6 which becomes concealed under tergite 5 in dried specimens. The exceptional species (*Duomyia* "sp.18" in AM, numerous females examined) has a well-developed tergite 6, which is non-retractile, quite broad laterally, with setulose surface, and enlarged posterior marginal bristles. Within the Platystomatidae, such a condition resembles the presumed plesiomorphic state manifested in the outgroups Pyrgotidae and Tephritidae. Three possible phylogenetic interpretations are theoretically possible. (1) *Duomyia* "sp.18" represents a primitive sister group to the greater part of the Platystomatinae, which is synapomorphic in this character. (2) *Duomyia* "sp.18" is related to other taxa with closely similar general morphology, but these other taxa (many of which are placed in the subfamily Platystomatinae and a number in the genus *Duomyia*) have attained the apomorphic state by multiple convergence. (3) The condition in *Duomyia* "sp.18" is due to an evolutionary reversal in its own peculiar lineage, and is effectively a species-level autapomorphy within the broad taxonomic field of Platystomatinae, which are characterised by the almost uniform homologous condition of a reduced, retractile female tergite 6. I reject interpretation (1) as extremely improbable in view of the apparently close relationship of *Duomyia* "sp.18" to *D. glebosa* McAlpine and a group of closely related undescribed species. Interpretation (2) must be rejected as passing far beyond the requirements of theoretical parsimony into the realm of fantasy. Interpretation (3) must therefore be accepted by elimination of alternatives.

Accepting that the reduction tendency in female tergite 6 of Platystomatidae has been markedly reversed within *Duomyia*, I now regard it as possible/probable that the relatively well-developed tergite 6 in the trapherine genera *Xiria* Walker and *Phasiomya* Walker and the "angituline" subgenera *Angituloides* and *Giraffomyia* is also a secondarily derived condition. In those numerous platystomatid groups which show heterogeneity in development of female tergites 4–5, evolution of these structures also may not necessarily be unidirectional.

Clearly, the Angitulinae must be incorporated into the Platystomatinae for reasons given below in the discussion of *Terzia* n.gen. This means that all taxa in which the aedeagus is known to possess a pair of hollow terminal filaments with terminal gonopores are now placed in the Platystomatinae, and this is considered to be a groundplan condition for the subfamily.

Delimitation of the remaining three subfamilies is problematical. Australasian genera sometimes placed in the Plastotephritinae are *Chaetorivellia*, *Atopognathus*, and



*Guamomyia*, but A. Whittington has indicated (pers. comm.), from his studies of this mainly Afrotropical subfamily, that these assignments may be incorrect. *Chaetorivellia* is here assigned to the Scholastinae, though it is in incomplete agreement with the characterisation previously given (D. McAlpine, 1973a). *Atopognathus* and *Guamomyia* are here categorized as of doubtful subfamily position, together with *Apiola* which is poorly known morphologically and certainly not close to the “angituline”

genera, now placed in Platystomatinae. Thus no Australasian genera now remain in the Plastotephritinae.

The Scholastinae and Trapherinae are discussed separately below. As aedeagal structure seems to be of major significance in the subfamily classification of platystomatids, it is possible that correlative study of reproductive biology may help interpretation of phylogeny. I also point out that gross morphology of the female reproductive system is known for very few genera.

#### Key to Australasian genera of Platystomatidae

- 1 Stem vein (base of R, Fig. 1, sv) dorsally before level of humeral crossvein with numerous setulae ..... 2
- Stem vein without setulae before level of humeral crossvein (setulose beyond) ..... 5
- 2 Fronto-orbital bristles distinct; scutellum devoid of hairs; squama very narrow; New Guinea ..... *Bama* part
- Fronto-orbital bristles absent or vestigial; scutellum with few or many dorsal hairs; squama large and rounded (Fig. 1, sq) ..... 3
- 3 Face with strongly raised flat-topped carina; mesopleural bristle usually absent; ♂: aedeagus with pair of terminal filaments (e.g., Figs. 24–26); ♀: abdominal tergite 5 long, or short but well sclerotised and exposed ..... 4
- Face without median carina; mesopleural bristle present; ♂: aedeagus without paired terminal filaments (e.g., Fig. 106); ♀: abdominal tergite 5 vestigial; widely distributed ..... *Pterogenia*
- 4 Mesoscutum, mesopleuron, and abdominal tergites 2 to 5 largely glossy and almost without pruinescence; second basal cell largely bare; wing hyaline, with three small transverse brown stripes and very small apical spot on vein 3; New Guinea (one aberrant species) ..... *Lamprogaster* part
- Mesoscutum, mesopleuron, and/or tergites 2 to 5 almost entirely densely pruinescent; second basal cell usually largely microtrichose; wing with more extensive dark markings than indicated above; widely distributed ..... *Euprosopia*
- 5 Eye densely haired; scutellum extensively haired dorsally; axillary lobe with fringe of long hairs, each >4 times as long as pubescence on vestigial squama; ♀: aculeus broad and blade-like; widely distributed ..... *Atopognathus*
- Eye bare or with sparse minute hairs; other characters not entirely as above ..... 6
- 6 Metathorax with complete, deep, glossy postcoxal bridge (Fig. 90, pcb); humeral callus hairless or almost so; mesoscutum with hairing mainly reduced to few longitudinal series; outer vertical, ocellar, humeral, supra-alar, posterior intra-alar, dorsocentral, and mesopleural bristles absent; legs long; mid-femur neither thickened nor ventrally spinose; squama vestigial, without lobe ..... 7
- Metathoracic postcoxal bridge usually absent, if complete, dull-pruinescent; other characters not entirely as above ..... 8
- 7 Scutellum without setiferous horns; pronotum very short and inconspicuous; thorax fulvous; Solomon Archipelago ..... *Terzia*

- Scutellum with pair of setiferous horns (Fig. 90, ss); pronotum enlarged, variously modified; thorax shining (often metallic) black; Moluccas, New Guinea, Bismarck and Solomon Archipelagos ..... *Angitula*
- 8 Mid femur thicker than other femora, with strong ventral spines; other femora without ventral spines ..... 9
- Mid femur usually not thicker than other femora, if ventrally spinose then fore femur and/or hind femur also spinose ..... 10
- 9 Pronotum transversely narrow-linear, recessed into front of thorax and scarcely visible from above; mesoscutum much broader than long; antennal sockets rather broadly separated by at least the width of antennal segment 1; widely distributed ..... *Mesoctenia*
- Pronotum broadly visible from above, not recessed; mesoscutum not broader than long; antennal sockets usually separated by less than half width of segment 1; widely distributed ..... *Brea*
- 10 Fronto-orbital bristles absent or not distinctly differentiated ..... 11
- Fronto-orbital bristles distinct, though often small ..... 33
- 11 Arista densely whitish-pubescent for almost whole length; antenna excluding arista longer than face on median line; face with minute erect hairs (Fig. 62) ..... 12
- Arista almost bare, or short-haired on basal part only, or loosely haired to apex, or bipectinate; other characters not as above ..... 13
- 12 First basal cell broad at level of basal crossvein, narrowed near middle by curvature of vein 4 (Fig. 61); penultimate section of vein 4 very short, straight; Moluccas, New Guinea, Philippines ..... *Antineura*
- First basal cell very narrow for most of length, widened near anterior crossvein; penultimate section of vein 4 longer, curved, dipping into discal cell; Sulawesi, not Australasian ..... *Philocompus*
- 13 Mesopleural bristle absent ..... 14
- Mesopleural bristle present ..... 20
- 14 Anal crossvein strongly bent at anterior third of length; section of costa on subcostal cell more than four times as long as that on marginal cell; ♂: costa basally inflated, eliminating first costal cell (Fig. 82); New Guinea ..... *Cleitamoides*
- Anal crossvein curved or almost straight; section of costa on subcostal cell not much longer than that on marginal cell; ♂: costa not inflated basally ..... 15
- 15 Arista long-haired, at least on mid section and usually for most of length, hairs tending to alignment in a dorsal and a ventral series (bipectinate condition); often some or all femora with ventral spinose bristles but mid femur always without posterior bristles ..... 16
- Arista at most short-haired on basal part (hairs not much longer than basal diameter), usually bare on distal half, or, if relatively long haired, then mid femur with posterior bristles on distal half (few *Duomyia* spp.); femora usually without ventral spinose bristles, except sometimes for a posteroventral series on fore femur ..... 17

- 16 Antennal segment 2 rotund, cap-like; mid femur much thicker than other femora; squama vestigial, not forming lobe; ♂: eye never stalked or laterally protruding; horn-like cheek process often present; ♀: abdominal tergite 6 well developed, exposed, but shorter than tergite 5; Samoan Islands ..... *Apiola*
- Antennal segment 2 subconical to subcylindrical, more or less attenuated basally; squama forming a distinct broad to narrow lobe; mid femur not thicker than other femora; ♂: eye often stalked or laterally protruding; cheek process absent; ♀: tergite 6 vestigial, generally concealed; New Guinea, Bismarck Archipelago, northern Australia ..... *Achias*
- 17 Basal crossvein very oblique, its distal end aligned with penultimate section of vein 5; postfrons usually with pronounced central tubercle; antennal segment 3 usually potentially extending far beyond lower margin of face on median line; second section of vein 4 at least three times as long as first; Moluccas, Oriental Region etc. .... *Lamprophthalma*
- Basal crossvein transverse to somewhat oblique, meeting penultimate section of vein 5 at an angle; other characters variable ..... 18
- 18 Squama vestigial, not forming a lobe; mesoscutum with transverse depression crossing medial line (evident in profile), much longer than wide; face somewhat saddle-like but without carina; scutellum with two pairs of bristles, bare medially but setulose laterally; suprasquamal ridge without erect hairs or setulae; mid femur neither bristled nor more conspicuously haired on posterior surface; widely distributed ..... *Elassogaster* part
- Squama forming a definite, often large lobe; mesoscutum without complete transverse depression; other characters not in above combination ..... 19
- 19 Suprasquamal ridge without hairs (sometimes with short pubescence); supra-alar and prescutellar acrostichal bristles absent; mainly New Guinea species ..... *Lamprogaster* part
- Suprasquamal ridge with erect hairs (Fig. 1, sr); supra-alar and prescutellar acrostichal bristles often present; Australia ..... *Duomyia* part
- 20 Prelabrum very deep, ventrally much extended towards proboscis; scutellar bristles only one pair or none; occiput very convex or prolonged; habitus elongate, ant-like; Queensland ..... *Inium* part
- Prelabrum not thus prolonged ventrally; other characters not entirely as above ..... 21
- 21 Antennal segment 3 with numerous black setulae on inner surface; suprasquamal ridge with erect hairs; parafacial with fine hairs (distinct from pruinescence) near centre; thorax markedly elongate; Moluccas, Oriental Region ..... *Conicipithea*
- Antennal segment 3 without setulae, with only the usual pile-like (under low magnification) vestiture; suprasquamal ridge without erect hairs (often pruinescent); other characters variable ..... 22
- 22 Face with strongly raised, sharply margined, flat-topped carina; squama very broad and rounded; posterior bridge of hind coxa without fine hairs; widely distributed ..... *Lamprogaster* part
- Without above combination of characters; face rarely with such carina in which case squama is narrow or vestigial ..... 23

|    |                                                                                                                                                                                                                                                                                                     |                              |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| 23 | Mesoscutum wider than long; ♀: abdominal tergites 4 and 5 much reduced (less so in <i>Asyntona</i> ) .....                                                                                                                                                                                          | 24                           |
| —  | Mesoscutum not wider than long; ♀: abdominal tergites 4 and 5 large and exposed .....                                                                                                                                                                                                               | 27                           |
| 24 | Anal cell acute at posterodistal angle; vein 4 ending at extreme apex of wing, its combined sections on discal cell much shorter than section on second basal cell (Fig. 121); widely distributed .....                                                                                             | <i>Asyntona</i> part         |
| —  | Posterodistal angle of anal cell not acute; vein 4 ending a little behind apex, its sections on discal cell not shorter than that on second basal cell .....                                                                                                                                        | 25                           |
| 25 | Face with deep transverse central depression, highly convex and glossy below; antennal segment 3 at least four times as long as wide; abdominal tergites 2 and 3 with prominent median carina; Moluccas, Oriental Region .....                                                                      | <i>Trigonosoma</i>           |
| —  | Face little depressed centrally, not noticeably convex below; antennal segment 3 no more than three times as long as wide; abdominal tergites 2 and 3 without median carina .....                                                                                                                   | 26                           |
| 26 | Antennal sockets separated by c. width of each or less; face almost entirely densely pruinulent; lower end of facial ridge with group of hairs not in a linear series; mesoscutum and dorsal surface of scutellum minutely roughened or pruinulent between hairs; New Guinea, Oriental Region ..... | <i>Neohemigaster</i>         |
| —  | Antennal sockets separated by c. twice width of each or more; face largely smooth and glossy; lower end of facial ridge with few hairs in a linear series; mesoscutum and dorsal surface of scutellum shining, almost smooth between hairs; Moluccas .....                                          | <i>Zygaenula</i>             |
| 27 | First posterior cell not narrowed apically; distal section of vein 4 not curving forwards apically; parafacial with fine hairs near middle .....                                                                                                                                                    | 28                           |
| —  | First posterior cell narrowed apically; distal section of vein 4 curved anteriorly towards apex; parafacial haired at most only on upper extremity (often pruinulent) .....                                                                                                                         | 29                           |
| 28 | Mesoscutum without pattern of numerous black spots; wing generally with brown markings; mesopleuron generally grey-pruinulent on entire posterior margin; widely distributed, not in Australia .....                                                                                                | <i>Pseudepicausta</i> part   |
| —  | Mesoscutum with many black spots on a grey-pruinulent field (pattern not visible in greasy specimens); wing generally without dark markings; mesopleuron grey-pruinulent only on upper part; Australia, Oriental Region .....                                                                       | <i>Rhytidortalis</i> part    |
| 29 | Face with fine hairs on central part; postscutellum setulose at sides; a dark longitudinal stripe covering first basal cell (Fig. 56), or wing with extensive infuscation; widely distributed .....                                                                                                 | <i>Plagiostenoptera</i> part |
| —  | Face not haired; postscutellum without setulae; wing with neither dark stripe on first basal cell nor general infuscation .....                                                                                                                                                                     | 30                           |
| 30 | Fore femur with strong dorsal bristles; arista plumose or subplumose on basal part; scutellum not haired dorsally; Fiji, Oriental Region .....                                                                                                                                                      | <i>Meringomeria</i>          |
| —  | Fore femur without distinct dorsal bristles; arista bare or with short pubescence; scutellum variable .....                                                                                                                                                                                         | 31                           |

- 31 Scutellum without hairs on central dorsal part, usually with few lateral hairs; vein 4 usually ending slightly in front of extreme apex of wing (Fig. 49); subcosta without ventral setulae on basal section; ♂ (where known): aedeagus with pair of terminal filaments; widely distributed ..... *Elassogaster* part
- Scutellum extensively haired dorsally; vein 4 ending at least slightly behind extreme apex; other characters variable ..... 32
- 32 Subcosta with a series of small black ventral setulae before humeral crossvein; second basal cell less than half as long as discal cell; distal section of vein 5 approximately aligned with penultimate section; posterior bridge of hind coxa with fine hairs; ♂: aedeagus with pair of subequal terminal filaments; Bismarcks ..... *Par* part
- Subcosta without ventral setulae (microtrichose only); second basal cell more than half as long as discal cell; distal section of vein 5 somewhat bent posteriorly from junction with discal crossvein; posterior bridge of hind coxa hairless; ♂: aedeagus with only one terminal filament (Fig. 48, f); widely distributed ..... *Microepicausta*
- 33 Sternopleural bristle present; ♀: abdominal tergite 5 reduced ..... 34
- Sternopleural bristle not distinct from surrounding setulae; ♀: abdominal tergite 5 variable ..... 36
- 34 Scutellum strongly convex, entirely glossy black, without paler markings, setulose only on dorsal surface above level of lateral bristles; wing with large recurved black band (Fig. 94); Australia ..... *Lenophila* part
- Scutellum slightly convex, dorsally pruinose, with yellowish U-shaped stripe or more extensively yellowish tawny, setulose laterally as well as dorsally; wing markings not including a recurved black band ..... 35
- 35 Ventral margin of face not reflexed; scutellum without a ventrolateral series of bristles; first section of vein 4 shorter than second section (Fig. 111); basal section of vein 5 bare; widely distributed ..... *Scholastes*
- Ventral margin of face narrowly reflexed, thus facing ventrally; scutellum with a ventrolateral series of bristles; first section of vein 4 longer than second section (Fig. 108); basal section of vein 5 dorsally setulose; New Guinea, Afrotropical Region ..... *Paryphodes*
- 36 Part of vein 4 on discal cell shorter than that on second basal cell; squama very broad; form subglobose ..... 37
- Part of vein 4 on discal cell longer than that on second basal cell; squama variable; form usually more elongate ..... 38
- 37 Anal cell acutely or subacutely pointed at posterodistal angle; vein 4 ending in wing apex (Fig. 121); posterior margin of scutellum thin, with numerous bristles intergrading with setulae; mesopleuron, in dorsal view, prominently gibbous anteriorly; widely distributed ..... *Asyntona* part
- Anal cell obtuse posterodistally; vein 4 usually ending behind wing apex (Fig. 117); posterior margin of scutellum thick, rounded; scutellar bristles in 2 or 3 well differentiated pairs; mesopleuron without dorsally visible anterior gibbosity; widely distributed ..... *Naupoda*

- 38 Section of costa on subcostal cell more than five times as long as that on marginal cell ..... 39
- Section of costa on subcostal cell not more than three times as long as that on marginal cell ..... 40
- 39 Anal crossvein strongly bent near middle, its posterior part running basad into vein 6 so that anal cell is without an angle at junction; New Guinea ..... *Cleitamia*
- Anal crossvein recurved near middle, then flexed distad posteriorly to form a short acute lobe to anal cell where it joins vein 6 (as in most Tephritidae, Fig. 85); New Guinea ..... *Loriomyia*
- 40 First basal cell at least as wide as combined width of second basal and anal cells; posterodistal angle of discal cell acute (Fig. 59); New Guinea ..... *Pseudocleitamia*
- First basal cell narrower than combined width of second basal and anal cells; venation otherwise variable ..... 41
- 41 Hind femur much thicker than other femora, with two series of stout ventral spines; scutellum with three pairs of marginal bristles and no hairs ..... 42
- Hind femur not significantly thicker than other femora, without seriate spines; scutellum with variable vestiture ..... 43
- 42 First posterior cell divided by a complete supernumerary crossvein; second section of vein 4 (before anterior crossvein) much longer than first (Fig. 54); fore femur with a series of stout ventral spines; Samoan Islands ..... *Apactoneura*
- First posterior cell without supernumerary crossvein; second section of vein 4 shorter than first (Fig. 20); fore femur without ventral spines; southern Micronesia, eastern Melanesia, tropical Polynesia ..... *Pseudorichardia*
- 43 All femora strongly thickened, fusiform, without ventral bristles or spines; upper pleurotergite (above callus) with many long fine hairs; lateral occipital bristle present; Sulawesi, not Australasian ..... *Scelostenoptera*
- Femora of normal shape, or only hind femur of male modified; upper pleurotergite not haired, except in some *Laglaisia* spp. with slender femora and no lateral occipital bristle ..... 44
- 44 Arista bipectinate (plumose) for most of its length ..... 45
- Arista with non-seriate short hairs or almost bare ..... 48
- 45 Anal crossvein strongly subangularly bent near middle (Fig. 79); postfrons broader than long; scutellum usually with fine ventral setulae; eyes of male usually stalked; New Guinea ..... *Laglaisia*
- Anal crossvein simply curved or almost straight; postfrons usually longer than broad; scutellum without ventral setulae, but often densely pubescent; eyes not stalked ..... 46
- 46 Wing membrane with many pale dots on darker field; membrane in discal cell with sharp longitudinal crease; one or two scapular bristles present; ♂: aedeagus with pair of terminal filaments; Sulawesi, not Australasian ..... *Euthyplatystoma*
- Wing membrane without pale dots, without sharp crease enclosed in discal cell; scapular bristles absent; ♂: aedeagus without terminal filaments ..... 47

- 47 Squama narrow-linear, not forming a lobe; scutellum very broad, without setulae, with metallic green reflections; vein 2 less than half as long as vein 3; anterior crossvein meeting vein 4 near distal end of discal cell (Fig. 122); Fiji ..... *Phlyax*
- Squama forming a distinct rounded lobe; scutellum of moderate width, dorsally setulose, not metallic green; vein 2 more than half as long as vein 3; anterior crossvein meeting vein 4 near mid-length of discal cell (Fig. 97); Moluccas, New Guinea, Solomon Archipelago ..... *Chaetorivellia*
- 48 Median part of face with fine hairs; lateral occipital bristle present; wing with dark longitudinal streak entirely covering first basal cell (Fig. 56); mesoscutum markedly longer than wide; New Guinea, Queensland, Moluccas ..... *Plagiostenopterina* part
- Median part of face bare; other characters not entirely as above ..... 49
- 49 Postscutellum with group of setulae on each side (Fig. 52, ps); distal section of vein 4 from its origin to apex convergent with vein 3; costal margin with black spot on end of vein 2 but none at apex (Fig. 50); scutellum haired dorsally on entire width; Australia ..... *Aetha*
- Postscutellum without setulae; other characters not entirely as above ..... 50
- 50 Lower part of facial ridge with dense short black setulae; lower anterior margin of cheek with a series of longer peristomial setulae, the foremost approximating in position to a vibrissa (Fig. 126); hind femur with long anteroventral bristles; axillary lobe with fringe of long hairs, each >4 times as long as pubescence on the vestigial squama; Lord Howe I, New Guinea, Bismarck Archipelago, Micronesia ..... *Guamomyia*
- Facial ridge with fine usually uniseriate hairs only; lower margin of cheek with setulae mainly on posterior part (these often very long in *Pogonortalis*); other characters variable ..... 51
- 51 Anterior crossvein very oblique, no shorter than and almost aligned with penultimate section of vein 4 (Fig. 28); face with flat-topped sharply margined carina; arista rather densely short-haired for most of length; mesoscutum as long as wide; Loyalty Is ..... *Montrouzieria*
- Anterior crossvein not as above or other characters not entirely as above ..... 52
- 52 Prelabrum deep and much prolonged ventrally towards proboscis, not arcuate in ventral view but sclerotised across full width; small, shining black ant-like flies; Queensland ..... *Inium* part
- Prelabrum not thus prolonged towards proboscis, arcuate to horseshoe-shaped in ventral view; habitus various ..... 53
- 53 Scutellum dull brown with yellowish U-shaped stripe, setulose on entire dorsal surface and on ventrolateral surface below marginal bristles; lower end of facial ridge with numerous non-seriate setulae covering a broad field (Fig. 98); axillary lobe and squama both moderately large; first section of vein 4 longer than second section; New Guinea ..... *Tomeus*
- Scutellum without yellowish U-shaped stripe; other characters not entirely as above ..... 54

- 54 Squama notably larger in area than axillary lobe ..... 55  
 — Squama vestigial or not much larger than axillary lobe ..... 57
- 55 First costal cell largely bare; face without central carina; ♀: tergite 4 c. ¼ as long as tergite 3; tergite 5 still shorter; New Guinea ..... *Bama* part  
 — First costal cell entirely microtrichose; face usually with broad flat-topped carina between antennal grooves; ♀: tergites 4 and 5 not much reduced ..... 56
- 56 Suprasquamal ridge with erect hairs or setulae (Fig. 1, sr); mesopleural bristle usually absent, if present, small; ♂: abdomen usually subcylindrical; Australia ..... *Duomyia* part  
 — Suprasquamal ridge with minute pubescence only; mesopleural bristle well developed; ♂: abdomen usually broadly ovate; widely distributed ..... *Lamprogaster* part
- 57 Scutellum haired on central part of dorsal surface (hairs reduced to minute stumps in male of one *Rivellia* sp.) ..... 58  
 — Scutellum without hairs on central part of dorsal surface, sometimes with a few hairs at sides ..... 63
- 58 Marginal cell much attenuated on distal half; hind femur longer than mesoscutum; second section of vein 4 (before anterior crossvein) less than half as long as third section; distal (fourth) section of vein 4 strongly converging with vein 3 apically (Fig. 18); Loyalty Is ..... *Tarfa*  
 — Marginal cell not much attenuated distally; other characters not entirely as above ..... 59
- 59 Dark band on discal crossvein, when present, quite separate from any more basally located dark band or zone; two pairs of scutellar bristles present; ♂: shape of hind tibia not modified; ♀: abdominal tergites 4 and 5 large ..... 60  
 — Dark band from apex of vein 5 passing obliquely forward to costa on subcostal cell where it connects with more basally located dark band or zone (Figs. 13, 94); three pairs of scutellar bristles present; ♂: hind tibia usually strongly modified in shape; ♀: tergites 4 and 5 variable ..... 62
- 60 Veins 3 and 4 apically convergent; subcosta with small ventral setulae before level of humeral crossvein; posterior bridge of hind coxa with small hairs; Bismarck Archipelago ..... *Par* part  
 — Veins 3 and 4 not apically convergent; subcosta without ventral setulae; posterior bridge of hind coxa hairless ..... 61
- 61 Second section of vein 4 rather strongly concavely curved on distal part (Fig. 14); postgenal fold absent; height of cheek generally less than 0.2 of height of eye; antenna (without arista) about as long as face on median line, at least in male; widely distributed, but absent from New Zealand ..... *Rivellia*  
 — Second section of vein 4 with only slight curvature; deeply incised vertical postgenal fold present (Fig. 17, pf); height of cheek greater than 0.2 of height of eye; antenna much shorter than face; Australia, New Zealand ..... *Zealandortalis*



- 62 Ground-colour of thorax almost entirely black; lateral occipital bristle absent; second costal cell partly hyaline; ♂: aedeagus without terminal filaments (Fig. 95); ♀: abdominal tergite 5 reduced; Australia ..... *Lenophila* part
- Ground-colour of thorax largely orange-tawny; distinct but fine black lateral occipital bristle present; second costal cell entirely dark brown; ♂: aedeagus with pair of terminal filaments (Fig. 12, f); ♀: tergite 5 large; Australia ..... *Loxoneuroides*
- 63 Height of cheek immediately below eye less than one tenth height of eye; hind femur with anteroventral keel or slightly developed tooth at or near distal third; anterior crossvein meeting vein 4 before mid-length of discal cell (Fig. 53); widely distributed ..... *Pogonortalis*
- Height of cheek below eye more than one tenth height of eye; hind femur without anteroventral keel or tooth; anterior crossvein generally meeting vein 4 at or beyond mid-length of discal cell ..... 64
- 64 Antennal segment 3 rounded oval, not more than c. twice as long as deep on outer exposure (Fig. 11); mesoscutum scarcely longer than wide; ♂: prelabrum creamy, and either hypertrophied, anteriorly flattened and shield-like, or vestigial and largely desclerotised, in the latter case palpus much broadened; New Guinea, Australia ..... *Hysma*
- Antennal segment 3 c. three times as long as deep or longer; mesoscutum variable in proportions; ♂: prelabrum with none of above modifications ..... 65
- 65 Parafacial with fine socket-based hairs on central part, often in addition to pruinescence ..... 66
- Parafacial with hairs restricted to upper part near confluence with postfrons, or absent ..... 68
- 66 Second section of vein 4 gently arched (Fig. 40); abdominal tergite 4 with broad lateral zone of dense non-directional white pruinescence; except in New Caledonian species, vein 1 ventrally near end of subcosta with a series of short black setulae, and alula largely bare; Queensland, New Guinea, Bismarck Archipelago, New Caledonia ..... *Eumeka*
- Second section of vein 4 not arched, straight or with concave curvature; abdominal tergite 4 either without pale pruinescence, or with pale pruinescence not covering lateral marginal zone and usually unidirectional (i.e. pale zones not apparent from some angles); vein 1 without ventral setulae; alula entirely microtrichose ..... 67
- 67 Mesoscutum extensively pale grey-pruinescent, with black dot at base of each hair; hind basitarsus distinctly less than half as long as hind tibia; wing, in Australasian species, without dark markings; ♀: ovipositor sheath not much longer than tergite 5; Australia, Oriental Region ..... *Rhytidortalis* part
- Mesoscutum not extensively pale grey-pruinescent, sometimes with pale grey median stripe; hind basitarsus at least half as long as tibia; wing with apical brown mark; ♀: ovipositor sheath usually at least twice as long as tergite 5; New Guinea, etc. .... *Pseudepicausta* part

- 68 Mid femur with one isolated preapical posterior bristle; a dorsocentral bristle situated almost halfway between scutellar suture and transverse suture, and usually, behind this, a bristle intermediate in position between dorsocentral and prescutellar acrostichal; anterior and discal crossveins enclosed in the one dark band (Fig. 72); New Guinea, Bismarck Archipelago, Queensland ..... *Euxestomoea*
- If mid femur with posterior bristles, then these merging with series of long hairs; dorsocentral bristle much closer to scutellar suture; wing markings various ..... 69
- 69 Second section of vein 4 with sigmoid curvature on distal part; anterior crossvein meeting vein 4 well beyond middle of discal cell; capitellum of halter dark brown; mesoscutum without noticeable grey pruinescence; ♀: abdominal tergites 4 and 5 vestigial, usually concealed in dried specimens; New Guinea ..... *Bama* part
- Second section of vein 4 without sigmoid curvature; ♀: abdominal tergites 4 and 5 well developed, exposed; other characters not entirely as above ..... 70
- 70 Mesoscutum without noticeable grey pruinescence between hairs, the interstices sometimes roughened; brown costal mark restricted to subcostal cell or absent; a shining median quadrate sclerite present between face and prelabrum (few aberrant species, e.g., Fig. 63); Australia ..... *Duomyia* part
- Mesoscutum with much grey pruinescence, often forming longitudinal bands; brown costal mark well developed at wing apex; sclerite between face and prelabrum absent or not distinctly developed ..... 71
- 71 Section of costa on subcostal cell subequal in length to that on second costal cell; distal section of vein 4 not perceptibly curved forward apically (Fig. 38); posterior bridge of hind coxa hairless; scutellum with two or three pairs of major bristles, progressively longer posteriorly, and no setulae; Australia ..... *Scotinosoma*
- Section of costa on subcostal cell much longer than that on second costal cell; distal section of vein 4 curved forward apically, converging with vein 3 (Fig. 42); posterior bridge of hind coxa with fine hairs; scutellum with two pairs of major bristles and one or few setulae on each side; New Caledonia ..... *Signa*

### Subfamily Platystomatinae

### Genus *Hysma* n.gen.

This subfamily is much the largest of the family. It is here further expanded to include the subfamily Angitulinae, which becomes a synonym, for reasons discussed above and under genus *Terzia*.

The groundplan of the Platystomatinae includes the characteristic aedeagus, with sclerotised, capsule-like glans, and a pair of hollow terminal filaments, each with an apical gonopore, but it is not certain if the presence of paired terminal filaments is an autapomorphy for the subfamily, as it is also feasible that the condition may have been secondarily lost in taxa outside this subfamily. However, the only known platystomatine taxa without this condition have a structure clearly derived therefrom. For instance, some species of *Brea* and *Lamprogaster* have three instead of two terminal filaments; at least one species each of *Bromophila* Loew and *Duomyia* have the two filaments fused for all or most of their length, and in *Microepicausta* there is a single terminal filament.

**Type species:** *Hysma lacteum* n.sp.

**Description** (♂, ♀). Small or moderately small robust flies, with legs of moderate proportions, as in stouter *Rivellia* spp.

*Head* much higher than long; face concave, without distinct median carina, with slightly sunken antennal grooves; facial ridge with single series of setulae on lower part only; parafacial narrowed on central part, without setulae; occipital region broadly convex below, slightly convex above; postgenal fold absent; cheek rather shallow or of moderate depth; the following bristles present: inner and outer vertical, small or vestigial postvertical, variably developed non-proclinate ocellar, two fronto-orbitals, postgenal; lateral occipital sometimes present. Antenna much shorter than face; segment 3 broadly oval, rounded distally; segment 6 with short pubescence of moderate density on entire length. Prelabrum sexually dimorphic, in female large or

moderately large, in male very large with anterior surface flattened (*Hysma lacteum*), or reduced and apparently little sclerotised; palpus moderate to large, in males of species other than *H. lacteum* subtriangularly broadened.

**Thorax.** Mesoscutum c. as broad as long or slightly broader, extensively setulose, with surface between hairs varying from largely glabrous and glossy (*H. lacteum*) to extensively pruinulent; scutellum rounded in outline, dorsally convex, almost glabrous or pruinulent, without setulae; the following bristles present: poorly differentiated scapulars, humeral, 1+1 notopleurals, supra-alar, postalar, posterior intra-alar, one dorsocentral, prescutellar acrostichal, three pairs of scutellars, of which intermediate one slightly removed from margin, mesopleural, sometimes pteropleural. Posterior bridge of hind coxa without hairs; femora without ventral spines; fore femur with dorsal and anteroventral bristles; mid femur with or without a series of short posterior bristles; hind femur usually with distinct distal dorsal bristles; mid tibia with one large apical ventral spur. Wing generally similar to that of *Rivellia*; veins 3 and 4 distally slightly divergent; cell-4 index = c. 0.6–0.8; second section of vein 4 less curved than in *Rivellia*; distal section of vein 6 well sclerotised almost to margin, or sclerotisation discontinued at c. 0.7 of distance to margin; wing membrane, including costal cells and alula, microtrichose, except sometimes on much of second basal and anal cells; squama forming a very small lobe; axillary lobe slightly larger in area.

**Abdomen.** Tergite 5 unreduced in either sex, without strong bristles. Female abdomen: spiracles 4 and 5, where investigated, located in pleural membrane near posterior part of lateral margin of respective tergites; aculeus very slender, obtuse.

**Distribution.** Eastern Australia: high rainfall areas of north and south. Papua New Guinea: only known from Morobe Province.

**Notes.** There are three or, perhaps, four species in the available material of *Hysma*, but only the type species is described at present.

Probably all species have remarkable sexual dimorphism of the face, prelabrum, and palpus, which are much modified in males. In *H. lacteum* the male has the prelabrum enlarged, with flattened, conspicuously pale creamy anterior surface, and the face similarly coloured (these parts being brown in the female), the palpus brown-black but no larger than the tawny-orange palpus of the female. In the other two species for which the males are known, the face of the male is paler and foreshortened below, relative to that of female, so that the pale, translucent, anterior extension of the subcranial membrane is broadly exposed above the small, desclerotised, pale yellow prelabrum (these parts unmodified in female). Also, these males have the palpus conspicuously broadened and subtriangular, in contrast to the unmodified palpus of the females.

A series of *Hysma* sp. from Bulburin (Monto district, Queensland, AM) shows extraordinary difference in wing pattern between the two males and the 12 females. Without further study material I cannot be sure if this indicates

unusual sexual dimorphism, or the presence of two species, each represented by one sex in the sample. In a pair of a very similar species from near Bulolo, Papua New Guinea (AM), the wing pattern of both sexes resembles that of the Bulburin females.

In general, *Hysma* spp. are found only in rainforest, but the specimen of *H. lacteum* from Bodalla State Forest was probably taken in wet sclerophyll forest. Several have been collected in faecal traps.

The generic name is Greek for rain, and is neuter.

### *Hysma lacteum* n.sp.

Figs. 10, 11

**Material examined.** HOLOTYPE, ♀, New South Wales: Upper Allyn (Lister Park), near Eccleston, 9.iii.1970, G.A.H., D.K.M. (AM). PARATYPES, New South Wales: 1 ♂, Dorrigo National Park, Glades area, Jan. 1988, D.J.B. (AM); 2 ♀♀, Upper Allyn, Dec. 1969, Mar. 1970, G.A.H., D.K.M. (AM); 1 ♀, Mount Keira, near Wollongong, Jan. 1970, G.A.H. (AM); 1 ♀, Bodalla State Forest, near Narooma, Jan. 1982, B.J.D. (AM).

**Other material.** Queensland: Longland's Gap, near Atherton (AM); Sluice Creek, near Millaa Millaa (AM).

**Description** (♂, ♀). **Coloration.** Head of female largely tawny; upper orbits and sides of vertex dark brown; occiput largely blackish, with silvery pruinescence in part; cheek suffused with brown; face tawny. Head of male with postfrons largely dark brown; face pale cream. Antenna in male brown, with base of segment 3 tawny, in female segments 1–3 all tawny. Prelabrum of male pale cream on anterior surface, dark brown laterally, in female entirely brown; palpus brown-black in male, tawny in female. Thorax largely glossy black, with faintly blue-green tinged reflections. Legs, including coxae and tarsi, dark brown to black. Wing with brown to blackish markings, as in Fig. 10, which are slightly more extensive in male, particularly the suffusion behind vein 5; wing apex between veins 3 and 4 subopaque white. Halter dark brown, tawny-brown basally. Abdomen black to dark brown; tergites 1–5 largely glossy.

**Head.** Height of cheek c. 0.22 of height of eye; fronto-orbital and ocellar bristles small. Prelabrum in female large, slightly convex anteriorly, in male larger, nearly as deep as face, well sclerotised, with anterior surface vertically flattened; palpus of moderate size, not enlarged in either sex.

**Thorax.** Wing: vein 3 setulose dorsally for most of length, bare ventrally; cell-4 index = 0.69–0.76; second basal cell bare on c. basal three quarters; anal cell with longitudinal bare zone.

**Abdomen.** Male postabdomen: epandrium with few enlarged setulae near base of outer surstylus; outer surstylus moderately stout, its apex exceeding that of inner surstylus, produced into a slender point posteroapically; aedeagus broken in only available male.

*Dimensions.* Total length: ♂ 2.7 mm, ♀ 4.6–5.6 mm; length of thorax, ♂ 1.3 mm, ♀ 1.9–2.6 mm; length of wing, ♂ 3.3 mm, ♀ 4.5–5.2 mm.

*Distribution.* Queensland: only known from higher parts of Atherton Tableland. New South Wales: coastal and subcoastal areas from Dorrigo district to Narooma district.

*Notes.* *Hysma lacteum* is distinguished from other, undescribed species of *Hysma* by having the mesoscutum and scutellum shining black, almost without pruinescence, and the halter largely dark brown, instead of pale yellowish.

The specific epithet is a Latin adjective meaning milky, in reference to the opaque white wing apex.

### Genus *Loxoneuroides* Hendel

Figs. 12, 13

*Loxoneuroides* Hendel, 1914a: 15, 80–81. Type species (original designation) *L. varipennis* Hendel.

*Description.* A detailed description has been given by Hendel, which I supplement as follows.

*Male abdomen.* Sternite 5 very deeply bilobed; base of preglans with elongate lobe, but preglans otherwise not much differentiated from stipe; glans short and stout,

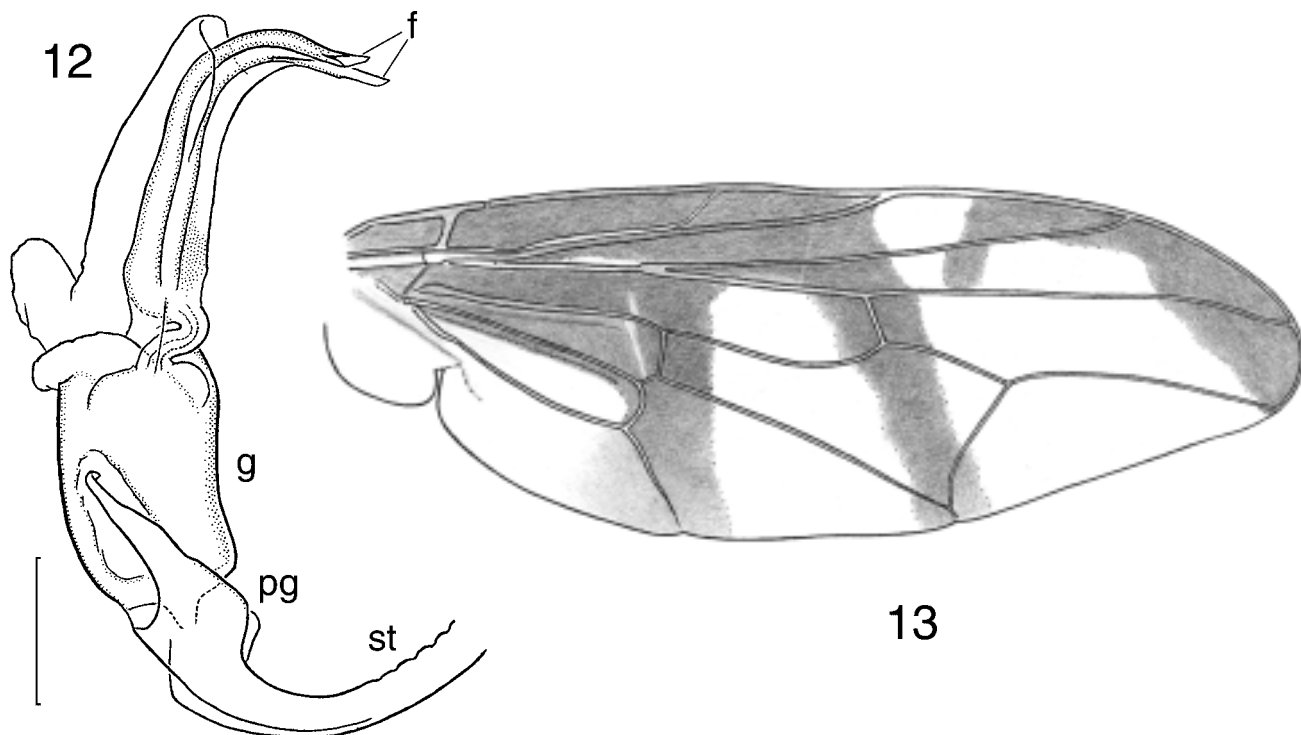
desclerotised on one side; bulb rather large and lobed; terminal filaments equal, tapered, each not much longer than glans, partly ensheathed by membranous bulb; cerci largely separate, lying in almost parallel planes.

*Female abdomen.* Tergites 3 and 4 large; tergite 5 slightly shorter; tergite 6 vestigial; spiracles 4 and 5 larger than others, situated close to posterior part of lateral margins of respective tergites; ovipositor sheath short; aculeus slender, obtuse, not compressed.

*Distribution.* Eastern Australia, from Cooktown district, Queensland, to Taree-Gloucester district, New South Wales.

*Notes.* *Loxoneuroides* includes at least three superficially similar species, of which only *L. varipennis* Hendel is described. Evenhuis (1989) used the spelling *L. variipennis* of the two original spellings given by Hendel (1914a). However, Hendel (1914b) consistently used the spelling *L. varipennis*, thus acting as first reviser under Article 24.2.4 of ICZN (1999).

These flies inhabit rainforest, including dryer rainforests in some areas, but are not recorded from littoral rain forests. They frequently rest on foliage (generally on the lower surface of leaves) or bark, with the wings fully extended laterally. They can be so conspicuous in this position, that aposematic display is suspected. Adults are attracted to mammalian faeces for feeding.



**Figures 12–13.** *Loxoneuroides* “sp. 2” (Mulgrave River, AM). 12, distal part of aedeagus (scale = 0.2 mm). 13, wing. Abbreviations: f, terminal filaments; g, glans; pg, preglans; st, stipe.

### Genus *Rivellia* Robineau-Desvoidy

Fig. 14

*Rivellia* Robineau-Desvoidy, 1830: 729. Type species (designated Rondani, 1869) *Musca syngenesiae* Fabricius.

See Soós, 1984 for details.

**Description.** The description by Hendel (1914a) remains largely valid. The generic and specific descriptions by Namba (1956) give a useful indication of the range of morphological variation in the species of America north of Mexico.

**Distribution.** Almost cosmopolitan. Australasian Region: Moluccas; New Guinea; Bismarck Archipelago; Solomon Archipelago; New Caledonia; Fiji; Samoan Islands; Austral (Tubuai) Islands; Norfolk Island; Australia—all states and Northern Territory (including central Australia). *Rivellia* has much the widest distribution of any platystomatid genus, both on a world basis and in the Australasian Region.

**Notes.** Namba (1956) gave an excellent review of the Nearctic species, and Lyneborg (1969) characterised the two European species. Taxonomic work on other faunas has a quite inadequate morphological basis, so that reidentifications and subsequent distribution records of described species should in general be queried. Future taxonomic studies should record details of male genitalia, including measurements of the glans, and positions of spiracles 4 and 5 in the female abdomen. Descriptions of additional species without this information are to be avoided.

Evenhuis (1989) listed 27 named species for the Australasian Region. Accumulated collections contain many undescribed species, but the number cannot be estimated without a thorough study. An arbitrary minimum of 45 species for the Region is here utilised.

Larvae of *Rivellia* spp. are recorded as feeding on the nitrogen-fixing root nodules of leguminous plants in Australia (Diatloff, 1965) and several other countries (summary in Bibro & Foote, 1986). In Australia, the very general distribution of *Rivellia* spp. is probably related to a similar distribution of these plants (family Leguminosae or

Fabaceae s. l.), perhaps particularly, but by no means exclusively, the genus *Acacia* (wattles, subjective synonyms *Zygmoloba*, *Racosperma*). Though I have no direct evidence of *Rivellia* larvae living on *Acacia* roots, adults are found on *Acacia* plants in many parts of Australia. For some years adults of a *Rivellia* sp. were plentiful in my back yard at Willoughby, Sydney, and seemed particularly to inhabit a large tree of *Acacia saligna*. When this tree died several years ago, the *Rivellia* population disappeared. The broad treatment of arthropods associated with *Acacia* by New (1984) seems to indicate that very little has been recorded of those infesting the root systems. Damage to the plants from injury to the roots has probably not been generally diagnosed, and there is a possibility that *Rivellia* spp. may have significant ecological impact on *Acacia* populations. Perhaps larvae of some other platystomatine genera frequently found in *Acacia*-dominated habitats, e.g., *Duomyia*, *Microepicausta*, *Rhytidortalis*, and *Zealandortalis*, are associated with *Acacia* roots.

A female specimen of *Rivellia* sp. from Jervis Bay, A.C.T. (AM), carries an ascoma of an ectoparasitic fungus of the order Laboulbeniales on its abdomen. I have seen a somewhat similar fungus on a female of *Senopterina foxleei* Shewell from British Columbia, Canada.

### Genus *Zealandortalis* Malloch

*Zealandortalis* Malloch, 1930a: 243. Type species (original designation) *Z. interrupta* Malloch.

**Description.** Flies of medium to rather stout build and moderately small size, with legs of moderate length.

**Head** markedly or only slightly higher than long; facial carina distinct and narrow, or undeveloped; facial ridge with a distinct series of hairs only near lower end; parafacial haired only at upper extremity, or with few hairs extending to middle; occiput broadly convex below, slightly concave to planate above, with distinctly incised vertical postgenal fold; cheek relatively deep (its height 0.24–0.38 of height of eye in measured specimens); the following bristles

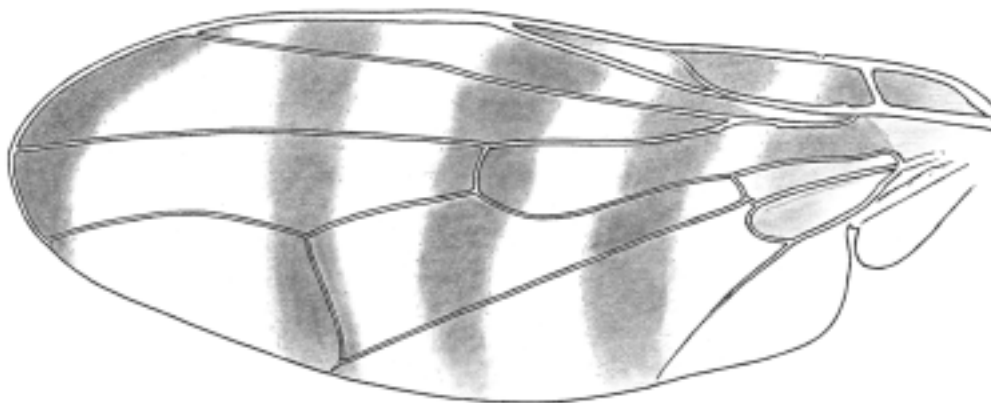


Figure 14. *Rivellia* “sp. A” (Iluka, AM), wing.

present: inner and outer vertical, strongly divergent postverticals, ocellar, two distinct fronto-orbitals, lateral occipital, postgenal. Antenna, excluding arista, much shorter than face; segment 6 minutely pubescent on most of length. Prelabrum of moderate size in female, markedly smaller in male; palpus and proboscis moderately developed.

*Thorax.* Mesoscutum c. 0.9–1.1 times as long as wide; scutellum rounded in outline, dorsally convex, setulose dorsally, with little or no pale pruinescence; the following thoracic bristles present: one or two scapulars, humeral, 1+1 notopleurals, supra-alar, postalar, posterior intra-alar, dorsocentral (sometimes reduced), prescutellar acrostichal (sometimes absent), two pairs of scutellars, mesopleural. Posterior bridge of hind coxa without hairs; femora without ventral spines; fore femur with dorsal and posteroventral bristles; hind femur with few dorsal bristles and, in Australian species only, one or more anteroventral bristles. Wing membrane, including anal cell and alula, largely microtrichose; section of costa on subcostal cell shorter than that on second costal cell; subcosta and vein 5 without setulae; anterior crossvein approximately transverse, meeting vein 4 slightly beyond mid-length of discal cell; second section of vein 4 with only slight curvature (compared with *Rivellia*); distal section of vein 4 slightly arched, not apically convergent with vein 3; anal crossvein slightly to rather strongly curved; axillary lobe small, with marginal hairs longer than on the narrower squama.

*Abdomen* ovoid; tergite 5 unreduced. Male postabdomen: apical part of outer surstylus much surpassing apex of inner surstylus; aedeagus either of simple platystomatine structure with short bulb and longer terminal filaments (New Zealand species), or with strap-like bulb many times as long as glans and terminal sclerotised lobe larger than either terminal filament (Australian species). Female abdomen: spiracle 5 located below lateral margin of tergite 5 (at least in Australian species); aculeus moderately or quite slender, obtuse.

**Distribution.** New Zealand: North and South Islands. Australia: temperate eastern areas and south-west.

**Notes.** *Zealandortalis* has been previously used to include two New Zealand species, and has been regarded as endemic to that country (Harrison, 1959). After careful consideration, I have decided to include the Australian *Z. gregi* (described below) in *Zealandortalis*, despite the number of differences from the New Zealand species. There is a reasonable

probability, but no certainty, that the more broadly defined genus is monophyletic, and it is readily identified from key characters. The placement of *Z. gregi* in another monotypic genus, when cladistic considerations do not necessitate it, is undesirable. I do not consider that divergence in male genitalia characters is a stronger indication of phylogenetic remoteness than is divergence in other kinds of character, especially as it is possible that the full range of morphological variation in the New Zealand species is not yet recorded.

The Australian species is treated as belonging in a separate informal group from the New Zealand ones, characterised in the key given below. My limited material from New Zealand shows a combination of the characters for the two described species as given by Harrison, so that the number of New Zealand species and their distinguishing characters may need clarification.

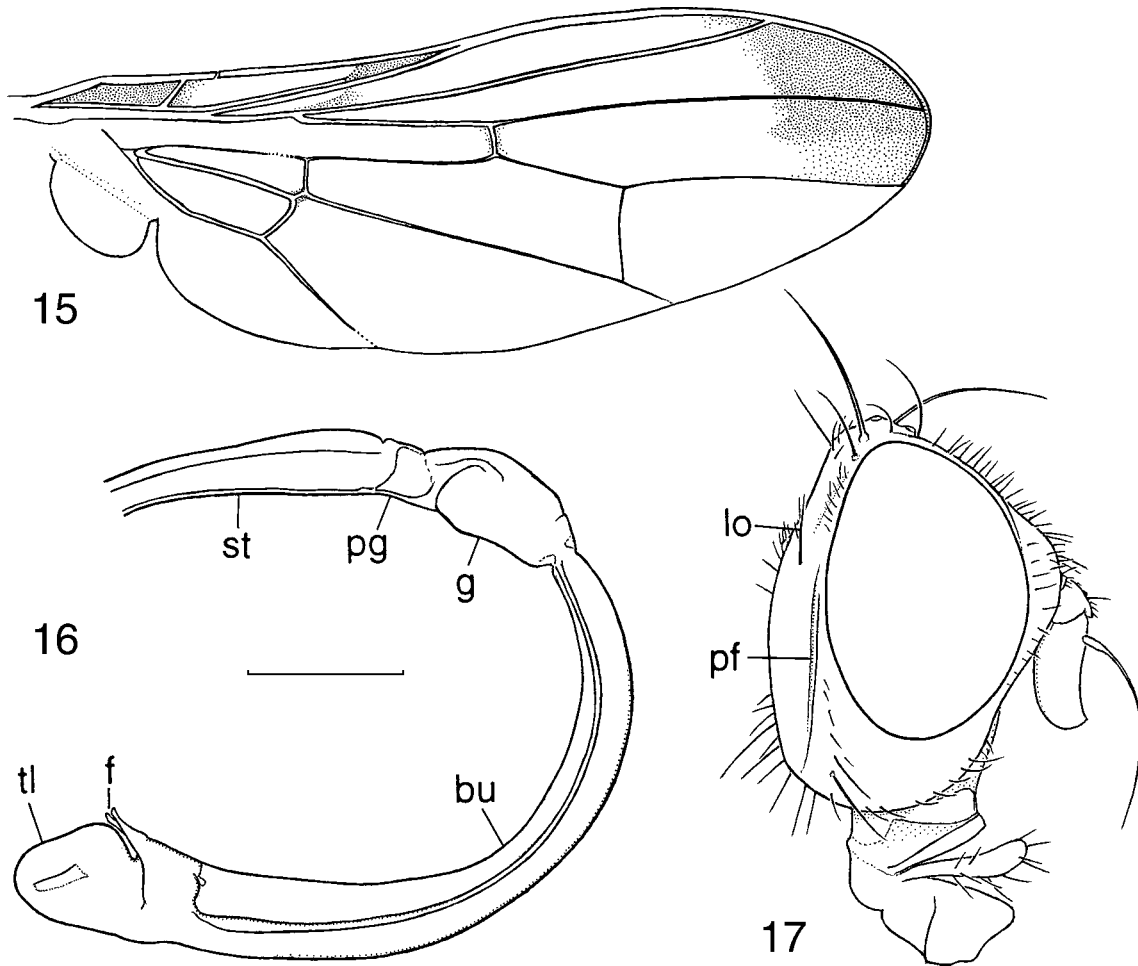
In temperate eastern Australia *Z. gregi* lives in a range of forest types from warm coastal lowlands to winter-cold highlands. Specimens of *Zealandortalis* sp. from South Island, New Zealand (B.J.S.), are labelled “ex nikau palms.” I collected a specimen doubtfully referable to *Z. interrupta* from low vegetation in *Nothofagus fusca* forest on Banks Peninsula, there being no palms in the vicinity.

The female from Banks Peninsula was observed *in vitro* to walk with the wings folded in a horizontal plane largely, but not completely, overlapping. No wing-waving was observed over a period of about five minutes’ activity. Though the above behaviour was observed comparatively briefly, it contrasts with that of *Z. gregi*, of which several specimens of both sexes from near Church Point, Sydney district, were observed in a plastic container over several days. When at rest, the wings were held in a horizontal plane, slightly spread in a V so as to avoid any overlap. But often there was an apparently alert attitude, with wings spread and vibrated rapidly between the fully spread and more flexed positions. When the fly was walking, the wings were sometimes held in a V-flexed position, but, for most of the time, there was no marked wing vibration. Two intermediate actions, not infrequent, were (1) vibrating one wing only, with the other almost still; (2) holding the wings in a very broad V and vibrating them with very small amplitude. A pair was observed apparently *in copula* several times. The male was clinging to the abdomen of the female in a position rather like that described for *Pogonortalis doclea* (see McAlpine, 1973b). The wings of the female were widely spread, while those of the male were almost fully flexed.

#### Key to groups in *Zealandortalis*

- 1 Ocellar bristle large, potentially reaching more than halfway to ptilinal suture; facial carina strongly raised, narrow, with steep sides; antennal segment 3 acute dorsoapically; hind femur with one or more long anteroventral bristles, stronger in male; vein 3 with setulae distributed over most of length; abdominal tergite 5 (both sexes) with long posterior marginal bristles; aedeagus with bulb strap-like, many times as long as glans, terminating in sclerotised lobe much larger than each terminal filament ..... Australian group

— Ocellar bristle smaller, not nearly reaching halfway to ptilinal suture; facial carina undeveloped; antennal segment 3 broadly rounded distally; hind femur without differentiated anteroventral bristles; vein 3 with few setulae, mostly near its base; abdominal tergite 5 without posterior marginal bristles; aedeagus (where known) with bulb little developed, lacking sclerotised lobe ..... New Zealand group



**Figures 15–17.** *Zealandortalis gregi* n.sp. 15, wing. 16, distal part of aedeagus (scale = 0.2 mm). 17, head of male. Abbreviations: bu, bulb; f, terminal filaments (paired); g, glans; lo, lateral occipital bristle; pf, postgenal fold; pg, preglans; st, stipe; tl, sclerotised terminal lobe of aedeagus.

***Zealandortalis gregi* n.sp.**

Figs. 15–17

**Material examined.** HOLOTYPE, ♂, New South Wales: Iluka rainforest reserve, 26.xi.1970, D.K.M. (AM). PARATYPES, New South Wales: 100 ♂♂, 18 ♀♀, Iluka, Nov. 1970, Jan. 1971, A.H., D.K.M. (AM, ANIC, UQ, BM, BPB, RMS, USNM).

**Other material.** Queensland: Blackdown Tableland, Expedition Range (AM); Bribie Island (AM, UQ). New South Wales: Mount Gibraltar National Park (AM); Tucker’s Rock, near Repton (AM); Urunga (AM); Boonanghi State Forest, near Kempsey (AM); Cobark Picnic Area, Wilson River, Bellangry district (AM); Taree (AM); Timor Rock, Warrumbungle Range (AM); Lahey’s Creek Road, 12 km NW of Gulgong (AM); Wongarbon Nature Reserve,

17 km SE of Dubbo (AM); “Tuglo”, near Mount Royal (AM); Mungo Brush, near The Broadwater, Myall Lakes (AM); Mooney Mooney Creek, near Gosford (AM); Newnes, Lithgow district (AM); Mount Wilson (AM); Katoomba (AM); Wentworth Falls (AM); Yellow Rock Lookout, near Springwood (AM); Newport (AM); Church Point (AM); Vaocluse (AM); Royal National Park (AM); Heathcote (AM); Otford (AM); Stanwell Tops (AM); Bendalong, Conjola district (AM); Bodalla State Forest, near Narooma (AM). Australian Capital Territory: Condor Creek, Brindabella Range (AM). Western Australia: 15 mi. (c. 24 km) SE of Manjimup (AM).

**Description** (♂, ♀). Habitus and appearance suggestive of a stout, dark *Rivellia* species, with few wing markings. **Coloration.** Head fulvous to reddish brown; orbital plates shining blackish brown; entire occipital region blackish brown, with grey pruinescence. Antenna fulvous, with

brown arista. Prelabrum tawny; palpus fulvous. Thorax black, largely shining, with dark grey pruinescence mainly on notopleural region, upper part of mesopleuron, and posterior parts of pleura, none on scutellum or a minute amount near scutellar bridge. Legs fulvous; hind tibia and sometimes fore femur suffused with brown; tarsi variably browned apically (flies in southern populations often with more extensively browned legs). Wing hyaline; first costal cell, base of second costal and stigmal section of subcostal cell browned; also a small brown spot in marginal cell near fork of veins 2 and 3, and a large apical dark brown spot on vein 3, usually not or only indistinctly reaching to veins 2 and 4; axillary lobe and squama creamy, with fulvous margins. Halter creamy, with tawny scabellum. Abdomen black; preabdominal tergites without obvious pruinescence.

*Head* slightly higher than long; height of cheek 0.25–0.38 of height of eye; face with pair of moderately deep antennal grooves, separated by a high, narrow, steep-sided carina; parafacial narrowed near middle, haired at upper end, the hairs extending as a spaced single series to about middle; occiput with well marked postgenal fold almost from lower extremity of postgena to middle of posterior margin of eye; anterior fronto-orbital much larger than posterior one, both reclinate; ocellar bristle much longer than anterior fronto-orbital. Antennal segment 3 relatively narrow, acute dorsoapically.

*Thorax.* Hairing on scutellum and posterior part of mesoscutum markedly longer in male than in female. Hind femur of male with a series of c. four to seven well-developed black anteroventral bristles, sometimes reduced to one bristle in diminutives, in female with c. one to three finer, usually yellow, but sometimes quite long anteroventral bristles. Wing: vein 3 dorsally with well-developed spaced setulae on most of length; cell-4 index = 0.57–0.64.

*Abdomen.* Tergites 2 to 5 with longer hairs in male than in female; tergite 5 with several long posterior marginal bristles, in male this tergite particularly broad and giving preabdomen a broadly truncated outline; spiracle 5 located below lateral margin of tergite 5 in both sexes. Male postabdomen: distal section of outer surstylus considerably exceeding apex of inner surstylus, tapering to a slender apex; aedeagus with short, simple preglans; glans short, broadly ovoid; bulb consisting of elongate tubular section, c. five times as long as glans, and containing three pigmented longitudinal strips, and broad, darkly sclerotised terminal lobe almost as long as glans; terminal filaments very small, subequal, arising from a distinct sclerite at base of terminal lobe.

*Dimensions.* Total length, ♂♂ 2.9–3.9 mm, ♀♀ 2.4–3.9 mm; length of thorax, ♂♂ 1.1–1.7 mm, ♀♀ 1.1–1.7 mm; length of wing, ♂♂ 2.4–3.6 mm, ♀♀ 2.7–4.1 mm; length of glans of aedeagus 0.20–0.24 mm.

**Distribution.** Queensland: apparently widely distributed south of the tropic (few records). New South Wales: widely distributed in coast and tableland districts, inland to Dubbo district and Warrumbungle Range (common in many

districts). Australian Capital Territory: Canberra district. Western Australia: far south.

The specific epithet refers to Greg Daniels who has collected much useful material.

### Genus *Tarfa* n.gen.

**Type species:** *Tarfa bowleyae* n.sp.

**Description** (♀, ♂ unknown). Moderately small flies; habitus somewhat like that of *Rivellia*, but significantly more elongate, not subcylindrical as in *Eumeka*, *Microepicausta*, etc.; legs conspicuously longer than in the above-named genera.

*Head* markedly higher than long; face without median carina, concave in profile except towards lower margin; lower end of facial ridge with uniseriate fine hairs; parafacial very narrow, without hairs; occiput convex below, slightly concave above; the following bristles present: inner and outer vertical, small divergent postvertical pair, vestigial ocellar, one large fronto-orbital, moderately small postgenal; lateral occipital bristle absent. Antenna, excluding arista, slightly shorter than face on median line; segment 2 short and rather rotund; segment 3 narrowly ovate; segment 6 slender, with numerous short hairs on entire length. Prelabrum deep; palpus broad.

*Thorax* largely shining, with very little pruinescence; mesoscutum c. 1.2 times as long as wide, with many short non-seriate hairs; scutellum short, subtriangular, only slightly convex dorsally, with numerous dorsal hairs; zone between metathoracic spiracle and halter base with only micro-pruinescence, no pile-like pubescence or setulae; the following thoracic bristles present: one or two quite small lateral scapulars, 1+1 notopleurals, supra-alar, postalar, posterior intra-alar, two unequal pairs of scutellars, mesopleural; paramedian scapular, humeral, dorsocentral, and prescutellar acrostichal absent. Femora slender, without distinct bristles; mid tibia with one long apical ventral spur; tarsi long and slender, each with terminal segment depressed but not dilated. Wing much narrowed basally; membrane largely microtrichose, except for anal cell and limited bare zones in second basal cell and base of discal cell; both costal cells densely microtrichose; subcosta on distal part straight, well sclerotised, running close to costa; subcostal cell very narrow; vein 2 with sigmoid curvature, rendering marginal cell exceedingly narrow on distal half; vein 3 at its origin approximated to vein 4, arched distally, setulose on most of length dorsally; stem of veins 2 and 3 and vein 5 bare; anterior crossvein meeting vein 4 well before mid-length of discal cell; penultimate section of vein 4 arched, distal section with slight sigmoid curvature, strongly converging with vein 3 distally; anal cell extending much further basad than second basal cell, about half as long as discal cell; distal section of vein 6 much shorter than preceding section; alula quite narrow, entirely microtrichose; axillary lobe narrow; squama very narrow.

*Abdomen* moderately narrowed basally; preabdomen otherwise subovoid; tergite 5 well developed; tergite 6 quite



small (not visible from above in dried material); aculeus slender, apically depressed and obtuse.

**Distribution.** New Caledonia: Loyalty Islands only.

**Notes.** The unusual combination of wing characters makes *Tarfa* easy to distinguish from other platystomatid genera: marginal cell much attenuated distally; first basal cell narrowed at origin of vein 3; anterior crossvein meeting vein 4 within basal third of length of discal cell; etc. (see Fig. 18). Determining its relationship to other genera is more difficult. The habitus and appearance suggest a large, elongate *Rivellia*-like fly, but *Tarfa* differs from *Rivellia* in the absence of humeral, dorsocentral, and fore femoral bristles, the single, large fronto-orbital bristle, the much longer legs, and quite different contour and relations of vein 4. Thus, there is hardly any morphological evidence of close

relationship between these genera. A few features suggest relationship to the loosely defined alliance known as the cleitamiine genera (McAlpine, 1982). Of these, the somewhat slender species of *Cleitamoides* resemble *Tarfa* in the basally narrowed wing, narrow alula, narrow subcostal cell, devious contours of veins 2 and 3, apically convergent veins 3 and 4, partly concave face, absence of humeral and dorsocentral bristles, and slender femora with reduced bristling. *Cleitamoides* lacks the fronto-orbital bristle, but the probably related genus *Cleitamia* usually has one large fronto-orbital as in *Tarfa*. It is doubtful if these resemblances to cleitamiine genera indicate genuine relationship. *Cleitamia*, *Cleitamoides*, and *Laglaisia* seem likely to form a monophyletic group or the major components of such a group, and a deduced groundplan for such group may not include many *Tarfa*-like character states. *Tarfa* shows certain points of resemblance to *Aetha*, as mentioned under that genus, but differs in the slender thorax, elongate legs, more reduced bristling, more attenuated subcostal, marginal, and first basal cells, different relative positions of bases of second basal and anal cells, and more reduced alula and squama.

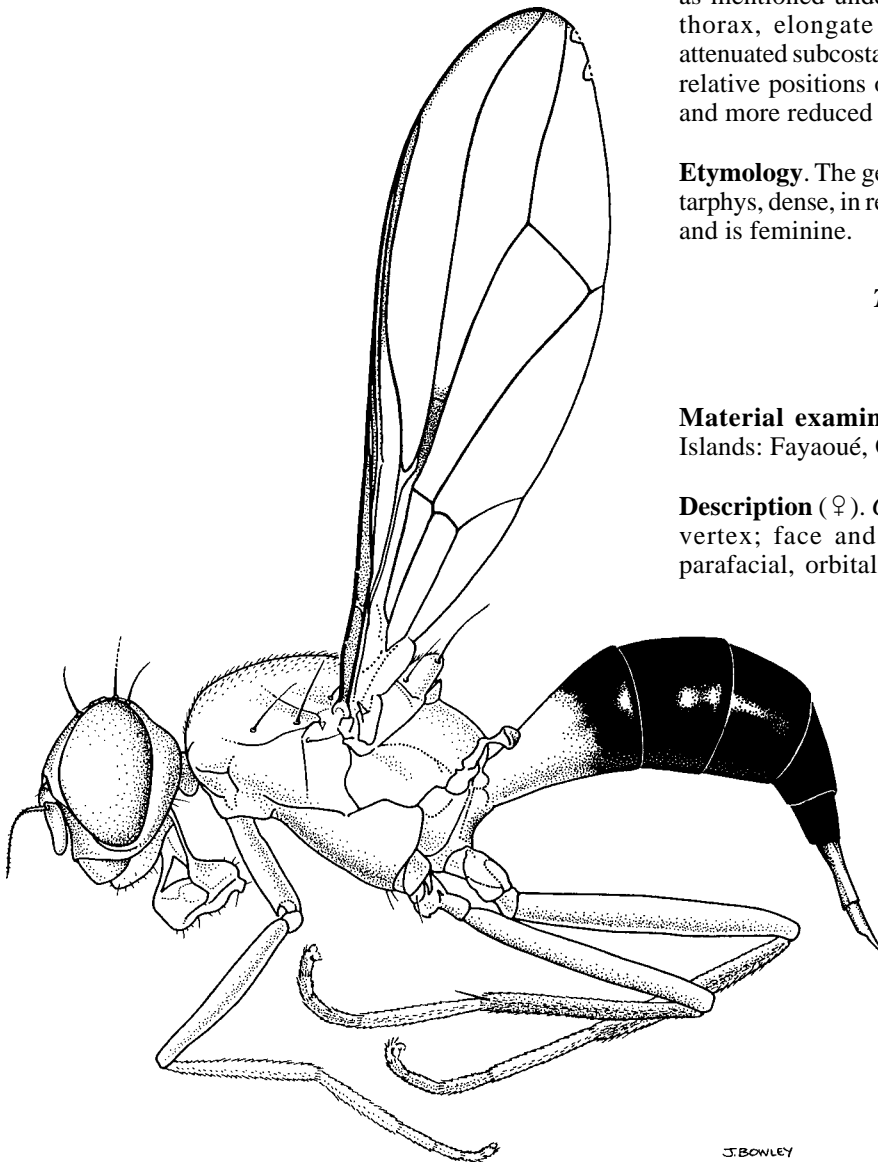
**Etymology.** The generic name is a contraction of the Greek *tarphe*, dense, in reference to the proximity of certain veins, and is feminine.

***Tarfa bowleyae* n.sp.**

Fig. 18

**Material examined.** HOLOTYPE, ♀ (unique), Loyalty Islands: Fayaoué, Ouvéa, xii.1968, N.L.K (BPB).

**Description (♀).** *Coloration.* Head brown, darker towards vertex; face and cheek fulvous; upper part of face, parafacial, orbital margin of postfrons, and post-orbital



**Figure 18.** *Tarfa bowleyae* n.sp., holotype.

margin whitish pruinulent. Antenna fulvous; arista brown. Prelabrum and palpus fulvous. Thorax shining orange-fulvous. Legs predominantly fulvous; fore coxa paler; mid and hind femora brown; mid and hind tarsi tawny. Wing clear, except for narrow brown costal band on entire length, which fills both costal cells, and brown zone in distal part of first basal cell, which extends over anterior crossvein. Halter fulvous, with largely brown capitellum. Abdominal tergites 2 and 5 shining black; tergite 1 fulvous; ovipositor sheath brown-black.

*Head.* Eye 0.66 as long as high; height of cheek c. 0.08 of height of eye. Longer hairs on antennal segment 6 slightly longer than basal diameter of segment.

*Thorax.* Mesoscutum and pleura almost devoid of pruinescence; scutellum slightly rugose and pruinulent on dorsal surface; metapleuron slightly encroaching on membranous postcoxal area. Wing: cell-4 index = 0.30.

*Abdomen.* Tergite 5 almost as long as tergite 4, with few differentiated bristles on posterior margin.

*Dimensions.* Total length 5.2 mm; length of thorax 1.8 mm; length of wing 5.0 mm.

**Distribution.** As given for genus.

**Notes.** *Tarfa bowleyae* superficially resembles a braconid or small ichneumonid, and may be a hymenopterous mimic.

The specific epithet refers to Janis Bowley, whose illustrations in this and other papers form a significant contribution to Dipterology.

### Genus *Brea* Walker

Fig. 19

*Brea* Walker, 1859 (February): 117. Type species (designated Hendel, 1914a) *B. contraria* Walker.

*Maria* Bigot, 1859 (July): 311. Type species (monotypy) *M. caeruleiventris* Bigot (= *Brea contraria* Walker).

**Description.** A detailed description has been given by Hendel (1914a), to which the following notes are added.

*Male postabdomen* (examined in three species). Aedeagus with preglans undifferentiated from stipe; glans elongate-ovoid to elongate-subcylindrical; bulb very long and slender, terminating in either two or three terminal filaments.

*Female postabdomen.* Ovipositor sheath moderately short and broad; aculeus slender, obtuse.

**Distribution.** Moluccas: Kei Island. New Guinea: mainland; Aru; Normanby Island. Australia: Queensland, N of 14°S.

**Notes.** Hendel (1914b) gave a key to species, which was repeated in English by Malloch (1939a), but the status and limits of the species are not yet well understood. I included the Queensland population in *Brea contraria* Walker (as indicated by Evenhuis, 1989), but further, incomplete studies render this identification doubtful. Nine nominal species, as listed by Evenhuis, may perhaps claim validity, and there may be one or two undescribed species.

In my experience, *Brea* species have been found on foliage in or at the margin of rainforest in Papua New Guinea and Queensland.

*Brea nouhuysi* de Meijere has a remarkably broadened head in the male, but such sexual dimorphism is absent or barely noticeable in other species examined.

### Genus *Pseudorichardia* Hendel

Fig. 20

*Pseudorichardia* Hendel, 1911: 21. Type species (original designation) *Richardia flavitarsus* Macquart.

**Description.** See Hendel (1914a: 123–124). In the available males from Tuvalu (AM), the long, paired terminal filaments are fused for the greater part of their length.

**Distribution.** Outer Melanesia: Vanuatu (New Hebrides); Fiji. Tropical Polynesia: Samoan Islands; Cook Islands; Society Islands; Marquesas; Pitcairn Island. Micronesia: Tuvalu.

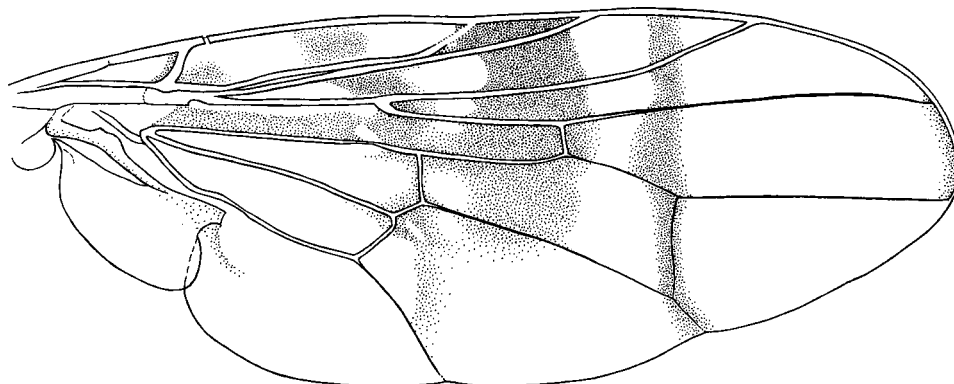


Figure 19. *Brea* sp. (Claudie River, AM), wing.

**Notes.** Steyskal (1952b) recognized four species and provided a key. It is evident from the small amount of material available to me that this is an over-simplification. Characters of the aedeagus, and, in the females, abdominal coloration and relative size of tergites, all omitted by Steyskal, should be utilised. The number of known species is likely to be increased by further collecting and study.

Almost no information on biology and behaviour is available, but Bezzi (1928) recorded material “bred from oranges” from Raratonga, Cook Islands.

### Genus *Lamprogaster* Macquart

Figs. 21–26

*Lamprogaster* Macquart, 1843: 211. Type species (monotypy) *L. flavipennis* Macquart.

*Cruphiocera* Macquart, 1843: 212. Type species (monotypy) *C. violacea* Macquart.

*Chromatomyia* Walker, 1849: 801. Type species (designated McAlpine, 1973a) *C. formosa* Walker (= *Lamprogaster laeta* (Macquart)). Homonym (? senior) of *Chromatomyia* Hardy, 1849 (family Agromyzidae).

*Ceratopelta* Bigot, 1878b: 34. Type species (monotypy) *C. tricolor* Bigot (= *Lamprogaster patula* Walker).

*Cryphiocera*.—Hendel, 1914a: 104. Variant spelling for *Cruphiocera*, as syn. of *Lamprogaster*.

*Liolamprogaster* Enderlein, 1924: 128. Type species (original designation) *Liolamprogaster angusta* Enderlein (? = *Lamprogaster semicyanea* (Walker), see McAlpine, 1995a).

**Description.** Generic descriptions have been given by Hendel (1914a) and McAlpine (1973a), to which I add the following.

*Male postabdomen.* Aedeagus diverse; sometimes a long, partly sclerotised process arising from between preglans and glans; glans rounded-ovoid to elongate-cylindrical; bulb seldom complex; terminal filaments usually two, but three present in one group of species, usually of similar size, occasionally very unequal.

*Female abdomen.* Tergites 4 and 5 not reduced in size; spiracles 4 and 5 (where known) located in pleural membrane below lateral margins of tergites; ovipositor sheath usually broad, of moderate length; aculeus slender, obtuse.

**Distribution.** Australasian Region: Moluccas; New Guinea; Bismarck Archipelago; Solomon Archipelago; New Caledonia; Australia—all states. Some species, e.g., *Lamprogaster excelsa* McAlpine and *L. maculipennis* Macquart, live in winter-cold highlands of south-eastern Australia. Oriental Region: Sulawesi; Philippines. *Lamprogaster elegans* Frey, 1964, apparently the only species recorded from continental Asia (Burma), is here transferred to subfamily Trapherinae as *Eopiara elegans* n.comb., from examination of the holotype (HELS).

**Notes.** McAlpine (1973a) reviewed the Australian species; Malloch (1939a) keyed those of New Guinea and adjacent islands that were known to him. In the Australasian Region there are c. 38 valid described species, and a further 54 apparently undescribed species have been seen in collections. Centres of diversity are New Guinea (especially), eastern Australia, and New Caledonia.

Though *Lamprogaster* is generally a well defined taxon, it may not be monophyletic (see McAlpine, 1994). A few species have caused difficulty because of marginal agreement in morphology. A remarkable undescribed species or species complex (provisional coding “sp. BM” from several localities in Papua New Guinea mainland and on Normanby Island, AM and BPB) is a mimic of vespid wasps. It has a petiolate abdomen, and can crease the wings longitudinally as do those insects. I have decided to include it in *Lamprogaster* because (1) it possesses the elongate process on the aedeagus between preglans and glans, characteristic of a number of *Lamprogaster* species, (2) there is another little known New Guinea species morphologically intermediate between this and more typical *Lamprogaster* species, and (3) there is no reason for assuming that, phylogenetically, it is not just a highly derived *Lamprogaster*.

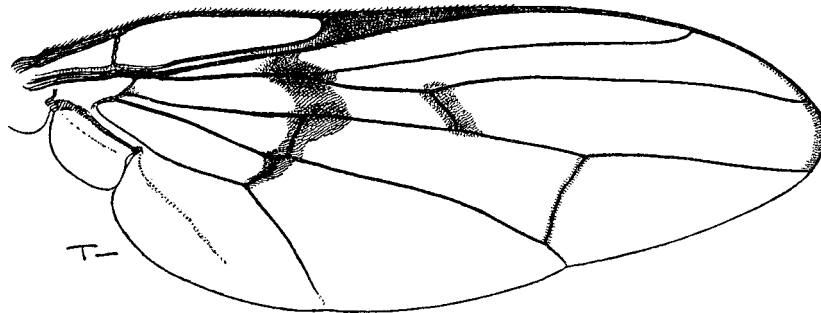
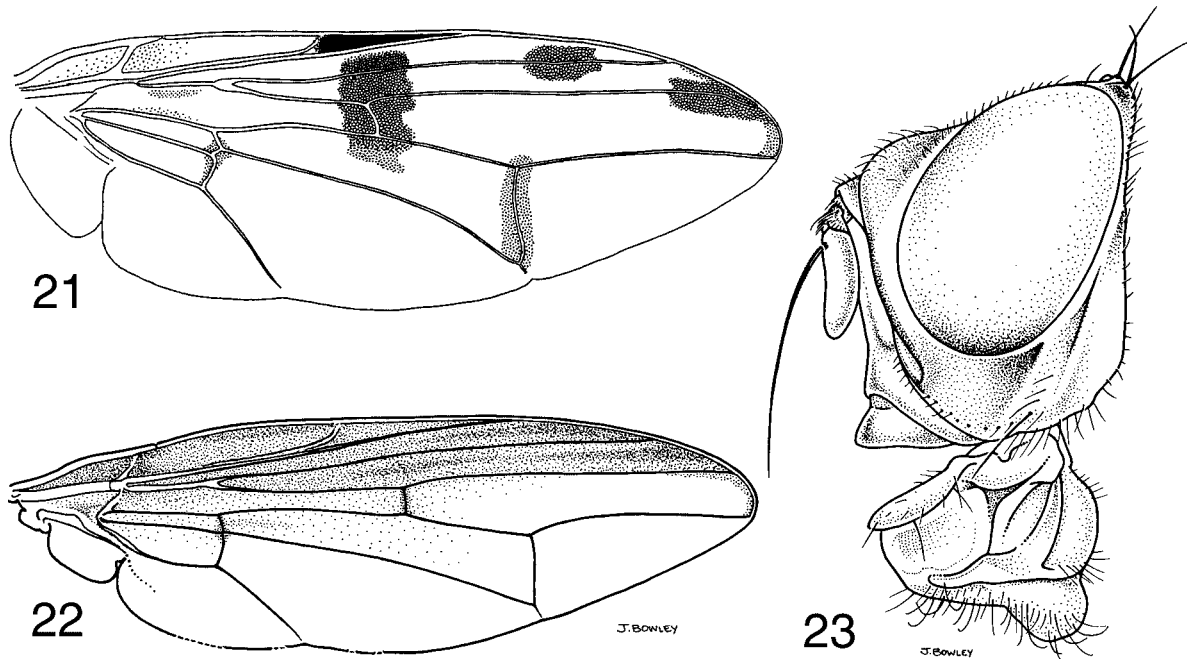


Figure 20. *Pseudorichardia interrupta* Bezzi, wing. After A.J.E. Terzi, in Bezzi (1928).



**Figures 21–23.** 21, *Lamprogaster viola* Malloch, wing. 22, *Lamprogaster* “sp. V” (Papua New Guinea, AM), wing. 23, *Lamprogaster* “sp. AN” (New Caledonia, AM), head.

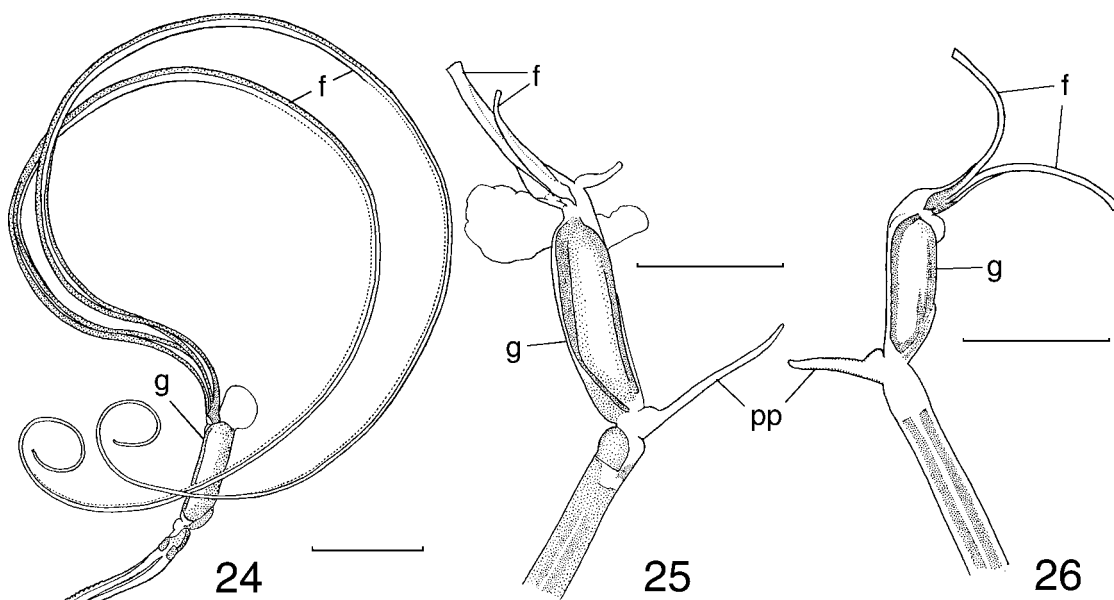
species. These aberrant species are among the very few *Lamprogaster* species without a mesopleural bristle, and should run to couplet 19 in my key to genera.

Though generally found in forested country, *Lamprogaster* species live in a wide range of habitats. Adults of some species rest on tree trunks, or on the lower surface of tree foliage. They are often collected in traps baited with mammalian dung.

I strongly suspect that *Lamprogaster macrocephala* Hendel, *L. nigrihirta* McAlpine, *L. patula* Walker, *L.*

*pumicata* Wulp, and other species are Batesian mimics of blow flies (Calliphoridae), with which the adults may be associated at mammalian dung.

Previously (McAlpine, 1973a: 11), I recorded a specimen of *Lamprogaster corusca* attacked by the fungus *Empusa*. The name of the host is now corrected to *Lamprogaster* “sp.1” (AM), and the fungal genus is probably *Entomophthora* (Zygomycotina: Entomophthorales).



**Figures 24–26.** Distal part of aedeagus of *Lamprogaster* spp. 24, *L. relucens* McAlpine (scale = 1 mm). 25, *L. rugifacies* McAlpine (scale = 0.5 mm). 26, *L. imperialis* McAlpine (scale = 0.5 mm). Abbreviations: f, terminal filaments; g, glans; pp, process of preglans.

**Genus *Montrouziera* Bigot**

Figs. 27, 28

*Montrouziera* Bigot, 1860b: 224. Type species (monotypy) *M. lifua* Bigot.

**Description.** The most detailed description is that of Hendel (1914a), though based on meagre material. Further morphological study of the only included species is needed.

**Distribution.** New Caledonia: perhaps Loyalty Islands only. Evenhuis (1989) also mentions the main island of New Caledonia, but I think this may be due to misinterpretation of the term “New Caledonia”, which may have been used in the broad sense to include the Loyalty Islands, which come under the same French administrative area. Fairly extensive modern collections from New Caledonia (main island) do not include *Montrouziera*.

**Notes.** Only the type species of *Montrouziera* is known. The wing pattern and venation (Fig. 28, based on Hendel’s figure of type material) should enable ready identification of *M. lifua*.

*Montrouziera* is probably closely related to *Lamprogaster*, but differs from probably all species of that genus in having a quite large fronto-orbital bristle. Though *Lamprogaster* is represented in New Caledonia by numerous species (mostly undescribed), apparently all these differ from *Montrouziera* in the less hirsute lateral occiput, less developed hairing of the arista, and different placement of the anterior crossvein. The characters of *Lamprogaster* species of New Guinea are, however, more variable.

**Genus *Achias* Fabricius**

Figs. 7, 8, 29–33

*Achias* Fabricius, 1805: 247. Type species (monotypy) *A. oculus* Fabricius.

*Mystia* Walker, 1861b: 249–250. Type species (monotypy) *M. attrahens* Walker.

*Achiosoma* Hendel, 1914a: 100–101. Type species (original designation) *Achias dacoides* Walker.

**Description.** See McAlpine (1994).

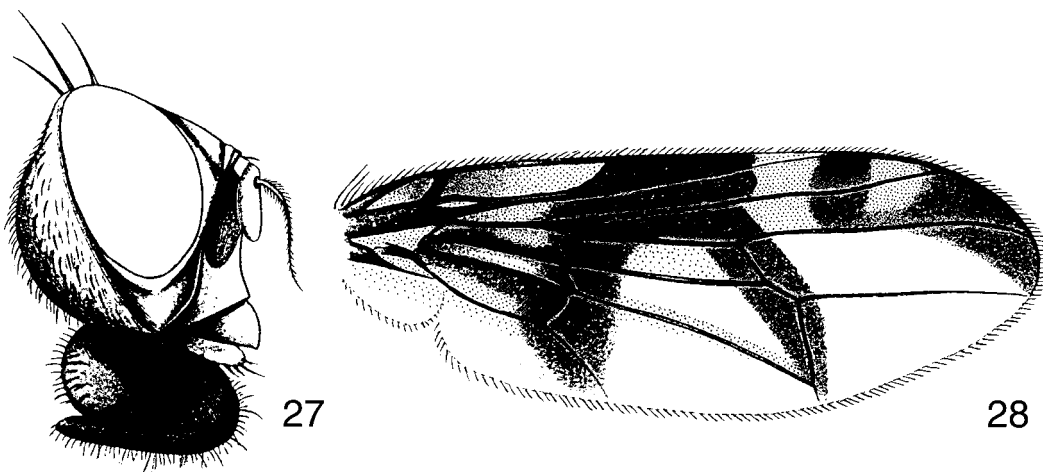
**Distribution.** New Guinea. Bismarck Archipelago. Northern Australia. Mainland New Guinea is the centre of diversity of the genus, but the limits of distribution in the west are Waigeo, Aru, and Melville Islands, in the north the equator, in the east New Britain and the Louisiade Group, and in the south the Townsville district of Queensland (see map, McAlpine, 1994: fig. 1).

**Notes.** The genus has been reviewed by McAlpine (1994). There are 96 probably valid described species, and I have seen about six additional species in collections.

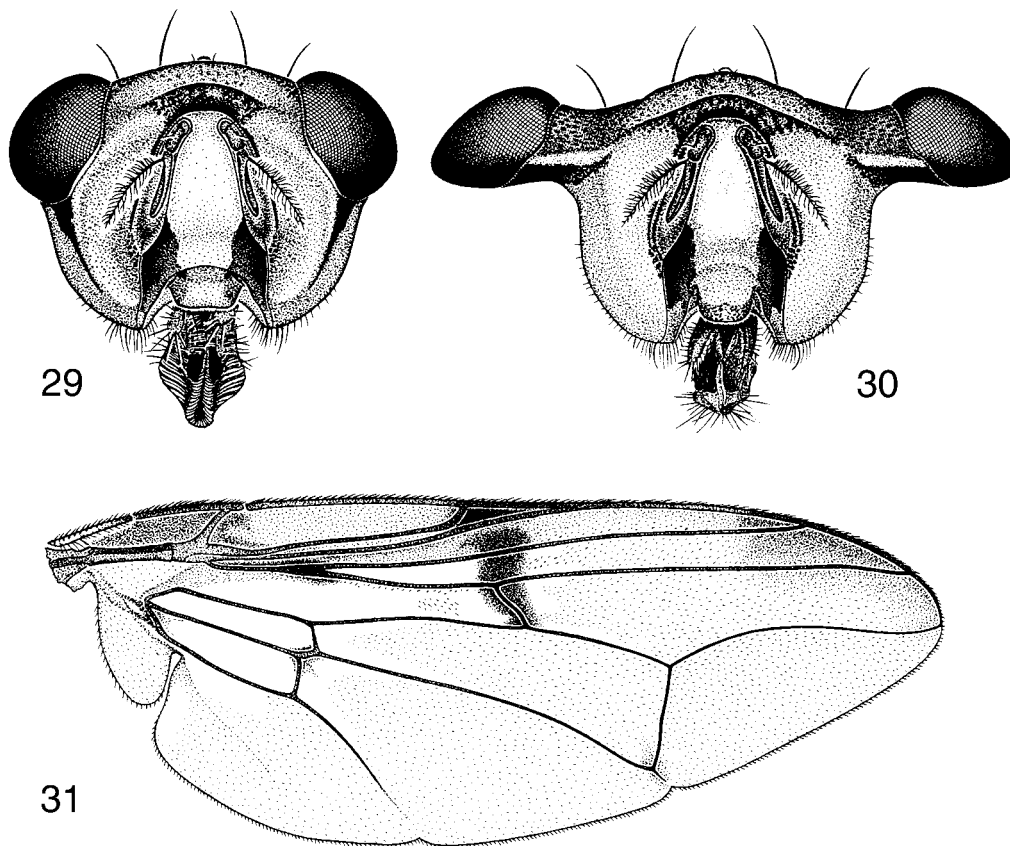
The males of many species have the head capsule prolonged laterally to form eye-stalks. *Achias rothschildi* Austen probably has the widest head capsule of any insect (up to 55 mm). The rôle of eye-stalks in agonistic behaviour has been discussed by McAlpine (1979).

Several species are apparent Batesian mimics of vespid wasps. This has been confirmed by my field observations on *Achias nigrifacies* Malloch and *A. minax* McAlpine.

A female paratype of *Achias xyrion* McAlpine has a male strepsipteran pupa protruding from the abdomen (AM).



Figures 27–28. *Montrouziera lifua* Bigot. 27, head. 28, wing. After Hendel (1914a).



**Figures 29–31.** *Achias kurandanus* Hennig. 29, head of female. 30, head of male. 31, wing. Illustrations by S.P. Kim.

**Genus *Inium* McAlpine**

Figs. 34, 35

*Inium* McAlpine, 1995b: 252. Type species (original designation) *I. mariae* McAlpine.

**Description.** See McAlpine (1995b).

**Distribution.** North-eastern Queensland, from the Atherton Tableland to the vicinity of Cape York.

**Notes.** *Inium* includes three rarely collected species, one still undescribed (ANIC), of diverse appearance, though probably all Batesian mimics of ants. The most noteworthy common feature is the structure of the prelabrum, which departs from the usual horse-shoe shape and is much extended posteroventrally towards the proboscis and largely medially sclerotised. It thus somewhat resembles the beak of certain parrots. The two described species are morphologically dissimilar in many respects (McAlpine, 1995b: table 1), but the third species is intermediate in morphology, size, and geographic distribution.

**Genus *Rhytidortalis* Hendel**

Figs. 36, 37

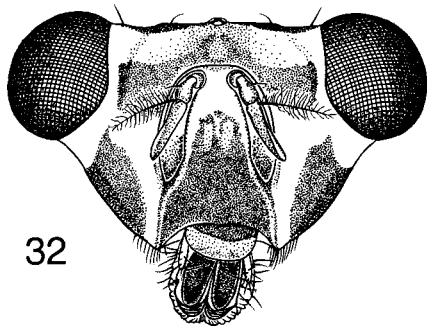
*Rhytidortalis* Hendel, 1914a: 14, 66–68. Type species (original designation) *R. cribrata* Hendel.

**Description.** See McAlpine (2000).

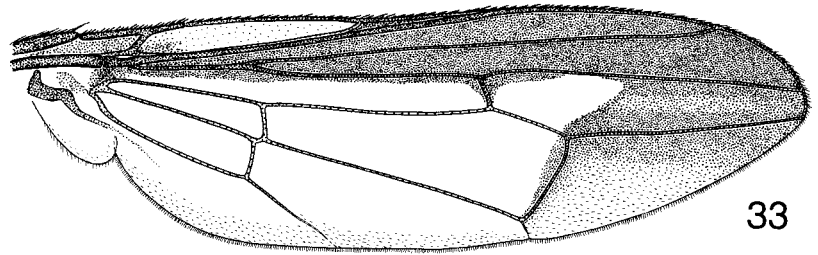
**Distribution.** Australasian Region: Australia—all states, including Northern Territory and Tasmania. Oriental Region: Taiwan; Vietnam. Palaearctic Region: Russian Far-east. Most species have strictly coastal distributions.

**Notes.** I have recently reviewed this genus (McAlpine, 2000), but omitted *R. nigripes* Korneyev from the Russian Far-east (Korneyev, 1991). The type species is the only known Oriental species, but seven species live in Australia. The Australian species originally described as *Senopterina rugifrons* Thomson and *Pseudepicausta solocifemur* Enderlein have been referred to *Rhytidortalis*, but are now placed in *Duomyia*.

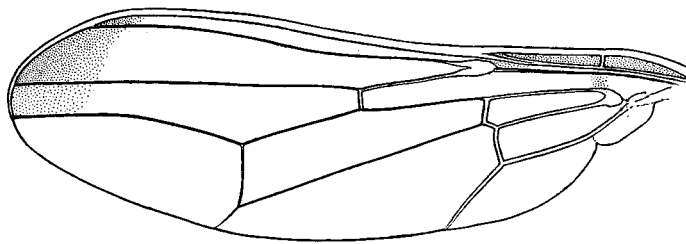
Adults are usually found on low vegetation on sand near the sea shore.



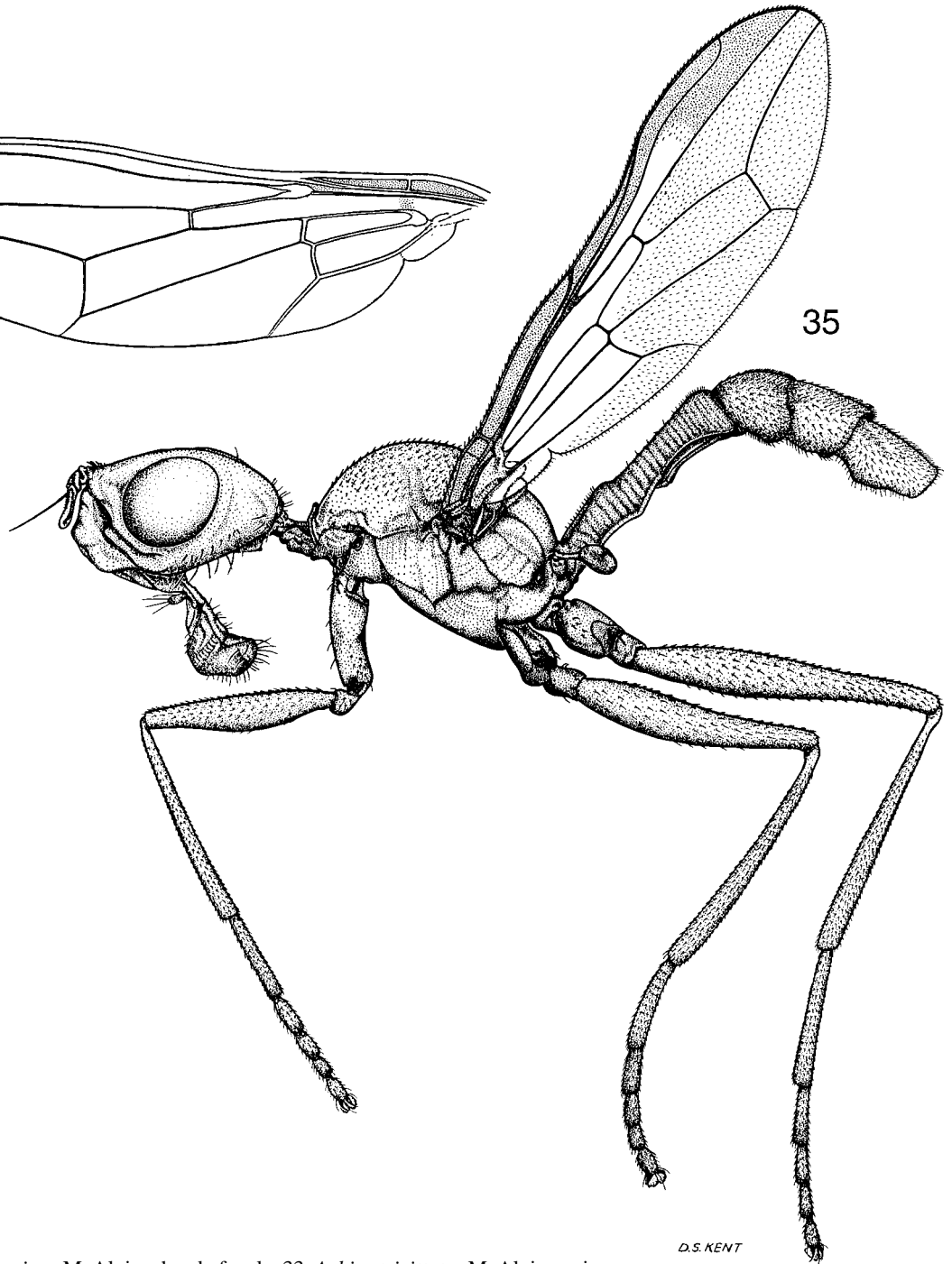
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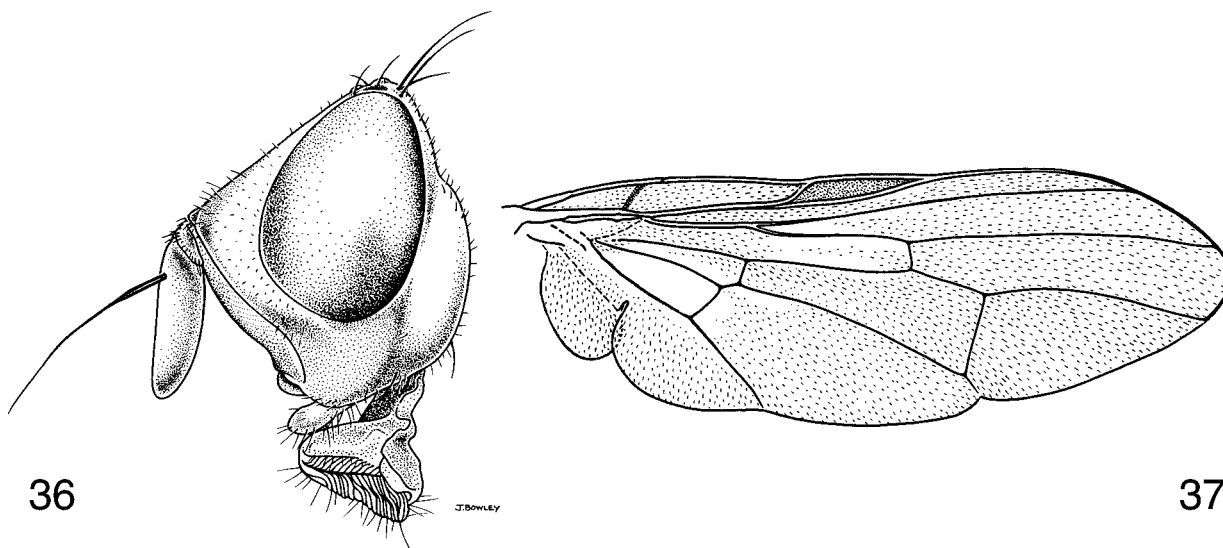
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Figures 32–35. 32, *Achias minax* McAlpine, head of male. 33, *Achias trivittatus* McAlpine, wing. 34, *Inium simplum* McAlpine, wing. 35, *Inium mariae* McAlpine, holotype.



**Figures 36–37.** *Rhytidortalis averni* McAlpine. 36, head of male. 37, wing, showing approximate distribution of microtrichia.

**Genus *Scotinosoma* Loew**

Fig. 38

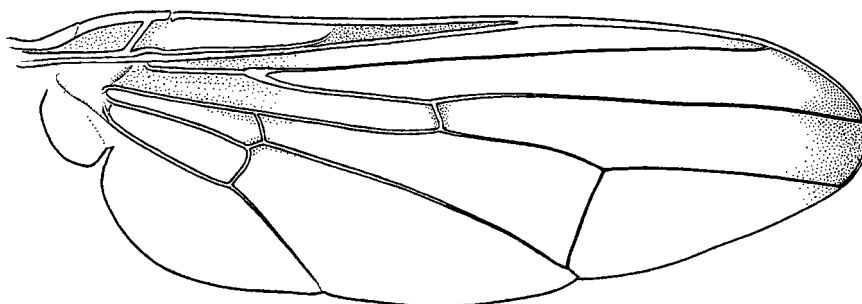
*Scotinosoma* Loew, 1873: 45. No included species.  
*Scotinosoma* Loew.–Hendel, 1914a: 16, 65–66. Type species  
 (subsequent monotypy) *S. bistrigatum* Hendel.

**Description.** Hendel gave a detailed description based on the characters of the type species only. I add the following descriptive notes from an examination of the available species.

**Head.** Facial carina typically strongly elevated, rather narrow, and rounded, sometimes reduced and more or less flattened, always without hairs; facial ridge with few fine hairs below; parafacial usually pruinose, without hairs except near upper extremity; lateral occipital and postgenal bristles present, sometimes duplicated. Prelabrum generally well developed, not joined to face by median shining quadrate sclerite, but sometimes its sclerotisation extended medially towards face, its lower anterior margin not markedly receding.

**Thorax.** Mesoscutum with extensive grey pruinescence, often in part forming a pale median stripe, less frequently generally distributed, not perforated by pattern of black spots as in *Rhytidortalis*; posterior part of mesopleuron with grey pruinose zone, which extends forward on vicinity of sternopleural suture to fore-coxal cavity; usually only one true supra-alar bristle present (in contrast to most *Rhytidortalis* species), but bristling of this region sometimes modified in females; scutellum with two or three pairs of bristles and no hairs. Fore coxa broad; femora without spines; fore femur often with variably developed dorsal and posteroventral bristles; hind basitarsus slender, subcylindrical, as compared with *Rhytidortalis*. Subcosta and ventral surface of vein 1 without setulae; second basal cell less than half as long as discal cell; wing markings usually simple, including a dark costal mark, and, in two species, one or two obliquely transverse bands and a sub-basal mark.

**Abdomen** subcylindrical in males, usually more ovoid in females. Male postabdomen (where known): preglans forming separate sclerite from stipe; glans ovoid to cylindrical; terminal filaments subequal in length, not very long. Female abdomen: tergite 5 unreduced, with spiracles



**Figure 38.** *Scotinosoma* sp. (near *S. erasum* Malloch, Mount Mowbullian, AM), wing.



close to its posterior margin; ovipositor sheath not much longer than tergite 5 (in contrast to typical *Pseudepicausta* species); aculeus slender, obtuse.

**Distribution.** Australia: eastern Queensland; north-eastern New South Wales—Richmond River district northwards. I am at present treating the one recorded Philippine species as probably generically misplaced, and the genus as perhaps endemic to Australia.

**Notes.** The first association of a specific name with *Scotinosoma* is that of *Dacus basalis* Walker, a junior synonym of *Plagiostenopterina aenea* (Wiedemann), by Hendel (1912b: 14), but, as this combination was inferred with doubt, it is not a valid type designation.

Four Australian species have been referred to *Scotinosoma* and a key to these was given by Malloch (1939a). From preliminary study of available material, I believe that there are likely to be at least 12 Australian species, and that use of secondary sexual characters not mentioned by Malloch will be necessary to characterise some of these.

The type locality for the type species, *S. bistrigatum* Hendel, 1914a, has been given as Cape York (Hendel, 1914b, Malloch, 1939a), but this is an error. The two original specimens collected by Thorey in Queensland and described by Hendel (1914b) in WM bear labels of similar format, but that on the male says “Thorey 1868 Port Denison”, that on the female “Thorey 1868 Cap York”. The supposition that both are from Cape York arose from Hendel’s carelessness in checking the two similar-looking labels. The illustrations on which the original availability of *S. bistrigatum* depends (Hendel, 1914a: pl. 5, figs. 103, 104), were based on the male from Port Denison (now Bowen), which is therefore the holotype. The female from Cape York, which was also used in the subsequent description (Hendel, 1914b), is not a type specimen. There are slight obvious differences between the male and female, and, as far as can be determined without a detailed taxonomic study based on adequate material, they may well belong to different species. The collection sites are nearly 1200 km apart in a virtual straight line.

*Scotinosoma* species live mainly in rainforests, including dry rainforest and vine scrub. They are apparently absent from most of the littoral rainforests of north-eastern New South Wales and south-eastern Queensland. Adults have been collected in dung-baited traps.

### Genus *Eumeka* n.gen.

**Type species:** *Eumeka hendeli* n.sp.

**Description** (♂, ♀). Medium-sized to moderately large elongate, dark flies, with legs of moderate length and wing lightly marked.

**Head** markedly higher than long; face with narrow flat-topped carina for most of its length (less elevated in New Caledonian species), without hairs; facial ridge with several or many fine hairs below; parafacial densely pruinose, with scattered hairs on entire length; occiput moderately

convex below, slightly concave above; the following bristles present: inner and outer vertical, small postvertical, minute ocellar, two medium-sized to small fronto-orbitals, small lateral occipital often distinguishable; postgenal bristle present or absent. Antenna, excluding arista, slightly shorter to slightly longer than face on median line; segment 3 c. four times as long as wide, apically rounded; segment 6 filiform, only slightly thickened basally, minutely pubescent on basal part only. Prelabrum rather small, coarsely rugose, its lower margin usually receding; palpus moderately small, coarsely setulose.

**Thorax.** Mesoscutum 1.2–1.3 times as long as wide, with pruinose median stripe; scutellum moderately short and convex, without hairs; pleura with pruinose zones; the following thoracic bristles present: a group of small lateral scapulars, humeral, 1+1 notopleurals, supra-alar, postalar, posterior intra-alar, small dorsocentral, prescutellar acrostichal, three pairs of scutellars, mesopleural; paramedian scapular absent. Posterior bridge of hind coxa without hairs; femora without ventral spines; fore femur with well-developed dorsal and posteroventral bristles; mid femur without bristles; hind femur with anterodorsal bristles near base (sometimes weak and pale) and dorsal bristles distally; tibiae unarmed, except for rather short apical ventral spur on mid one; tarsi elongate. Wing elongate, not significantly narrowed basally; membrane with extensive bare areas in first basal, second basal, and anal cells; subcosta separate from vein 1 for whole length beyond humeral crossvein; section of costa on subcostal cell slightly shorter than that on second costal cell, much longer than that on marginal cell; stem of veins 2 and 3 simple, nearly straight, without setulae on either surface; veins 3 and 4 subparallel or slightly divergent apically; anterior crossvein meeting vein 4 well beyond middle of discal cell; second section of vein 4 gently arched, penultimate section almost straight; second basal cell slightly over half as long as discal cell; basal crossvein transverse; anal crossvein curved; distal section of vein 5 slightly shorter than section on anal cell; alula well developed, rounded; squama forming distinct, narrowly rounded lobe, scarcely larger in area than the well-developed axillary lobe.

**Abdomen** in male subcylindrical, in female more ovoid, variably narrowed anteriorly, with tergite 5 unreduced; ovipositor sheath shorter than tergite 3; aculeus very slender, obtuse. Aedeagus, where known, with pair of moderately short, equal terminal filaments.

**Distribution.** Australia: Queensland—north-east coast as far south as Paluma. New Guinea: eastern and south-eastern mainland. Bismarck Archipelago: Lavongai (New Hanover). New Caledonia: main island.

**Notes.** *Eumeka* includes two very similar species or distinct populations in north Queensland, one of which also occurs in New Guinea. There is a probably distinct species on Lavongai in the Bismarck Archipelago (ZMC) and another more divergent species in New Caledonia (BPB), but I have only seen single specimens of the two latter.

*Eumeka* appears to be most closely related to *Pseudepicausta*, and perhaps to *Rhytidortalis* and *Conicipithea*. All these genera consist of more or less elongate, *Senopterina*-like flies (Senopterini sensu Hendel, 1914a, as Stenopterini), with veins 3 and 4 subparallel apically, the face hairless, the parafacial haired near centre, and often a distinct lateral occipital bristle. *Eumeka* species of Australia, New Guinea, and the Bismarcks are unique among these genera in having a series of setulae on the ventral surface of vein 1, which is usually most developed near the distal bend of the subcosta. Because vein 1 tends to lie in a deep groove, as seen from the ventral surface, the setulae are sometimes difficult to see in dried material, but I have detected them in all 12 available specimens of these species. *Eumeka* further differs from *Pseudepicausta* in having the cheek deeper, the second section of vein 4 longer and definitely arched, and the thick, non-directional, almost paint-like white pruinescence on the sides of tergite 4; also *Eumeka* differs from the typical species of *Pseudepicausta*, from New Guinea and nearby island groups, in having sternite 5 of the male compact and not deeply divided, and the ovipositor sheath of the female not much longer than tergite 5. From *Rhytidortalis*, *Eumeka* differs in its consistently larger size, vertically elongate eye, lack of the characteristic mesoscutal pattern of that genus, more elongate hind basitarsus, arched second section of vein 4, narrower anal cell, and characteristic microtrichiation pattern of tergite 4. *Eumeka* resembles *Conicipithea* in its more or less wasp-like appearance (both could be mimics of pompilids), the head prominently produced at the bases of the antennae, and the facial carina usually long and flat-topped; but it differs in the absence or slight development of setulae on antennal segment 3, the absence of setulae on the scutellum, the absence of erect hairs on the suprasquamal ridge, and the quite different venation; also the glans of the aedeagus is much shorter than in the one available male of *Conicipithea*.

The New Caledonian species (1 ♀, Mount Koghi, BPB) seems to form a distinctive group, distinguishable as indicated in Table 1.

I have collected two males of *Eumeka hendeli* feeding at sap exuding from recently cut stems of *Calamus* sp. (Arecaceae) in lowland rainforest near Babinda, Queensland.

The generic name is from the Greek *eumekes*, of good length, and is treated as feminine.

### *Eumeka hendeli* n.sp.

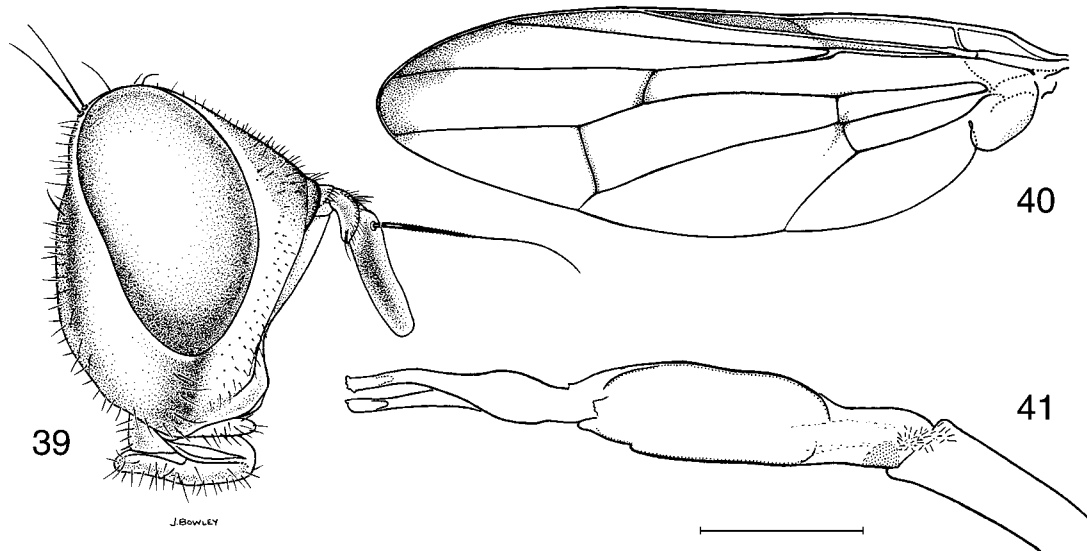
Figs. 39–41

**Material examined.** HOLOTYPE, ♂, Queensland: The Boulders reserve, near Babinda, 27.i.1991, B.J.D., D.K.M. (AM). PARATYPES, Queensland: 2 ♂♂, Whitfield Range, near Cairns, Feb. 1978, A.W-H. (AM); 1 ♂, The Boulders, Jan. 1991, B.J.D., D.K.M. (ANIC); 1 ♂, Paluma, 2925 ft (c. 890 m), Jan. 1970, G.A.H. (AM).

**Description** (♂, ♀ of type race unknown). *Coloration.* Head with ground colour largely brown; fronto-orbital margin (except posteriorly), parafacial, much of antennal groove, posterior orbits (narrowly), and postgenal region (diffusely) silver-grey pruinescent; facial carina with translucent pruinescence, not concealing ground colour, which is distinctly yellowish on upper part. Antenna tawny; segment 3 variably suffused with brown distally; arista brown basally, black elsewhere. Prelabrum brown or tawny-brown; palpus tawny-brown, somewhat paler distally. Thorax with dark brown or sometimes partly tawny-brown ground colour; mesoscutum with rather narrow pale grey-pruinescent median stripe, complete, except that it merges posteriorly with pale transverse stripe along scutellar suture, also with grey lateral presutural pruinescent zone, which is denser and paler between notopleural bristles; scutellum with thin greyish pruinescence dorsally; propleuron largely greyish white-pruinescent; mesopleuron shining anteriorly, with broad greyish-white pruinescent band on posterior margin; sternopleuron with central greyish-white pruinescent zone reaching sternopleural suture and expanded ventrally; a pale-pruinescent mark covering pleurotergite and part of meropleuron. Legs brown to tawny-brown; fore coxa extensively whitish-pruinescent, except on much of posterior surface. Wing: subcostal cell brown; brown costal band extending from end of vein 1 to just behind vein 4, narrowest near end of vein 2, broader and diffuse in first posterior cell; marginal cell with small brown mark at origin of vein 2; anterior and discal crossveins narrowly margined with brown; a small brown mark on vein 5 between basal and anal crossveins; axillary lobe and squama white. Halter brown. Abdomen dark brown to black; tergite 2 with transverse, medially narrowed, densely greyish white pruinescent band across whole width on or near posterior

**Table 1.** Comparison of groups in *Eumeka*.

| <i>Hendeli</i> group                                                                                                                                                                                                                                                                                                                                                                                                   | New Caledonian group                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Postgenal bristle absent or poorly differentiated</li> <li>• Prelabrum small, receding</li> <li>• Vein 1 setulose ventrally</li> <li>• Both costal cells and alula with extensive bare areas</li> <li>• Anterior and discal crossveins with inconspicuous separate brown marks, or none</li> <li>• Abdominal tergites 3 and 5 without whitish-pruinescent markings</li> </ul> | <ul style="list-style-type: none"> <li>• Postgenal bristle well developed</li> <li>• Prelabrum of moderate size, rather prominent</li> <li>• Vein 1 bare below</li> <li>• Both costal cells and alula almost entirely microtrichose</li> <li>• Anterior and discal crossveins enclosed in the one oblique brown mark</li> <li>• Abdominal tergites 3 and 5 with whitish-pruinescent markings</li> </ul> |



**Figures 39–41.** *Eumeka hendeli* n.sp. 39, head of male. 40, wing. 41, distal part of aedeagus (scale = 0.2 mm).

margin; tergite 4 with large triangular, densely greyish white-pruinose zone on each lateral margin; tergites 3 and 5 without pale pruinescence.

**Head.** Facial carina strongly raised, especially on upper part, in centre markedly narrower than antennal groove, slightly depressed and broadened below, not reaching lower margin of face; height of cheek 0.33–0.40 of height of eye. Antenna potentially extending for 0.7–0.8 of length of face on median line.

**Thorax.** Cell-4 index = 0.70–0.75; alula microtrichose only on narrow posterior marginal zone, or entirely bare (except for marginal series of setulae).

**Abdomen.** Tergite 4 slightly longer than tergite 3; tergite 5 slightly shorter than tergite 3. Postabdomen: outer surstylus obtuse, its apex only slightly exceeding that of inner surstylus; stipe of aedeagus slender; preglans sharply differentiated from stipe, sclerotically continuous with glans; a small patch of pubescence on base of preglans, extending on to stipe; glans elongate-ovoid; terminal filaments rather short, of equal length, arising from a common sclerotised base, the whole structure c. as long as glans; cerci large, much exceeding surstyli, fused to proctiger for their whole length.

**Dimensions.** Total length 8.9–10.9 mm; length of thorax 3.2–4.0 mm; length of wing 7.5–9.1 mm; length of glans of aedeagus 0.24 mm.

**Distribution.** Queensland: Cairns district to Paluma district (typical populations). Populations in the Iron Range district, Queensland (AM) and the Central and Oro Provinces of Papua

New Guinea (AM, BPB) appear to be morphologically distinct, probably at infraspecific rank.

**Notes.** *Eumeka hendeli* is here interpreted broadly to include populations in northern Cape York Peninsula and eastern mainland New Guinea, as well as the type population. On this interpretation, the species differs from the only other recognized species of the *hendeli* group (from Lavongai) in the complete but usually dorsally narrowed whitish-pruinose posterior marginal band on abdominal tergite 2, and in having the facial carina not broadened near mid-length nor very sharply margined. The type population of *E. hendeli* differs from more northern populations in the markedly shorter antenna (at least in males), slightly shorter facial carina, and from at least some such populations in the less distinctly petiolate abdomen. From the little available material, I am not sure if all these populations are conspecific.

The specific epithet refers to Friedrich Hendel, master worker on platystomatid flies.

### Genus *Signa* n.gen.

**Type species:** *Signa mouldsi* n.sp.

**Description** (♂, ♀). Flies of medium build or slightly elongate, of small to rather large size, with moderately short, rather slender legs.

**Head** markedly higher than long; face not very broad, minutely roughened or pruinose, without hairs, with rather low, rounded, saddle-like carina; fine uniseriate hairs along lower parafacial suture scarcely extending on to facial ridge; parafacial with hairs near upper extremity only; occiput variably convex below, somewhat concave above;

the following bristles present: inner and outer vertical, small ocellar, generally two reclinate fronto-orbitals, of which anterior one is always well developed and at least slightly larger than posterior one, lateral occipital (sometimes reduced), large postgenal; postvertical bristle absent; antennal sockets narrowly separated. Antenna, excluding arista, slightly shorter than face on median line, slightly shorter in female than in male; segment 3 generally subacute dorsoapically; segment 6 long, filiform, but sometimes preapically dilated in males, with variable amount of basal pubescence. Prelabrum of moderate size, its lower margin slightly anteriorly prominent; palpus moderately large, elongate; proboscis stout.

*Thorax.* Mesoscutum c. 1.0–1.2 times as long as wide, largely with blackish ground-colour and extensive covering of grey pruinescence, a pair of variably developed black, non-pruinescent stripes on or near dorsocentral lines, sometimes broad and running almost full length of mesoscutum, sometimes narrow, disjunct at suture, or present only in front of suture; scutellum thick, rounded, dorsally pruinescent, with few hairs restricted to lateral margins, or sometimes quite hairless; pleura, except sternopleuron, extensively greyish-pruinescent; sternopleuron pruinescent along upper margin and along ventral median margin, with extensive smooth zone between, which extends broadly approximately to mid-coxal cavity; centre of sternopleuron with a haired zone, which is almost smooth between hairs, and isolated, except on dorsal margin, from other haired or pruinescent zones; the following thoracic bristles usually present: one short lateral scapular, humeral, 1+1 notopleurals (some of these reduced or modified in females of some species), supra-alar, postalar, posterior intra-alar, dorsocentral, two pairs of scutellars, mesopleural; paramedian scapular and prescutellar acrostichal absent. Posterior bridge of hind coxa with fine hairs; fore femur with well-developed dorsal bristles and a series of long posteroventral bristles on almost its entire length; mid femur with several posterior bristles distally, merging into long hairs, or posterior bristles scarcely differentiated from hairs; hind femur distally with few dorsal bristles. Wing: membrane microtrichose except for anal cell and much of second basal cell; section of costa on subcostal cell substantially longer than that on second costal cell and that on marginal cell; subcosta and vein 1 without ventral setulae; veins 3 and 4 converging apically; vein 4 terminating distinctly behind wing apex, its basal section often with weak point or flexure near distal end, its distal section slightly or strongly curving forward only on apical half or less; anterior crossvein meeting vein 4 near or slightly beyond mid-length of discal cell; vein 5 without setulae, its short distal section slightly bent towards posterior margin; second basal cell on vein 4 c. one third as long as discal cell or slightly less; anal crossvein curved on anterior part only; axillary lobe of moderate to small size, with moderate marginal fringe; squama forming a rounded lobe, slightly variable in size, but not noticeably larger in area than axillary lobe.

*Abdomen* ovoid, not much narrowed basally. Male: tergite 5 usually rather large; outer surstylus usually extensively spinulose on distal part (not examined in some species); aedeagus with subcylindrical glans, variably developed bulb, and pair of about equal-sized terminal filaments. Female: tergite 5 well developed but always shorter than tergite 4; spiracles 1 to 3 situated in pleural membrane; spiracle 4 situated in intersegmental membrane near lateral margins of tergites 4 and 5; spiracle 5 situated behind tergite 5, near its posterior margin; ovipositor sheath broad and rather short; aculeus slender, obtuse.

**Distribution.** New Caledonia: only known from main island.

**Notes.** *Signa* is represented by at least 10 species in available collections (mainly BPB, PM, and AM).

*Signa* belongs among the group of more or less elongate platystomatine genera with hairless face, apically convergent veins 3 and 4, distinct but rather small squamal lobe, non-setulose suprasquamal ridge, and no femora noticeably enlarged or ventrally spinose, this group including *Elassogaster*, *Microepicausta*, *Meringomeria*, and *Par*. *Signa* differs from *Elassogaster* in the presence of fronto-orbital bristles, the termination of vein 4 behind the wing apex, and the absence of a shallow groove connecting the transverse sutures of the mesoscutum. It differs from *Microepicausta* in the distinct fronto-orbital bristles, presence of small hairs on the posterior bridge of hind coxa and dorsal bristles on the fore femur, absence of hairs on the central part of the scutellum, and in having paired terminal filaments on the aedeagus. It differs from *Meringomeria* in the presence of fronto-orbital bristles, non-pruinescent central zone of the sternopleuron, slender aculeus, and, particularly from the Melanesian species of that genus, in the non-plumose arista and absence of a distinct series of anterior bristles on the hind femur. Perhaps the most closely related genus is *Par*, which, though also Melanesian, is apparently geographically isolated from *Signa*. *Signa* differs from *Par* in having larger fronto-orbital bristles, centrally grey-pruinescent mesoscutum, scutellum without dorsal setulae, sternopleuron centrally smooth, fore femur with dorsal bristles, subcosta without ventral setulae, anterior crossvein infuscated, abdominal pleura of female without dense, pile-like covering (? microtrichia or macrotrichia), outer surstylus extensively spinulose on distal part (not checked for some *Signa* spp.).

*Signa* species have been collected in both lowland and mid-mountain rainforest, while the long series of *S. mouldsi* was obtained in dry vine forest or sclerophyllous forest (M.S.M., pers. comm.). According to Jaffre *et al.* (1998), this is the most fragmented and vulnerable natural vegetation type in New Caledonia, and *S. mouldsi* is not represented among the many available specimens of *Signa* from other localities. Probably the numerous species occupy a wide range of natural habitats in New Caledonia.

The generic name is derived from the Latin *signum*, a sign or signal, and is feminine on account of the altered suffix.

*Signa mouldsi* n.sp.

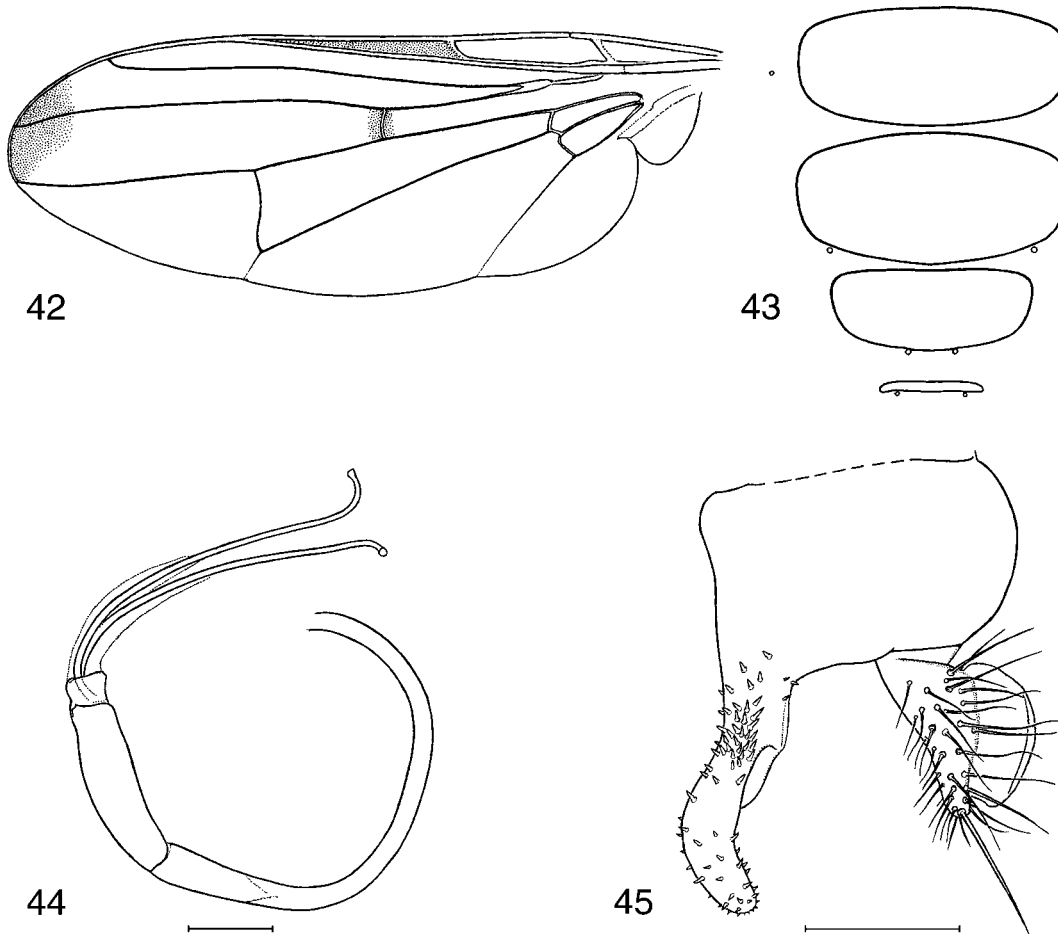
Figs. 42–45

**Material examined.** HOLOTYPE, ♂, New Caledonia: Pindai, Nepoui Peninsula, 11.vi.1996, M.S.M. (PM). PARATYPES, New Caledonia: 28 ♂♂, 38 ♀♀, same data as holotype (AM, BM, BPB, PM, RMS, USNM). Additional material in alcohol (AM).

**Description** (♂, ♀). Dark fly, small for the genus, with blackish apical wing spot. *Coloration.* Head tawny; antennal groove brown, with whitish pruinescence; upper part of face and parafacial yellow, with pale pruinescence; occipital region extensively blackish, with grey pruinescence thinner on upper part, tawny-yellow zone extending over centre of vertex on to central upper occiput, so that inner vertical bristle stands on tawny zone, while outer vertical stands on black zone. Antenna tawny; segment 3 largely greyish

brown; segment 6 blackish brown. Prelabrum fulvous yellow, brownish only at posterolateral extremities; palpus fulvous-yellow, greyish brown on a relatively small area near base. Thorax black, with large part of cuticular surface covered with thin grey pruinescence; mesoscutum with pair of narrow anterior dorsocentral to intradorsocentral black stripes, and postsuturally a pair of narrow extradorsocentral black stripes; scutellum thinly grey-pruinescent dorsally, glabrous on free margins. Legs black to brown-black, including all tarsi. Wing: stigmal section of subcostal cell blackish; apical blackish spot on vein 3 relatively compact, extending to vein 4, but not to vein 2; brown spot present on anterior crossvein; discal crossvein unmarked; marks on fork of veins 2 and 3 and on basal crossvein absent or barely perceptible; axillary lobe and squama white. Halter creamy. Abdominal tergites shining black.

*Head.* Height of cheek 0.11–0.14 of height of eye.



**Figures 42–45.** *Signa mouldsi* n.sp. 42, wing. 43, diagram of female abdominal tergites 3–6, showing positions of spiracles. 44, aedeagus (scale = 0.2 mm). 45, epandrium and associated structures (scale = 0.2 mm).

**Thorax.** Humeral and anterior notopleural bristles quite large in both sexes, the latter inserted well above level of humeral and posterior notopleural; usually one or few long setulae, better developed in female, just above anterior notopleural and in front of transverse suture; in female only, several long setulae on anterior slope of posterior notopleural callus; hairs on humeral callus fairly long and pale in male, short and mostly pale in female; hairs on mesopleuron pale and of moderate length in both sexes. Wing: distal section of vein 4 only slightly curved apically; cell-4 index = 0.49–0.58.

**Abdomen.** Male: tergites with moderately developed hairing, not much denser towards lateral margins; tergite 5 c. 1.3 times as long as tergite 4; outer surstylus only moderately elongate, with many unevenly distributed mostly black spinules, many of them directed basad, its distal section much surpassing apex of inner surstylus, very obtuse, obliquely compressed; inner surstylus with few, relatively minute spinules, in addition to the usual two stout apical prenisetae; preglans rather long, not very sharply demarcated from stipe, but more uniformly sclerotised, slightly expanding distally; glans moderately elongate, without lobe; bulb quite short, enclosed in short sclerotised tunic; each of two terminal filaments c. twice as long as glans, not tapering, very slightly expanded apically. Female: preabdomen broadly humped; tergite 5 not over half as long as tergite 4, with hairs mostly pale, a little more crowded than those on tergite 4, not especially developed on sides, those near anterior margin much shorter and more crowded, many of them reduced to minute stumps in relatively conspicuous sockets; spiracles of segment 5 closer to each other than to lateral margins of tergite; pleural membrane with rather short yellow to brown setulae on upper part on segments 2 to 5, also on segment 4 a few long setulae or bristles, largely pale yellowish, often some black.

**Dimensions.** Total length, ♂♂ 4.1–4.2 mm, ♀♀ 3.5–4.4 mm; length of thorax, ♂♂ 1.6–1.8 mm, ♀♀ 1.6–1.9 mm; length of wing, ♂♂ 3.7–4.3 mm, ♀♀ 3.8–4.2 mm; length of glans of aedeagus 0.41–0.47 mm.

**Distribution.** Only known from the type locality on the central west coast of New Caledonia.

**Notes.** A brief comparative survey of the available species of *Signa* indicates that *S. mouldsi* is distinguishable by the following character combination: small size; yellow palpus; filiform arista in both sexes; long humeral bristle in both sexes; high position of insertion of anterior notopleural bristle, which is unreduced in both sexes; quite short hairs on humeral callus in female (longer in male); quite narrow non-aligned presutural and postsutural pairs of black, non-pruinulent stripes on mesoscutum; compact apical wing spot, not touching end of vein 2; absence of shading on discal and anal crossveins; comparatively slight apical curvature of vein 4; also, in the female, the vestiture of tergite 5; and, in the male, the form and degree of spination of the outer surstylus, and numerous details of the aedeagus.

The specific epithet refers to Maxwell S. Moulds, who collected the type series.

## Genus *Par* n.gen.

**Type species:** *Elassogaster evitta* Malloch.

**Description** (♂, ♀). Somewhat elongate flies, but more robust than most species of *Elassogaster* and *Microepicausta*, with ovoid abdomen and moderately short legs.

**Head** markedly higher than long; face not very broad, minutely roughened and pruinulent, but without hairs, with rather low, rounded, dorsally narrowed, saddle-like carina; facial ridge with a series of few fine hairs at lower end; parafacial with hairs as upper extremity only; occiput moderately convex below, concave and largely bare above; the following bristles present: inner and outer vertical, minute ocellar, one very small black fronto-orbital, large lateral occipital, large postgenal; postvertical bristle absent; antennal sockets very narrowly separated. Antenna, excluding arista, as long as face (male) or distinctly shorter (female); segment 3 moderately elongate, apically rounded; compound segment 5+6 much longer than rest of antenna, slender, with little basal pubescence and, in male only, spatulate apex. Prelabrum of moderate size, its lower margin not receding, with minute rugosity and pruinulence on anterior surface; palpus and proboscis moderately developed.

**Thorax.** Mesoscutum c. 1.2–1.3 times as long as wide, pruinulent laterally, but without noticeable pruinulence on broad median zone; scutellum thick, rounded, dorsally convex, in dorsal view longer than a semicircle, with rather dense hairs on entire dorsal surface, and pubescence-pruinulence towards scutellar suture; pleura extensively pruinulent; sternopleuron pruinulent and largely short-haired on at least posterior half; the following thoracic bristles present: scapulars (in a small group on each side), humeral (particularly long in male), 1+1 notopleurals, supra-alar, postalar, posterior intra-alar, dorsocentral, two pairs of scutellars, mesopleural; paramedian scapular and pre-scutellar acrostichal absent. Posterior bridge of hind coxa with fine hairs; femora without ventral spines; fore femur without dorsal bristles, with long posterior bristles, mainly on distal half; mid femur with posterior bristles intergrading with hairs; hind femur with few dorsal bristles. Wing: membrane almost entirely microtrichose, except for variable zone in anal cell; first basal cell with microtrichia in basal part much denser than those in distal part; section of costa on subcostal cell at least 1.5 times as long as that on second costal cell; subcosta with several small ventral setulae on basal part before humeral crossvein; vein 1 with dorsal setulae more numerous and crowded than in *Elassogaster* and *Microepicausta*; vein 4 terminating distinctly behind wing apex, its distal section curving forward only in c. apical third; anterior crossvein meeting vein 4 slightly before mid-length of discal cell; vein 5 without setulae, its short distal section longitudinally placed, approximately aligned with its penultimate section; second basal cell c. one third as long as discal cell; anal crossvein curved on anterior part only; axillary lobe small, with marginal fringe of hairs less developed than that on squama; squama not larger than axillary lobe.

*Abdomen* ovoid, its anterior part not narrowed; tergite 5 unreduced. Male postabdomen: surstyli of moderate length; preglans distinct, short and simple; glans subcylindrical, nearly three times as long as its greatest diameter; bulb undeveloped; terminal filaments two, of similar size, each nearly twice as long as glans; cercus large, c. three times as long as wide. Female postabdomen: spiracles not seen, evidently not enclosed in tergites; ovipositor sheath not much longer than wide; aculeus (apex only visible) obtuse, apparently not compressed.

**Distribution.** Bismarck Archipelago: New Britain; Makada Island, Duke of York Group.

**Notes.** The available material of *Par* (1 ♂, Tari Creek, near Kimbe, central northern New Britain, AM, 1 ♀, Mount Sinewit, eastern New Britain, BPB, and 1 ♀, Makada Island, assumed holotype of *Elassogaster evitta* Malloch, AM) possibly represents a single species. The only feature that suggests a difference at population level is the very largely bare anal cell of the male, as compared with the more extensively microtrichose anal cell of the two females.

I previously (McAlpine, 1973a) placed *Par evitta* in *Microepicausta*, but the latter is characterised by having only a single terminal filament on the aedeagus, a condition which I consider to be a generic autapomorphy, and *P. evitta* further differs in detail from *Microepicausta* as indicated in the key. *Meringomeria* is also rather similar, but has strong dorsal bristles on the fore femur, no dorsal hairs on the scutellum, and, typically, a compressed, blade-like aculeus. There is possibly close relationship to *Signa*, q.v. for comparison. The wing venation, scutellar vestiture, and, to a degree, the aedeagus resemble those of the Oriental and Lemurian genus *Icteracantha* Hendel, but *Par* lacks the ventral femoral spines of that genus, has a more nearly bare arista, the dorsal setulae near base of vein 3 much more crowded, and the aculeus not broadly compressed. *Par evitta* was originally described in *Elassogaster*, but it differs from typical taxa of that genus (including the two available Afrotropical species) in the absence of a transverse depression across the centre of the mesoscutum, in the extensive hairing on the mid-dorsal region of the scutellum, in the termination of vein 4 distinctly behind the apical extremity of the wing, and in having the apical section of vein 5 almost aligned with the previous section. *Par* also differs from these probably related genera in the series of

small ventral setulae near the base of the subcosta. Among other taxa of Platystomatinae, I have noted this condition only in a few species of *Euprosopia*, including *E. impingens* (Walker). *Par* and *Euprosopia* are not very closely related, and the subcostal setulae must have been acquired independently in the two genera. *Par* has the arista 2-segmented through fusion of segments 5 and 6, whereas related genera, including *Elassogaster*, *Icteracantha*, *Meringomeria*, *Microepicausta* and *Signa*, generally show a suture between these segments.

*Par* is a Latin adjective meaning equal, in reference to the two similar terminal filaments of the aedeagus. As it is treated as a Latin noun of variable gender, it is masculine under Article 30.1.4.2 of the ICZN. The specific epithet *evitta*, though grammatically unusual, cannot be treated as an adjective with variable suffix.

***Par evitta* (Malloch) n.comb.**

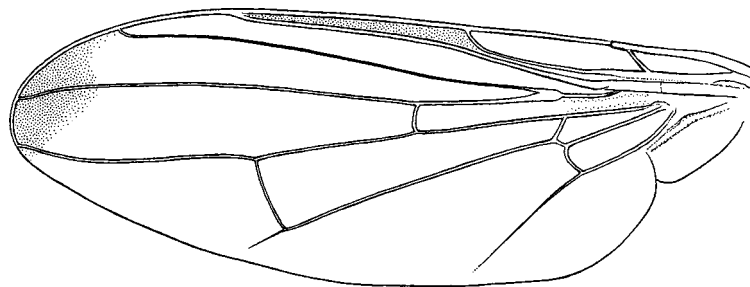
Fig. 46

*Elassogaster evitta* Malloch, 1939a: 116, 153, pl. 4, fig. 16.  
*Microepicausta evitta* (Malloch).—McAlpine, 1973a: 30, 188.

**Type material.** APPARENT HOLOTYPE, ♀, Makada I. off New Britain, F.H.T. (AM, formerly in SPHTM), left wing mounted on slide.

Malloch described this species from “Type, male, and allotype, Makada Is.” etc., and it is apparent from his description that he had both sexes. The only specimen of the type series that I have traced is a female, with a typical Malloch “Type” label, which should indicate a holotype, though, from the above, the type should be a male. However, the left wing of the female specimen is mounted on a slide and was used for Malloch’s fig. 16, captioned as “*Elassogaster evitta*, n.sp. type”. Lee *et al.* (1956: 316), in cataloguing types and other material of J.R. Malloch, listed only one specimen of *E. evitta*, which they categorized as holotype, in SPHTM, undoubtedly meaning this female specimen.

In view of (1) the contradictory statements in the original publication, (2) the fact that Malloch labelled the female as “Type”, (3) the assumption by Lee *et al.* that the female was the holotype, and (4) the unknown fate of the original male, it is considered best to regard the above female specimen as the holotype.



**Figure 46.** *Par evitta* (Malloch), wing of holotype.

### Genus *Microepicausta* Hendel

Figs. 47,48

*Microepicausta* Hendel, 1914a: 52–54. Type species (original designation) *M. gracilis* Hendel.

**Description.** The description by Hendel gives much detail, though based on a limited sample of one species. The following statements supplement Hendel's description.

**Head.** Face without hairs; carina varying from very low to high and narrow, but not flat-topped; prelabrum large and prominent to small and receding.

**Thorax.** Mesoscutum largely dark, with or without pale grey-pruinose median stripe, or largely grey-pruinose; anterior notopleural bristle present or absent; scutellum haired dorsally across most of its width. Fore femur without strong dorsal bristles, with variably developed, sometimes undifferentiated, posteroventral bristles. Subcosta ventrally without setulae; distal section of vein 4 usually gradually curved forwards to meet costa at or slightly behind apex.

**Abdomen.** Male: aedeagus (where known) with short, compact glans and single, long terminal filament. Female: tergite 5 unreduced; spiracle 5 in membrane near posterior margin of tergite 5; aculeus slender, its apex compressed and very acute to relatively thick and obtuse.

**Distribution.** Australasian Region: New Guinea; Bismarck Archipelago—New Britain, New Ireland; Solomon Archipelago; Australia—eastern and southern coasts, including northern Tasmania. Oriental Region: ?far western Indonesia. In temperate Australia all records are from the sea coast.

**Notes.** I have seen at least nine species of *Microepicausta*. Described species known to me (not necessarily all valid) are: *M. albopilosa* (de Meijere, 1915), *M. gracilis* Hendel,

1914a, *M. marginalis* (Malloch, 1940), *M. lineata* (de Meijere, 1915), *M. terraereginae* (Malloch, 1928). *Elassogaster sangiensis* de Meijere, 1916 from western Indonesia (AMST) perhaps belongs in *Microepicausta*, but the aedeagus is undescribed. *Microepicausta evitta* (Malloch, 1939a) is no longer included in *Microepicausta* (see above under *Par*). There is no published key to species.

The single terminal filament of the aedeagus, now confirmed for almost all species, is a remarkable condition not known to me in other Platystomatinae. In one or two species of *Duomyia* and in some specimens of the African genus *Bromophila* Loew there appears to be a single terminal filament, but this structure has two separate lumina and is the product of fusion of the usual two filaments; this is not the case in *Microepicausta*. Reduction to a single terminal filament is probably a groundplan autapomorphy for the genus *Microepicausta*.

Adults of *Microepicausta* are usually found in sandy areas. In eastern Australia they are often found in coastal dune scrub or on the grass *Spinifex sericeus* on or near beaches. In northern Papua New Guinea I have found them on low herbage at sandy stream margins far from the coast. A specimen from New Britain, not determined to species, is labelled "coastal area, rainforest".

### Genus *Elassogaster* Bigot

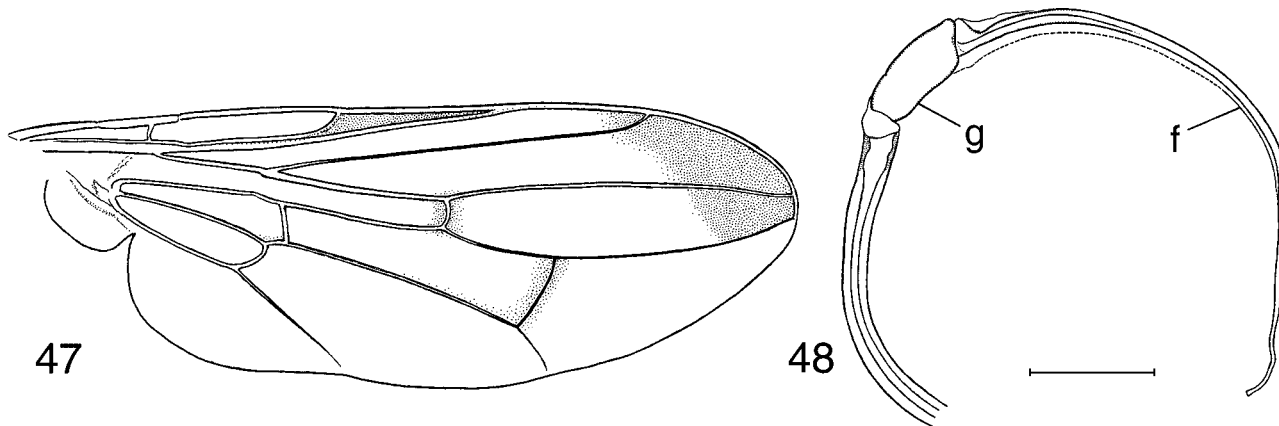
Fig. 49

*Elassogaster* Bigot, 1860a: 546. Type species (monotypy) *E. metallicus* Bigot.

*Myiodella* Rondani, 1873: 290. Type species (monotypy) *M. brachialis* Rondani.

*Epicausta* Loew, 1873: 46. Type species (designated Steyskal, 1980) *Epicausta nigra* Wulp (= *Myiodella brachialis* Rondani).

**Description.** With access to so few of the accepted species, I am not prepared to give a formal description. Hendel (1914a) simply listed the differences from *Plagiostenoptera* s.l., and quoted Bigot's uninformative original description.



**Figures 47–48.** 47, *Microepicausta* "sp. 2" (near Musgrave, AM), wing. 48, *Microepicausta* "sp. 1" (Nullica Beach, AM), distal part of aedeagus (scale = 0.2 mm). Abbreviations: f, terminal filament (single); g, glans.



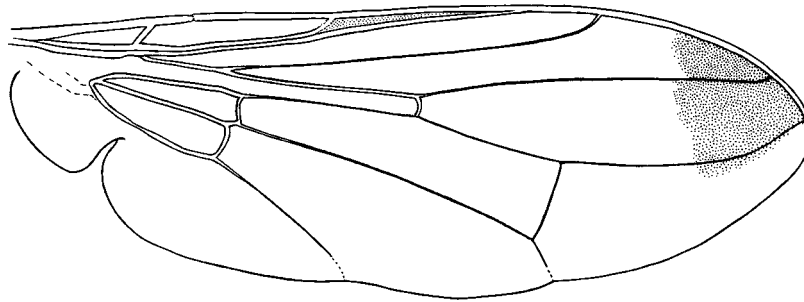


Figure 49. *Ellassogaster linearis* (Walker), wing.

**Distribution.** Australasian Region: Moluccas—Buru (AMST); New Guinea; Bismarck Archipelago—New Britain; Solomon Archipelago; northern and eastern Australia. Afrotropical Region: Arabian Peninsula; Madagascar; Mascarene Islands; Africa—widely distributed. Palaeartic Region: Japan. Oriental Region: widely distributed.

**Notes.** The type species, *E. metallica* Bigot, is unknown to me (as it was to Hendel), but Hendel and all subsequent authors have interpreted *Ellassogaster*, possibly correctly, as the generic concept that includes the well known *E. linearis* (Walker) (syn. *Dacus sepsoides* Walker) and some closely related African and Oriental species.

*Ellassogaster* is much in need of a thorough taxonomic revision. Five species have been transferred from *Ellassogaster* to *Microepicausta* (McAlpine, 1973a; Evenhuis, 1989), in accordance with my view on the limits of these genera, but *E. evitta* Malloch is now placed in *Par* (q.v.). Hardy (1959) transferred *Dacus sordidus* Walker to *Ellassogaster*, and synonymised *Dacus varialis* Walker therewith from examination of type material of both nominal species (in BM). I am unable to evaluate this action at present. Evenhuis (1989) listed six Australasian species of *Ellassogaster*, and I am not aware of any undescribed species in this Region.

Australasian species of *Ellassogaster* differ from those of *Plagiostenoptera* in the absence of fine hairs on the face, the longer anal cell which is not or only slightly shorter than the distal section of vein 6, and the absence of a dark longitudinal stripe covering the first basal cell. These *Ellassogaster* species differ from *Microepicausta* in having the scutellar hairs restricted to the sides or absent, and two terminal filaments instead of one on the aedeagus.

Larvae of *Ellassogaster linearis* have been found consuming the eggs of the locust, *Locusta migratoria* (Linné) (Orthoptera: Acrididae), in the Philippines and Papua New Guinea (AM). However, specimens that may be conspecific have been reared from rotting potato tubers in Western Highlands Province, Papua New Guinea, and others are labelled as a secondary pest of taro roots (? rhizomes, *Colocasia esculenta*) in Milne Bay Province (AM), and larvae have also been found “in rotting asparagus crowns” near Katherine, Northern Territory, Australia.

### Genus *Aetha* n.gen.

**Type species:** *Aetha cowanae* n.sp.

**Description** (♀, ♂ unknown). Flies of moderate build, with anteriorly narrowed but not petiolate abdomen and moderately short legs.

**Head** of moderate proportions, but markedly higher than long; face concave in profile, without median carina; facial ridge with few fine hairs only; parafacial pruinose, without hairs; occiput entirely convex, with many fine, pale hairs on most of surface; the following bristles present: inner and outer vertical, weakly differentiated postvertical, two short fronto-orbitals, minute ocellar, postgenal; lateral occipital bristle absent without trace. Antenna (excluding arista) a little shorter than face on median line; segment 3 not attenuated, acute dorsoapically; segment 6 filiform, minutely pubescent. Prelabrum and mouthparts normal.

**Thorax.** Mesoscutum c. as long as wide; scutellum extensively haired dorsally; subscutellum with a well-developed series of setulae on each side; the following thoracic bristles present: scapular, humeral, 1+1 notopleurals, supra-alar, postalar, posterior intra-alar, dorsocentral, two pairs of scutellars, mesopleural; prescutellar acrostichal absent. Posterior bridge of hind coxa bare; femora not spinose; fore femur with weakly differentiated dorsal and long, fine posteroventral bristles; hind femur with few dorsal bristles distally. Wing: subcosta without ventral setulae, not strongly flexed near distal end; section of costa on subcostal cell shorter than that on either side of it; anterior crossvein located before mid-length of discal cell; terminal section of vein 4 on its entire length converging with vein 3; first basal cell entirely microtrichose; second basal cell more than half as long as discal cell; axillary lobe with marginal fringe of hairs not noticeably longer than those on squama; squama forming a rather small lobe, slightly less in area than axillary lobe.

**Abdomen** somewhat ovoid; tergite 1+2 somewhat narrowed anteriorly; tergite 5 unreduced; tergite 6 small and more or less concealed, well sclerotised; aculeus very slender, not much compressed, with rounded apex.

**Distribution.** Australia: tropical and subtropical Queensland and Northern Territory.

**Notes.** *Aetha* is apparently monotypic, and only females are known.

*Aetha* runs near *Pogonortalis* and *Microepicausta* in the generic key of McAlpine (1973a) and near *Pogonortalis* in that of Malloch (1939a). It differs from *Pogonortalis* in the absence of the lateral occipital bristle, the haired scutellum, the virtual absence of noticeable areas of thoracic pruinescence, the shorter stigmal section of the costa (on subcostal cell), and in the termination of vein 4 before the wing apex. It differs from *Microepicausta* in the extensively pubescent arista, broader thorax, shorter stigmal section of costa, more basally located anterior crossvein, and the termination of vein 4 before the wing apex.

*Aetha cowanae* was initially sorted as a species of *Elassogaster*, but it differs from that genus in its more uniformly convex occiput, presence of distinct fronto-orbital bristles, absence of the lateral occipital bristle, extensively pubescent arista, broader thorax, more extensively haired scutellum, relatively short fore coxa, and different contour of the terminal section of vein 4. *Aetha* also has some resemblance to *Tarfa* n.gen. of the Loyalty Islands, particularly in contour and relations of vein 4. See under that genus for comparison.

*Aetha* differs from all the above genera in possessing a group of setulae on each side of the postscutellum. The only other Australasian platystomatid taxon with setulae

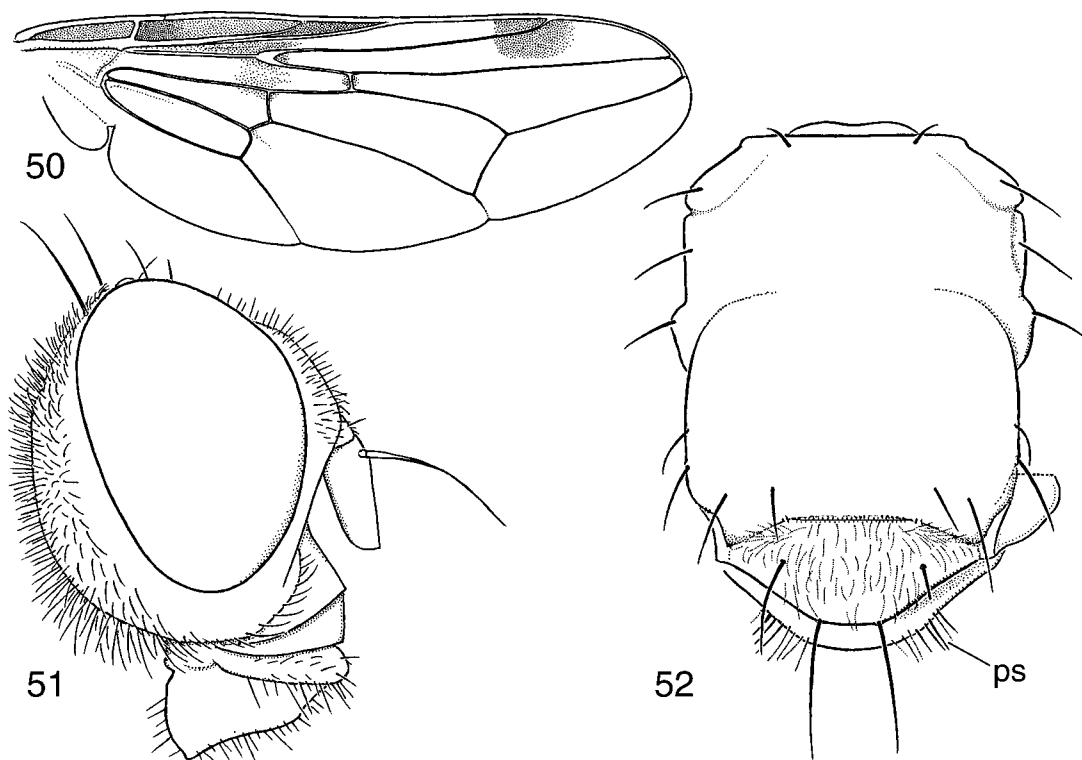
in this position is the subgenus *Plagiostenopterina* of *Plagiostenopterina*, but in the latter they are usually fewer and smaller. *Aetha* differs from *Plagiostenopterina* in the absence of the lateral occipital bristle, absence of hairs on the face, broader thorax, reduced thoracic pruinescence, shorter fore coxa, much longer second basal cell, largely unpigmented first basal cell, and more extensive pubescence on the arista. *Aetha* and subgenus *Plagiostenopterina* are not so close morphologically, and presumably phylogenetically, as to allow any probability that the setulosity of the postscutellum is a homologous condition in the two taxa.

The generic name is latinised from the Greek *aithos*, burnt, in reference to the dark coloration, and is feminine.

***Aetha cowanae* n.sp.**

Figs. 50–52

**Material examined.** HOLOTYPE, ♀, Northern Territory: Mudginberri, near Jabiru, iii–iv.1971, Manitoba trap, A.L.D., H.A.S. (ANIC). PARATYPES, Northern Territory: 2 ♀♀, Black Point, Cobourg Peninsula, i, ii.1977, E.D.E., T.A.W. (AM, ANIC); 1 ♀, Wollgorang (Homestead), c. 17°13'S 137°57'E, ix.1930, T.G.C. (ANIC).



**Figures 50–52.** *Aetha cowanae* n.sp. 50, wing. 51, head. 52, thorax (setulae of mesoscutum omitted); ps, postscutellar setulae.

**Other material.** Queensland: 1 ♀, Peach Creek, near Coen, xi.1979, M.S.M., B.J.M. (AM); 1 ♀, Charleville–Bollon Road, 70 km SE of Charleville, 26°52'S 146°35'E, x.1991, G.D. (AM).

**Description** (♀). Appearance and habitus resembling those of the familiar *Pogonortalis doclea* (Walker). *Coloration* predominantly black and somewhat shining; major bristles of head and thorax black; hairs of most parts whitish. Postfrons, face, parafacial, anterior part of cheek, and antenna brownish-tawny; eye almost encircled by narrow whitish-pruinescent stripe. Prelabrum greyish brown; palpus brownish, with tawny apex, with mainly black hairs above and more numerous white hairs below. Pleurotergite largely grey-pruinescent; thorax otherwise almost without pale pruinescent zones. Legs black to blackish brown. Wing hyaline; both costal cells, base of marginal cell, large blotch at end of vein 2, and lighter zone near middle of first basal cell brown; axillary lobe and squama white. Halter dark brown. Abdomen without pale pruinescent zones on tergites.

*Head.* Eye 0.67–0.71 as long as high; height of cheek 0.17–0.18 as high as eye; occipital region extensively haired, but postocular setulae undifferentiated.

*Thorax.* Mesoscutum, humeral callus, notopleural region, mesopleuron, pteropleuron, sternopleuron, and dorsal surface of scutellum extensively haired. Wing: cell-4 index = 0.34–0.37.

*Abdomen.* Tergite 5 only slightly shorter than tergite 4.

*Dimensions.* Total length 5.2–6.3 mm; length of thorax 2.0–2.4 mm; length of wing 4.1–4.7 mm.

**Distribution.** Northern Territory: widely distributed in less arid districts; Queensland: Cape York Peninsula and Charleville district in southern inland (isolated records).

**Notes.** *Aetha cowanae* resembles *Pogonortalis doclea* in superficial appearance, at least as dried material. In the field it should be easily distinguished by the large preapical dark wing spot and lack of an apical spot.

Locality data indicate at least seasonally dry habitats. The Peach Creek locality includes riverine forest (M.S. Moulds, pers. comm.).

The specific epithet refers to Sally Cowan who has assisted in many of my dipterous projects.

### Genus *Pogonortalis* Hendel

Fig. 53

*Pogonortalis* Hendel, in de Meijere, 1911: 370 (footnote). Type species (monotypy) *Pogonortalis uncinata* de Meijere.

*Pogonortalis*.–Hendel, 1914a: 16, 84–85. Type species given twice in error as *Pogonortalis barbifera* Hendel (not originally included) = *Trypeta doclea* Walker.

*Pogonortalis*.–Hendel, 1914b: 6. Type species given in error as *Pogonortalis barbata* Hendel, sic (not originally included) = *Trypeta doclea* Walker.



**Figure 53.** *Pogonortalis doclea* (Walker), male. After Hendel (1914a), retouched.

**Description.** Hendel (1914a) gave a detailed description, but the particular characters of *Pogonortalis similis* Hendel should be discounted, as that species is now placed in *Plagiostenoptera* (see McAlpine, 1973a). The following notes supplement Hendel's description.

*Male abdomen.* Surstyli short; preglans sharply defined, separated from the more strongly sclerotised stipe by a constriction; glans simple, short, stoutly ovoid; bulb little developed; paired terminal filaments long, subequal.

*Female abdomen.* Tergites 4 and 5 large; tergite 6 very short and generally concealed; spiracles 3, 4, and 5 in pleural membrane close to lateral margins of tergites; ovipositor sheath rather short; aculeus slender, obtuse, not compressed.

**Distribution.** Australasian Region: Micronesia—Guam; Australia—southern and eastern parts, Lord Howe Island; Norfolk Island. Oriental Region: Java. Nearctic Region: California (introduced).

**Notes.** I regard Hendel, not de Meijere, as the author of *Pogonortalis*, because the latter quoted the descriptive statements for the genus from a letter from Hendel, who originated the name.

Previously (McAlpine, 1973a: 31) I expressed doubt as to the relationships of the type species, *Pogonortalis uncinata* de Meijere. Since then I have examined type material (AMST) and confirmed its close relationship to *Pogonortalis doclea* and the consequent stability of the generic name.

A key to the species was given by Paramonov (1958), but he included *Pogonortalis similis* Hendel, now placed

in *Plagiostenoptera*, and the species *Pogonortalis hians* Schneider & McAlpine, 1979 should be added. Six species are described, and I am not aware of any undescribed species. *Pogonortalis communi* Paramonov is still only known to me from the holotype.

All the species have a low anteroventral keel at about the distal third of the hind femur, but this may be little developed in diminutive specimens. The male genitalia of *Pogonortalis doclea* are illustrated by Steyskal (1961).

*Pogonortalis doclea* is very common in gardens in Sydney and other Australian towns. Adults of *P. doclea* and *P. howei* Paramonov are attracted to fresh mammalian dung for feeding.

Some observations on sexual behaviour of *Pogonortalis doclea* have been made (McAlpine, 1973b), and fighting between males of this species has been recorded (McAlpine, 1975).

### Genus *Apactoneura* Malloch

Fig. 54

*Apactoneura* Malloch, 1930b: 223. Type species (original designation) *A. flavicornis* Malloch.

**Description.** Medium-sized to rather large, moderately elongate flies, reminiscent of *Plagiostenoptera* in habitus, largely black, with heavy dark wing markings.

**Head** slightly higher than long; face with slight development of median carina on upper part only, with low, rounded, saddle-like median elevation, without hairs; facial ridge almost without hairs, except where it meets peristomial series; parafacial without hairs, but with well-developed pubescence-pruinescence; the following bristles present: inner and outer vertical, small postvertical and ocellar, two moderately small reclinate fronto-orbitals, postgenal; lateral occipital bristle absent. Antenna, excluding arista, much shorter than face; segment 3 little more than twice as long as wide; segment 6 with sparse, minute pubescence on basal part only, in male apically spatulate. Prelabrum moderately developed; palpus rather long and narrow.

**Thorax.** Mesoscutum c. 1.2 times as long as wide, without pruinescent median stripe; scutellum slightly longer than a semicircle, slightly flattened dorsally and finely rugose,

without hairs, pubescent on free margins; mesopleuron pruinescent on upper part only; sternopleuron with pale pruinescent stripe along upper margin, extending to fore-coxal cavity; pteropleuron and posterior pleural sclerites pruinescent; the following thoracic bristles present; humeral, 1+1 notopleurals, supra-alar, postalar, posterior intra-alar, small dorsocentral (near scutellar suture), prescutellar acrostichal, three long scutellars, mesopleural; scapular bristles absent. Posterior bridge of hind coxa haired; fore femur with an extensive series of thick posteroventral spines and at most rudimentary anteroventral ones; mid femur with few anteroventral and posteroventral spines distally; hind femur longer and thicker than other femora, with a well-developed series each of anteroventral and posteroventral spines not extending to base. Wing: setulae on veins (other than costa) restricted to dorsal surfaces of vein 1 (beyond humeral crossvein) and vein 3; section of costa on subcostal cell c. as long as that on second costal cell and c. twice as long as that on marginal cell (Fig. 54); supernumerary crossvein dividing first posterior cell meeting vein 4 just beyond discal crossvein; anterior crossvein meeting vein 4 slightly beyond apical third of discal cell; basal cells and alula entirely microtrichose; squama forming a rounded lobe, only slightly greater in area than axillary lobe.

**Abdomen.** Male: tergite 5 as long as tergite 4; preglans little differentiated; glans stoutly subcylindrical; bulb little developed; paired terminal filaments subequal, each less than half as long as glans. Female: spiracle 5 located in pleural membrane, well below lateral margin of tergite 5; tergite 6 small but well sclerotised; ovipositor sheath moderately long, with long posterior marginal bristles; aculeus slender, obtuse.

**Distribution.** Tropical Polynesia: Samoan Islands.

**Notes.** *Apactoneura* has one recognized species, but possible differences between the populations on Savaii and Upolu are yet to be evaluated.

*Apactoneura* is readily recognizable from its wing venation and ventral spination on all femora, combined with the enlargement of the hind femur. No other platystomatid genus in this Region has a regular crossvein dividing the first posterior cell. This condition is consistent in the five specimens known to me, from both island populations.

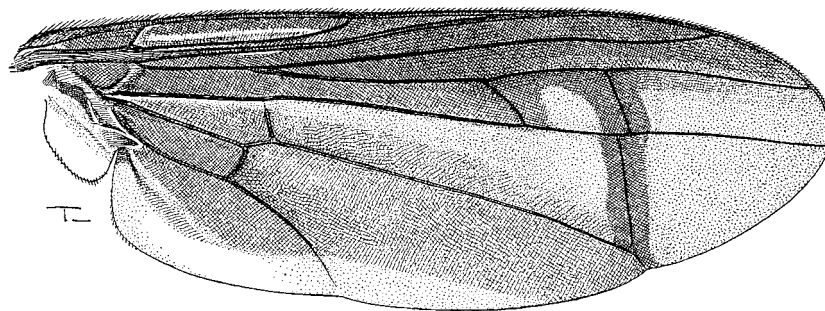


Figure 54. *Apactoneura flavicornis* Malloch, wing. After A.J.E. Terzi, in Malloch (1930b).

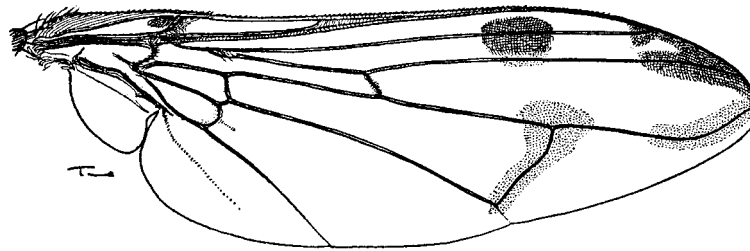


Figure 55. *Meringomeria neurostigma* (Bezzi), wing. After A.J.E. Terzi, in Bezzi (1928).

However, the relationship to other platystomatine genera is obscure. *Apactoneura* resembles the Oriental genus *Icteracantha* Hendel in the presence of stout ventral spines on all femora, presence of well-developed hairs on the posterior bridge of the hind coxa, and in the general habitus, but differs in the lack of forward curvature in the distal section of vein 4, the presence of three instead of two pairs of bristles and the absence of dorsal hairs on the scutellum. The genus also resembles *Lamprogaster*, but no *Lamprogaster* species known to me has well-developed femoral spines or so well-developed posterior hairing on the hind coxa; also the squama is consistently larger in *Lamprogaster* and the facial carina is distinctly margined on each side. *Apactoneura* differs from *Plagiostenoptera* in the lack of hairing on the face, and absence of apical forward curvature of vein 4.

### Genus *Meringomeria* Enderlein

Fig. 55

*Meringomeria* Enderlein, 1924: 108. Type species (original designation) *Dacus trivittatus* Walker.  
*Charax* Walker, 1861a: 325 (preocc. *Charax* Gronovius, 1763).  
 Type species (monotypy) *C. planidorsum* Walker.  
*Stenopterella* Malloch, 1931: 13, 16 (as subgenus of *Plagiostenoptera*). Type species (original designation) *Dacus trivittatus* Walker.

**Description.** Flies of elongate habitus, with rather slender legs of moderate length.

**Head** markedly higher than long; face pruinose, without hairs, typically with rounded, saddle-like carina, which is depressed near middle (Oriental species), or with carina broadly almost flat-topped on upper part (Fijian species); facial ridge with fine uniseriate hairs near lower extremity only; parafacial without hairs; occiput moderately convex below, concave to almost flat above, haired mainly on dorsolateral and lower parts; the following bristles present: inner and outer vertical, minute ocellar, lateral occipital, postgenal; fronto-orbitals minute or absent; postvertical absent. Antenna about as long as face on median line, or slightly longer in some males (Oriental species), or distinctly shorter than face (Fijian species, females only known); segment 3 elongate, usually distally tapered but not pointed; segment 6 filiform, usually with basal pubescence (Oriental species), or plumose on basal part (Fijian species).

Prelabrum moderately large and prominent, pruinose and often also finely rugose (Oriental species), or almost smooth and shining (at least one Fijian species); palpus moderately developed, broadly rounded at apex.

**Thorax.** Mesoscutum longer than wide, extensively pruinose, with or without pair of broad, dark, shining longitudinal stripes (Oriental species), or with relatively little pruinose and largely shining (Fijian species); mesopleuron extensively rather thinly pruinose (Oriental species), or with dense pale pruinose restricted to posterior part (Fijian species); scutellum somewhat convex, more or less pruinose, with few lateral hairs only; the following thoracic bristles present: one well-developed lateral scapular (Oriental species), or several small such bristles (at least one Fijian species), humeral, 1+1 notopleurals, supra-alar, postalar, posterior intra-alar, dorsocentral, two pairs of scutellars, mesopleural; paramedian scapular present or absent. Posterior bridge of hind coxa with fine hairs; fore femur with dorsal bristles, with long posteroventral bristles (Oriental species), or latter scarcely differentiated (one Fijian species); mid femur without bristles; hind femur with dorsal bristles beyond mid-length; mid tibia with apical ventral spur. Wing with dark markings quite restricted to costal region (Oriental species), or (in Fijian species) either with more extensive markings (Fig. 55) or completely without dark markings; membrane largely microtrichose, except for variable bare zones in basal and anal cells; section of costa on subcostal cell considerably longer than that on second costal cell (Oriental species), or scarcely longer (Fijian species); anterior crossvein meeting vein 4 near or slightly beyond mid-length of discal cell; distal section of vein 4 strongly curved forward near distal extremity to meet costa at or slightly behind apex of wing; vein 3 also curved to a smaller extent near apex to converge with vein 4; vein 5 without setulae, its distal section short (Oriental species), or very short (less than one quarter length of discal crossvein) in Fijian species; second basal cell c. one quarter to one third as long as discal cell; anal crossvein curved, sometimes more strongly so on anterior part; axillary lobe moderately developed; squama forming a short lobe, scarcely greater in area than axillary lobe.

**Abdomen** ovoid to subcylindrical, not significantly narrowed anteriorly. Male abdomen (unknown for Fijian species): surstyli elongate, straight, apex of outer surstylus not extending much beyond that of inner one; aedeagus with preglans differentiated but simple; glans rather stoutly

subcylindrical; bulb little developed; paired terminal filaments present; cerci moderately large. Female abdomen (Oriental species): spiracles 4 and 5 situated within respective tergites and at least the latter visible dorsally; ovipositor sheath well developed, scarcely tapered posteriorly; aculeus very broad and compressed, obtuse. Female abdomen (available Fijian specimen): spiracles not situated in tergites, those of segment 5 somewhat approximated close behind posterior margin of tergite 5; ovipositor sheath very like that of Oriental species, but aculeus not visible.

**Distribution.** Australasian Region: Fiji. Oriental Region: southern China (Guangdong = Kwangtung Province; Taiwan) and Sikkim to Palawan and Western Indonesia. There appear to be no records from localities between Wallace's Line and Fiji.

**Notes.** Although *Meringomeria* (or *Stenopterella*) has often been included as a subgenus of *Plagiostenoptera*, Malloch (1931) found difficulty in defining such a diffuse genus, and more recently *Meringomeria* has been given generic status (McAlpine, 1973a; Evenhuis, 1989). Steyskal (1966) provided a useful key to species, but it seems to me that one or two of the categories keyed may be complexes of species rather than single species. This is suggested by the wide distributions accepted for some species, and a study of limited material, representing c. six Oriental species now available to me.

There would seem to be at least two species, one undescribed, in Fiji, as the only Fijian specimen at present available differs from *Meringomeria neurostigma* (Bezzi, 1928) in the absence of wing markings (and perhaps in several other characters, as suggested by Bezzi's description). These Fijian species are more similar to each other than to the Oriental species, as indicated by my comparisons in the above redescription, but to what degree they need taxonomic segregation can only be decided when better study material is available.

## Genus *Plagiostenoptera* Hendel

Figs. 56, 57

*Plagiostenoptera* Hendel, 1912a: 3. Type species (original designation) *Dacus aeneus* Wiedemann.

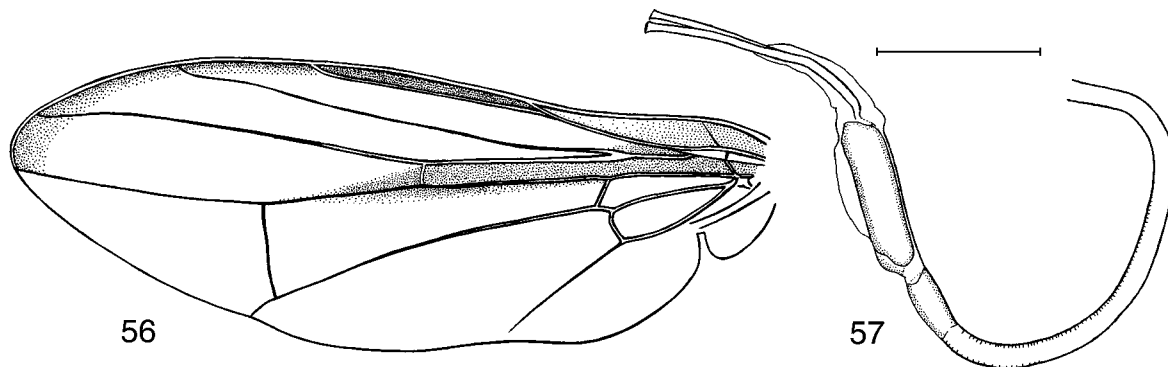
*Stenopterosoma* Malloch, 1939a: 114. As subgenus of *Plagiostenoptera*. Type species (monotypy) *P. orbitalis* Malloch (= *Dacus lativentris* Walker).

**Description.** See McAlpine (1973a).

**Distribution.** Very widely distributed in the tropics of the Old World. Australasian Region: extending from the Moluccas to the Solomon Archipelago; Tropical Polynesia—Samoa Islands; tropical Australia—coastal and subcoastal districts of Queensland and Northern Territory.

**Notes.** In accordance with McAlpine (1973a) the taxa *Carolimyia* Malloch, *Meringomeria* Enderlein, and *Peronotrochus* Enderlein, which are sometimes given as subgenera of *Plagiostenoptera*, are now excluded from the genus. See Steyskal (1977) for synonymy of these taxa. Steyskal (1980) has corrected the original citation of the genus and the means of type designation. McAlpine (1973a) reviewed the Australian species of the genus, but I am now very doubtful if populations in New Guinea, Solomon Archipelago, and Australia are correctly referred to *P. enderleini* Hendel. Of the two subgenera represented in Australasia, *Plagiostenoptera* s.str. is also widely distributed in the Afrotropical and Oriental Regions, while *Stenopterosoma* Malloch is known only from New Guinea and northern Queensland.

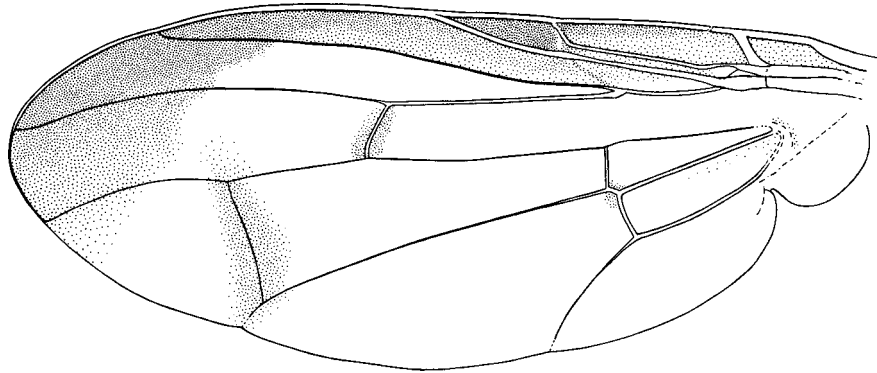
Adults of subgenus *Plagiostenoptera* are often numerous in disturbed vegetation or the interface of forest and cultivation. Those of subgenus *Stenopterosoma* are found mainly in rainforest. Adults of both subgenera are attracted to fresh mammalian dung.



Figures 56–57. *Plagiostenoptera* (*Stenopterosoma*) *claudiana* McAlpine. 56, wing. 57, aedeagus (scale = 0.5 mm).

**Key to Australasian subgenera of *Plagiostenoptera***

- 1 Scutellum extensively setulose; postscutellum with fine setulae on each side; fronto-orbital bristles absent ..... *Plagiostenoptera* s.str.  
 — Scutellum and postscutellum without setulae; two pairs of fronto-orbital bristles present ..... *Stenopterosoma*



**Figure 58.** *Pseudepicausta chalybea* (Doleschall), wing.

**Genus *Pseudepicausta* Hendel**

Fig. 58

*Pseudepicausta* Hendel, 1912b: 14. Type species (designated Hendel, 1914a) *Herina chalybea* Doleschall.

**Description.** See Hendel (1914a). That description, together with characters cited above in my key, should enable identification of the Australasian and Oriental species.

**Distribution.** Australasian Region: Moluccas; New Guinea; New Britain; Solomon Archipelago. Also Oriental and Afrotropical Regions.

**Notes.** *Pseudepicausta* seems to be a well defined genus within the Australasian and Oriental Regions. Some Afrotropical material (e.g., from Madagascar) is slightly less typical, e.g., in having better developed fronto-orbital bristles and shorter ovipositor sheath. However, I do not have sufficient Afrotropical species available for investigation of their relationships.

Malloch (1939a) gave a key to species of New Guinea and nearby islands, but included *P. lagarosia* Hendel, which belongs in *Pseudocleitamia* (q.v.). Evenhuis (1989) listed nine Australasian species, but the list includes *P. rufitarsis* (Macquart, 1847, as *Tephritis*). The latter is not recognizable from the brief description, and the type locality (Nouvelle Holland = mainland Australia) is beyond the known range of *Pseudepicausta*. The holotype (Bigot collection, OX, examined by author September 1998) is in exceedingly poor condition with almost no significant features visible, but is very doubtfully referred to the genus *Rivellia*. Without a thorough revision of the genus, it is difficult to estimate how many of the other listed species are valid. I have seen at least one probably undescribed species from southern Papua New Guinea (AM).

**Genus *Pseudocleitamia* Malloch**

Fig. 59

*Pseudocleitamia* Malloch, 1939a: 104. Type species (original designation) *P. setigera* Malloch.

**Description.** A brief description was given by Malloch, and the description of *Pseudepicausta lagarosia* Hendel (1914b: 118–119), now included in *Pseudocleitamia*, indicates some characters of the male. I do not have on hand enough material for a redescription. The genus is not represented in BPB and Australian collections.

**Distribution.** New Guinea: Aru Islands; Papua New Guinea—mainland (Madang and Oro Provinces).

**Notes.** The nominal species *Dacus pompiloides* Walker, 1859, *Pseudepicausta lagarosia* Hendel, 1914a, and *Pseudocleitamia setigera* Malloch, 1939a, are referable to this genus. I have examined the types of *D. pompiloides* and *Pseudocleitamia setigera* (BM). Hendel (1914a: pl. 6, fig. 121) and Malloch (1939a: pl. 4, fig. 5) each illustrated the wing of their holotypes, showing the quite distinctive pattern and venation of *Pseudocleitamia*. Among the more distinctive characters mentioned by Malloch for the genus are “mesopleura, sternopleura, pteropleura with numerous short stout bristles”, and “the very narrow upper portion of the frons”. The latter condition is not atypical of *Pseudepicausta* species, but the multiple bristling of the pleura is not recorded in that genus, nor is it present in the type of *Pseudocleitamia pompiloides* (and probably that of *P. lagarosia*), in which the thoracic pleura have slender hairs and only the usual bristles. The type of *P. lagarosia* has a series of broadened, lanceolate posteroventral bristles on the fore femur, but the fore femoral bristles of *Pseudocleitamia setigera* and *P. lagarosia* are not thus modified. The types of *P. pompiloides* and *P. lagarosia*

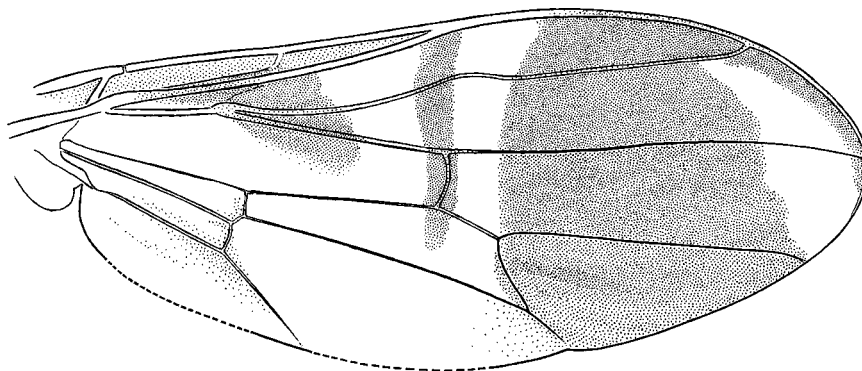


Figure 59. *Pseudocleitamia setigera* Malloch, wing of holotype.

are males, whereas that of *Pseudocleitamia setigera* is a female. Hardy (1959) examined the type of *D. pompiloides* and placed it in *Pseudepicausta*, but he did not make comparison with *Pseudocleitamia lagarosia* nor mention the genus *Pseudocleitamia*. Evenhuis (1989) made the combination *Pseudocleitamia pompiloides* (on my suggestion) and gave *P. lagarosia* as a junior synonym, leaving *P. setigera* as a separate species.

From my studies of morphology of many platystomatine taxa, I think that the presence of numerous stout pleural bristles as in the type of *Pseudocleitamia setigera* is likely to be female-restricted, whereas the presence of compressed, lanceolate femoral bristles, as in the type of *P. lagarosia*, is likely to be male-restricted. On the other hand, there are differences which suggest that these species and *P. pompiloides* are distinct from one another. *Pseudocleitamia setigera* differs from the other two species in having a marked sinuosity in vein 2 just before mid-length (not very clearly shown in Malloch's fig. 5, but see my Fig. 59 based on same specimen). *Pseudocleitamia setigera* differs from *P. pompiloides* in having the hyaline prediscal band quite bare from the costa to halfway across the discal cell; also the sub-basal hyaline zone in the submarginal cell, smaller adjacent zone in marginal cell, and a substantial adjacent zone in discal cell are bare, whereas these zones are entirely microtrichose in the type of *P. pompiloides*. The type of *P. pompiloides* lacks the modified lanceolate femoral bristles present in that of *P. lagarosia* (confirmation by J. Chainey in litt.), though both specimens are males.

With each of the apparent species of *Pseudocleitamia* known to me from only one specimen, it is not possible adequately to describe the range of morphological variation in the genus nor fully to characterise the species.

### Genus *Lamprophthalma* Portschinsky

*Lamprophthalma* Portschinsky, 1892: 16–17, pl. 1, figs. 7, 7a.  
Type species (monotypy) *L. metallica* Portschinsky.

**Description.** The annotated description by Hendel (1914a: 45, largely quoted from Portschinsky) is probably adequate for identification of this marginally or doubtfully Australasian genus. I can add that the frontal tubercle is quite variable in development among Oriental species, but

this variation may not indicate that these species are not closely interrelated. The face has fine hairs (macrotrichia) in some species, but not in others. The putative hind coxal spine, figured and described by Portschinsky, is probably really on the trochanter and male-restricted. It is absent in some species. The statement “nervi omnes inermes” does not apply to veins 1 and 3.

**Distribution.** Australasian Region: Moluccas—?Seram, see below. Afrotropical Region. Palaeartic Region: Iran; China; Japan. Oriental Region: widely distributed.

**Notes.** The only Australasian record for *Lamprophthalma* known to me is that of the type specimen of *Dacus sepedonoides* Walker, which I have not examined. Hardy (1959: 181) corrected the type locality from “Waigiou” Island to Ceram (Seram), and made the combination *Lamprophthalma sepedonoides* in accordance with the placement of the type in the BM collection. As this supposed type is possibly not from the given type locality, and as Hardy did not appear to vouch for its generic placement, the Australasian occurrence of this genus needs confirmation.

I transfer the two following Oriental species from *Plagiostenoptera* to *Lamprophthalma* from study of type material (AMST): *Lamprophthalma egregia* (de Meijere, 1924: 41–42) n.comb.; *Lamprophthalma medionotata* (de Meijere, 1924: 40–41) n.comb.

### Genus *Conicipithea* Hendel

Fig. 60

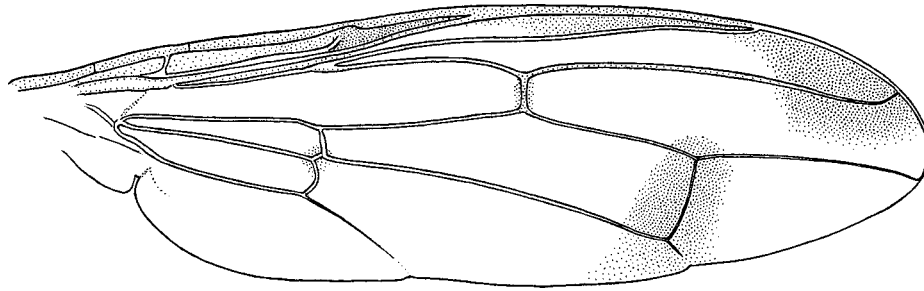
*Conicipithea* Hendel, 1912b: 14. Type species (monotypy) *Dacus addens* Walker.

**Description.** Hendel (1914a) gave a fairly detailed description, which I supplement from a specimen of *C. addens* from Kendari, south-east Sulawesi (AM).

**Head.** Face without hairs; parafacial with several short setulae on central part.

**Wing.** Costa much narrowed but not broken at end of subcosta.





**Figure 60.** *Conicipithea addens* (Walker), wing of male (Sulawesi, AM).

**Male postabdomen.** Preglans differentiated, but not separated from stipe by a constriction; glans narrowly elongate, subcylindrical; paired terminal filaments very short.

**Distribution.** Australasian Region: Moluccas—Ambon. Oriental Region: Sulawesi (Celebes).

**Notes.** *Conicipithea* is a little known but easily recognized genus, the very long antenna with black setulae on segment 3 and the relatively long hairs on the suprasquamal ridge provide a unique character combination among Australasian platystomatids. The haired suprasquamal ridge and flat facial carina suggest a relationship to *Duomyia*, but *Conicipithea* differs from that diverse purely Australian genus in the setulose antennal segment 3, the much more extensively haired segment 6, the narrowed costa at the end of the subcosta, and the relatively large mesopleural bristle.

It has been assumed that all available material of *Conicipithea* represents *C. addens*, but no direct comparison seems to have been made between Sulawesi and Ambon specimens. The wing venation of my single specimen from Sulawesi (Fig. 60) looks a little different from that in Hendel's figure of a specimen from Ambon (1914a: pl. 4, fig. 73).

### Genus *Antineura* Osten Sacken

Figs. 61, 62

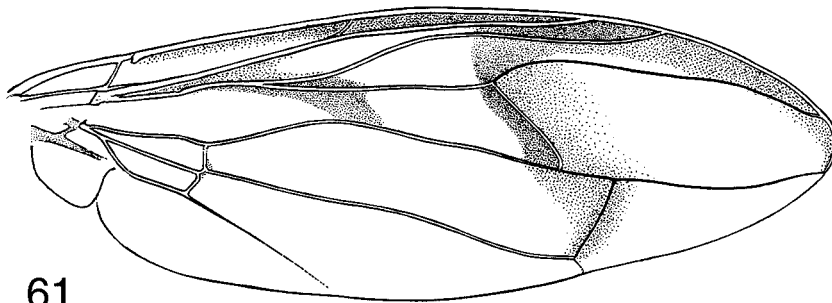
*Antineura* Osten Sacken, 1881b: 134. Type species (designated Hendel, 1914a) *A. stolata* Osten Sacken.

*Antineura*.—Hendel, 1914a: 12, 40–42.

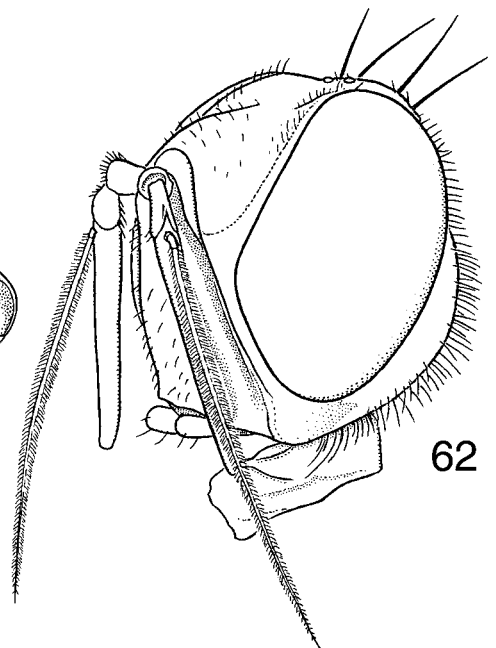
*Adantineura* Hendel, 1914a: 41 (as subgenus of *Antineura*, no included species). Type species (designated Evenhuis, 1989) *Antineura biroi* de Meijere.

*Adantineura*.—Hendel, 1914b: 32–34 (four included species).

**Description.** Hendel (1914a) gave a detailed description, but this is based mainly on species of subgenus *Adantineura*, because the two species of *Antineura* s.str. from the Philippines were known to him only from Osten Sacken's descriptions, as evidenced from the fact that he only quoted Osten Sacken's (1882) descriptions, without citing material examined (Hendel, 1914b: 32–33). The following supplementary data are derived from species of both subgenera, but I only have females of subgenus *Antineura*.



61



62

**Figures 61–62.** 61, *Antineura* (*Adantineura*) sp. (Wewak, AM), wing. 62, *Antineura* (*Adantineura*) *biroi* de Meijere, head.

**Head.** Postfrons broadly convex on anterior part, depressed behind convexity; face with broadly rounded, transversely grooved, finely haired carina for whole length.

**Thorax.** Humeral bristle absent; mesopleural bristle well developed (subgenus *Antineura*), reduced or absent (subgenus *Adantineura*). Wing: veins 3 and 4 distally convergent; stem of veins 2 and 3 (base of radial sector) with distinct flexure before (subgenus *Antineura*) or beyond (subgenus *Adantineura*) mid-length, section beyond flexure thicker and armed with a series of long setulae.

**Male postabdomen.** Aedeagus relatively simple, with slender stipe, no differentiated preglans, simple rather compact glans, and pair of rather short, equal terminal filaments.

**Female postabdomen.** Tergite 5 large; spiracle 5 located laterally below margin of tergite; tergite 6 small and separate, or relatively well developed and sometimes laterally fused with sternite 6 to form an annular tergosternite; segment 8 slender; aculeus small, flat, obtuse, with rounded preapical expansion on each side and pair of ventral bristles.

**Distribution.** Australasian Region: Moluccas; New Guinea. Oriental Region: Philippines.

Of the two subgenera, *Antineura* is recorded only from the Philippines. The subgenus *Adantineura* lives in the Moluccas and New Guinea. Williston (1908: fig. 107) published a photograph of a fly determined as "*Antineura* sp. Brazil." This is apparently a richardiid of the genus *Setellia* Robineau-Desvoidy.

**Notes.** There are six nominal species of subgenus *Adantineura* listed as Australasian (Evenhuis, 1989), but the status of those recorded from the western part of the range needs reassessment. I have sorted five distinct species from Papua New Guinea (mainland), apparently including *A. biroi* de Meijere and *A. kerteszi* de Meijere. Specimens determined by Malloch as *A. kerteszi* (see Malloch, 1939a: 104; pl. 4, fig. 4) are probably not that species.

Hendel (1914b) inadvertently referred *A. sericata* Osten Sacken to *Adantineura*, though it was correctly excluded from this subgenus in his key to species. Enderlein (1924: 110) treated *Adantineura* as a separate genus, but has not been followed by others.

The appearance of *Antineura* species suggests mimicry of pompilid wasps. The species of subgenus *Antineura* are particularly large, conspicuous flies.

### Genus *Duomyia* Walker

Figs. 63–67

*Duomyia* Walker, 1849: 800. Type species (designated Hendel, 1914a) *D. obscura* Walker.

*Campigaster* Macquart, 1855: 142. Type species (monotypy) *C. testaceus* Macquart.

*Euchalcota* Loew, 1873: 40. Type species (monotypy) *Senopterina decora* Macquart.

*Helocnemis* Enderlein, 1924: 128. Type species (original

designation) *Chromatomyia apicalis* Walker.

*Duomyza* Malloch, 1929: 507 (as subgenus of *Duomyia*). Type species (original designation) *Duomyia tomentosa* Hendel.

**Description.** See McAlpine (1973a).

**Distribution.** Australia: all states, including Torres Strait Islands and Lord Howe Island—apparently endemic.

The species are very generally distributed. Numerous species, mostly locally endemic, live in south-western Australia, two in the Snowy Mountains of the south-east, one in central Australia, one in the Torres Strait Islands, and one on Lord Howe Island.

**Notes.** *Duomyia* was revised by McAlpine (1973a), but I have now seen at least 106 species, including two species formerly placed in *Rhytidortalis* (McAlpine, 2000) and more than 30 undescribed species. Although *D. rugifrons* (Thomson) and *D. solocifemur* (Enderlein) are not morphologically typical of *Duomyia*, the intermediate characters of several species prevent generic separation on the basis of present knowledge. These few aberrant species could be mostly excluded by restricting *Duomyia* to species with erect hairs on the suprasquamal ridge, but (1) I am satisfied that the relationships of the species thereby excluded are not with *Rhytidortalis*, and (2) I am not prepared to introduce a new genus for such an arbitrary group of species.

Contrary to the use of Evenhuis (1989), the name *Duomyia punctifrons* Malloch, 1929, is invalid under Articles 10.6 and 59.1 of the ICZN (1999). The replacement name *D. montium* McAlpine, 1973a, should be used.

The genus occupies a greater range of habitats than do most other Australian platystomatid genera. Many species inhabit seasonally wet to moderately dry *Eucalyptus* forest or woodland. Some live only in sandy coastal vegetation, and populations may be at risk from habitat destruction. Littoral rainforests harbour more species than upland rainforests.

Adults of some species visit myrtaceous flowers for feeding, e.g., *D. decora* (Macquart) at *Leptospermum*, *D. rugifrons* (Thomson) at *Kunzea*, and *D. lutea* McAlpine at *Astartea*. Adults of several species have been taken at fresh mammalian dung, and many have been collected at light.

### Genus *Euprosopia* Macquart

Figs. 1, 68–71

*Euprosopia* Macquart, 1847: 89–90. Type species (monotypy) *E. tenuicornis* Macquart.

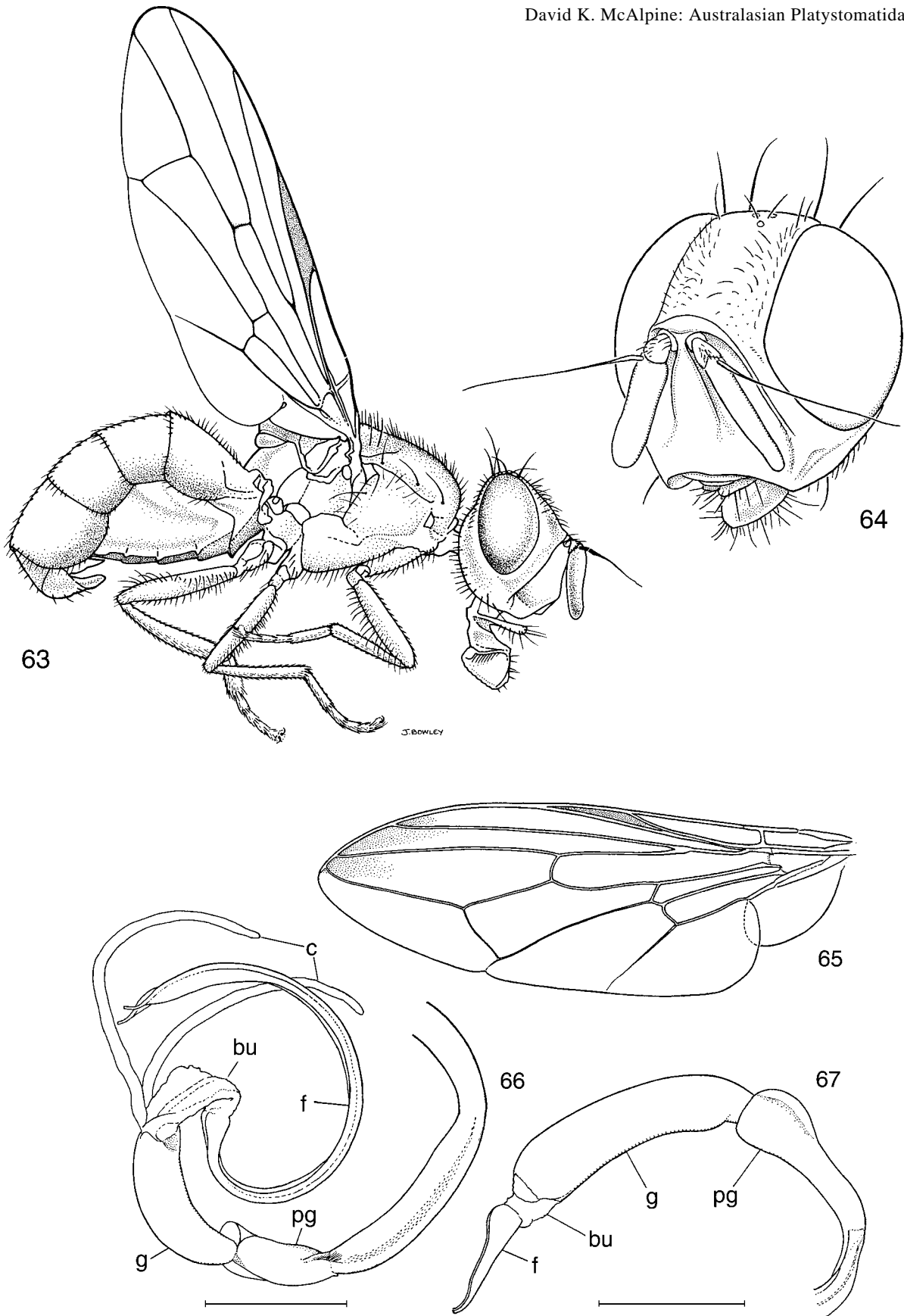
*Pachycephala* Doleschall, 1859: 115–116 (43–44 in reprint), (preocc. *Pachycephala* Vigors, 1825). Type species (designated Enderlein, 1924 for replacement name *Oncoscelia*) *Pachycephala mohniikei* Doleschall.

*Oncoscelia* Enderlein, 1924: 136. New name for *Pachycephala* Doleschall.

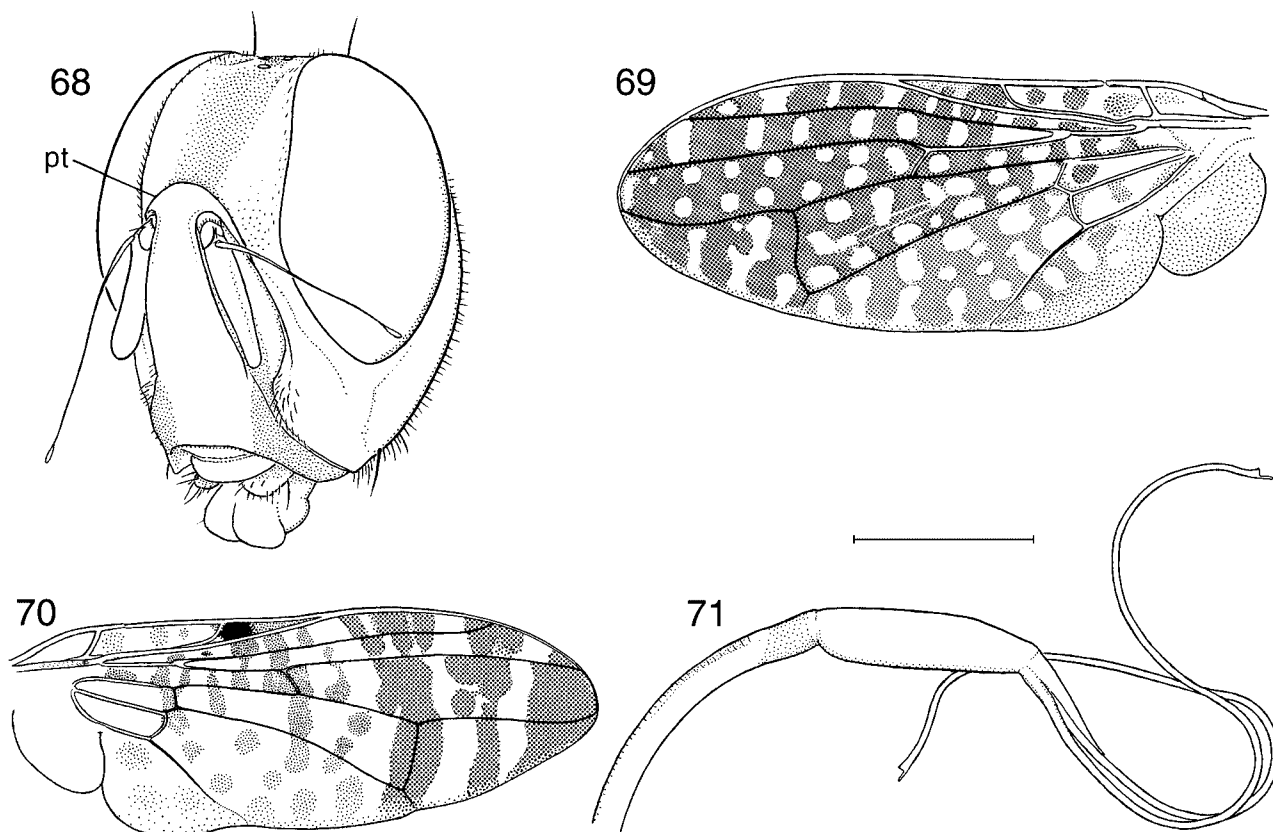
Additional synonymy given by McAlpine (1973a: 132).

**Description.** See McAlpine (1973a).

**Distribution.** Australasian Region: Moluccas; New Guinea; Bismarck Archipelago; Solomon Archipelago; Vanuatu;



**Figures 63–67.** 63, *Duomyia rugifrons* (Thomson), male. 64, *Duomyia* “sp. 17” (Shoal Bay, AM), head of male. 65, *Duomyia* sp. (Binnaway State Forest, AM), wing. 66, *Duomyia chaetostigma* McAlpine, aedeagus (scale = 0.5 mm). 67, *Duomyia lonchaeina* McAlpine, distal part of aedeagus (scale = 0.5 mm). Abbreviations: bu, bulb; c, membranous caeca; f, terminal filaments (paired); g, glans; pg, preglans.



**Figures 68–71.** 68, *Euprosopia armipes* McAlpine, head of male; pt, ptilinal fissure. 69, *Euprosopia rete* McAlpine, wing. 70, *Euprosopia kurandae* McAlpine, wing. 71, *Euprosopia acula* McAlpine, distal part of aedeagus (scale = 0.5 mm).

Australia—all states, but absent from arid and subarid areas, and in Western Australia restricted to far north. Oriental Region: widely distributed. Palaearctic Region: eastern provinces only.

**Notes.** The *Euprosopia* species of New Guinea were revised by Malloch (1939a), those of the Solomon Archipelago by Malloch (1940), and those of Australia by McAlpine (1973a).

This is one of the largest platystomatid genera. Evenhuis (1989) lists 69 species of *Euprosopia* for Australasia. I have sorted 38 undescribed species of New Guinea-Melanesia and a further 15 undescribed Australian species. Steyskal (1977) recorded 26 species for the Oriental Region, to which should be added *Euprosopia robusta* de Meijere, 1916, from Sumatra. Soós (1984) listed four species for the Palaearctic Region, two of which are also in Steyskal's Oriental list. Thus 151 species (including undescribed ones) have been recognized, of which 122 are Australasian, but numerous others undoubtedly exist.

The only species common to the published Oriental and Australasian lists is *E. sexpunctata* (Osten Sacken, 1882, as *Notopsila* sp.) from the Philippines, with which Hendel (1914b) synonymised *Platystoma atomaria* Walker, 1861c, described from Batchian (Bacan, Moluccas). The latter is a primary junior homonym of *Platystoma atomarium* Walker, 1860, from "Makassar" (Sulawesi), a synonym of *Euthyplatystoma rigidum* (Walker, 1856). Hendel, from his listed material, appears only to have seen material of *E.*

*sexpunctata* from the Philippines, and his synonymy of the Moluccan *P. atomaria* was inferred from Walker's inadequate description, which omits many morphological data relevant to species diagnosis in *Euprosopia*. I therefore consider that there is at present no case (1) for assuming the synonymy of *P. atomaria* under *E. sexpunctata*, and (2) for recording any one species of *Euprosopia* for both the Oriental and Australasian Regions.

There is confusion in the listing of *Euprosopia miliaria* Hendel in the Australasian catalogue (Evenhuis, 1989: 490). The lectotype of this species (McAlpine, 1973a: 141) is the holotype of *Platystoma pectoralis* Walker, 1862 (a preoccupied name), and *E. miliaria* is **only** reliably reported from the Moluccas (Gilolo or Halmahera), despite the additional distribution given by Evenhuis. Other material, recorded by Hendel (1914b) and Malloch (1939a) as *E. miliaria*, is referable to other species (see McAlpine, 1973a). Evenhuis also gave *E. diminutiva* de Meijere (1913) as a new synonym of *E. miliaria*. However, de Meijere established no such name; he simply misapplied the name *E. diminutiva* (Walker) to material from West New Guinea, which Hendel (1914a, 1914b) erroneously thought to be conspecific with *E. miliaria*. The material mentioned by de Meijere (1 ♂, 1 ♀, Heuvelbivak, Lorentz River, West New Guinea, AMST) is probably referable to *E. rete* McAlpine.

Sexual behaviour and its relation to sexual dimorphism were described for a few *Euprosopia* species by McAlpine (1973b).

### Genus *Euxestomoea* de Meijere

Fig. 72

*Euxestomoea* de Meijere, 1913: 377. Type species (designated Hendel, 1914a) *Ortalis prompta* Walker.

**Description.** The description by Hendel (1914a) remains largely valid, though the genus is now restricted by transference of *E. bipunctata* Hendel to *Bama*. The principal differences between *Euxestomoea* and *Bama* are listed under the latter genus. Also, *Euxestomoea* consistently has the base of vein 1 bare dorsally, and the second section of vein 4 without sigmoid curvature.

**Distribution.** New Guinea: widely distributed, including Karkar Island. Bismarck Archipelago: New Ireland. Australia: Queensland—Iron Range district (*E. prompta* (Walker), AM).

**Notes.** The last published key to species is that of Malloch (1939a). In addition to the described species *E. prompta* (Walker) and *E. discifera* de Meijere, I have seen an undescribed species from New Ireland (AM). Material from mainland Papua New Guinea shows variation which is not yet assessed taxonomically. *Euxestomoea discifera* appears to have no prescutellar acrostichal bristle and two pairs of dorsocentrals, but it is possible that the posterior dorsocentral is the homologue of the apparent acrostichal of the other species, which has migrated laterad.

### Genus *Bama* n.gen.

**Type species:** *Xiria papuana* Hennig.

**Description** (♂, ♀). Flies of rather stout to slightly elongate build, with legs of moderate length. General appearance and morphology reminiscent of species of *Cleitamia*, *Laglaisia* (females), or *Euxestomoea*. Cuticle of thorax and abdominal tergites sparsely or thinly pruinose, largely shining.

**Head** considerably higher than long, a little wider than high but not sexually dimorphic in this respect; face bare, without carina, in profile concave near or above middle, often slightly convex below; facial ridge with minute hairs in a single series; occiput slightly concave above, moderately convex below; the following cephalic bristles present: inner and outer vertical, two moderately large fronto-orbitals, postgenal; postvertical and ocellar bristles small or poorly differentiated. Antenna, excluding arista, much shorter than face; segment 2 largely bare on medial surface; segment 3 usually apically rounded; segment 6 short-haired for most of length, the hairs either irregularly placed or with tendency to be aligned in a dorsal and a ventral series. Prelabrum well developed but not very deep, its lower margin not receding; palpus moderately to conspicuously long; proboscis stout, with broad prementum and labella.

**Thorax.** Scutellum slightly longer than a semicircle, without ventral marginal hairs; pleurotergite and postscutellum without hairs or setulae; the following thoracic bristles well developed: humeral, 1+1 notopleurals, supra-alar, postalar, posterior intra-alar, dorsocentral, prescutellar acrostichal, three pairs of scutellars, mesopleural; scapular bristle absent or vestigial. Mid coxa with variable armature, which is sometimes specifically distinctive; fore femur with posterodorsal and posteroventral bristles, the latter sometimes enlarged and spinescent; other femora without ventral bristles and spines; mid femur without posterior bristles; hind femur with some weak dorsal bristles; mid tibia with one long apical spur, secondary ones less than half as long; other tibiae without special armature. Section of costa on subcostal cell shorter than to somewhat less than twice as long as that on marginal cell; base of vein 1 (stem-vein, base of R), before humeral crossvein, often with group of dorsal setulae (smaller than in *Euprosopia*, absent in two species); vein 3 with few fine ventral setulae and more numerous dorsal setulae; anterior crossvein often longer than penultimate section of vein 4 (some exceptional species); second section of vein 4 usually with sigmoid curvature, this curvature sometimes very slight; anal crossvein curved to variable degree on anterior part only; squama forming a very short to moderate-sized lobe, its

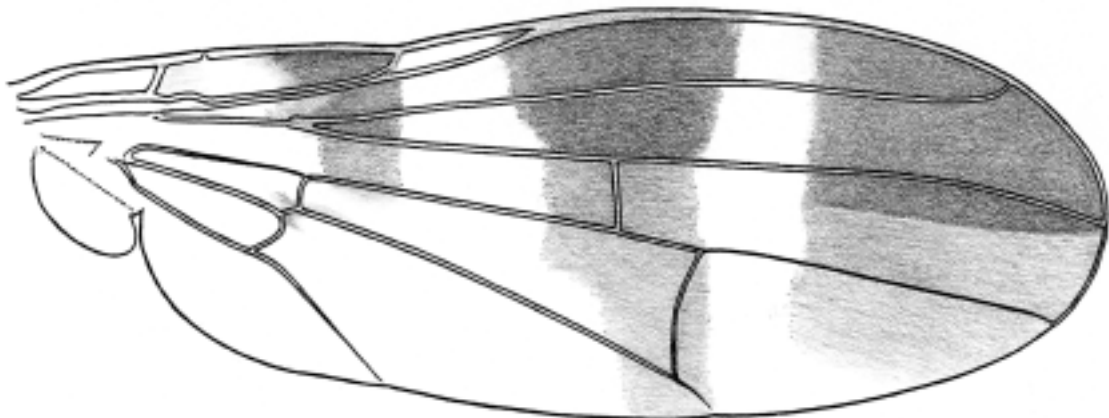


Figure 72. *Euxestomoea prompta* (Walker), wing.

marginal fringe usually longer than that on distal half of axillary lobe, but fringe on sinus between lobes conspicuously longer.

*Abdomen* in male typical of Platystomatinae, rather narrowly ovoid, with tergites 3, 4, and 5 all large, in female with tergite 3 medium-sized to very large and tergites 4, 5, and 6 much reduced, often concealed in dried specimens. Male postabdomen (where known): surstyli rather elongate, typical of the Platystomatinae; aedeagus with short, more or less ovoid glans, membranous lobe on bulb, and two short, unequal terminal filaments. Female postabdomen: aculeus slender, obtuse.

**Distribution.** New Guinea: apparently mainland only. All records and available material are from the eastern half of the island, i.e. mainland Papua New Guinea. I expect that a similar number of species lives in West New Guinea, where the montane Diptera are little known.

**Notes.** This genus includes three previously described species, viz. *Bama bipunctatum* (Hendel, 1914a) (as *Euxestomoea* sp.) n.comb., *Bama papuanum* (Hennig, 1940b) (as *Xiria* sp.) n.comb., and *Bama strigatum* (Hennig, 1940b) (as *Xiria* sp.) n.comb. I have seen type material of all three species. An additional species is described below, and I have also seen seven undescribed species belonging in *Bama*.

*Euxestomoea* differs from *Bama* in having longer, strongly divergent postvertical bristles, lateral occipital bristle present, the medial surface of antennal segment 2 extensively setulose, segment 6 bare on distal half, the mesopleuron and sternopleuron conspicuously pruinose in part, the dorsocentral and intermediate scutellar bristles differently placed, the mid femur with one stout, isolated preapical posterior bristle, the mid tibia with two slightly unequal apical ventral spurs, the anal cell almost entirely microtrichose, tergites 4 and 5 of the female abdomen well

developed and exposed, the aedeagus with relatively short preglans and two terminal filaments of similar length. *Bama* may be less closely related to *Euxestomoea* than to *Cleitamia* and *Laglaisia*, but the two latter have only one fronto-orbital bristle, antennal segment 6 long-haired, no prescutellar acrostichal bristle, more extensive setulae or hairs on the scutellum and pleurotergite, base of vein 1 always without dorsal setulae, the anal crossvein generally more abruptly bent near mid-length, and, in the female, tergites 4 and 5 unreduced.

Hennig (1940b) referred two *Bama* species to *Xiria* Walker. The latter genus has the diagnostic characters of the subfamily Trapherinae as stated by McAlpine (1973a), whereas *Bama* is undoubtedly referable to the Platystomatinae. *Xiria* is not otherwise recorded from east of Wallace's Line, and is readily distinguished from *Bama* in having the facial convexity much more prominent and complex, antennal segment 2 setulose on its medial surface, antennal segment 6 very long-bipectinate, the scutellum extensively haired dorsally, vein 5 setulose dorsally, anal cell entirely microtrichose, in the male the aedeagus without glans and terminal filaments, and, in the female, abdominal tergites 4 and 5 unreduced and the aculeus broad, blade-like.

The species *B. shinonagai* is so different from the majority of *Bama* species, that I initially intended to place it in a separate genus. Though it perhaps constitutes a sister group to the other known species, some of its unusual features occur singly among other *Bama* species, and it has the distinctive aedeagal features of *Bama*. I therefore place it in a separate subgenus of *Bama*.

A series of an undescribed *Bama* species (Moro, Madang Province, BM) was obtained by M.E. Bacchus (pers. comm.) at a point where the nearly dry stream bed is closely roofed over by trees. A newly eclosed specimen of *B. shinonagai* (Myola, Oro Province, J.W.I., AM), is labelled "bamboo".

The generic name is Greek for dye, in reference to the usually conspicuous pigmentation of the wing. It is neuter.

#### Key to subgenera of *Bama*

- 1 Scutellum without setulae, dorsally subshining, with covering of fine pubescence; antennal segment 3 rounded distally; squama forming very short lobe, its area scarcely larger than that of axillary lobe ..... *Bama*
- Scutellum setulose laterally, dorsally glossy, without pubescence; antennal segment 3 distinctly angular dorsoapically; squama larger, almost semicircular ..... *Polimen*

#### Subgenus *Bama* s.str.

Figs. 73–75

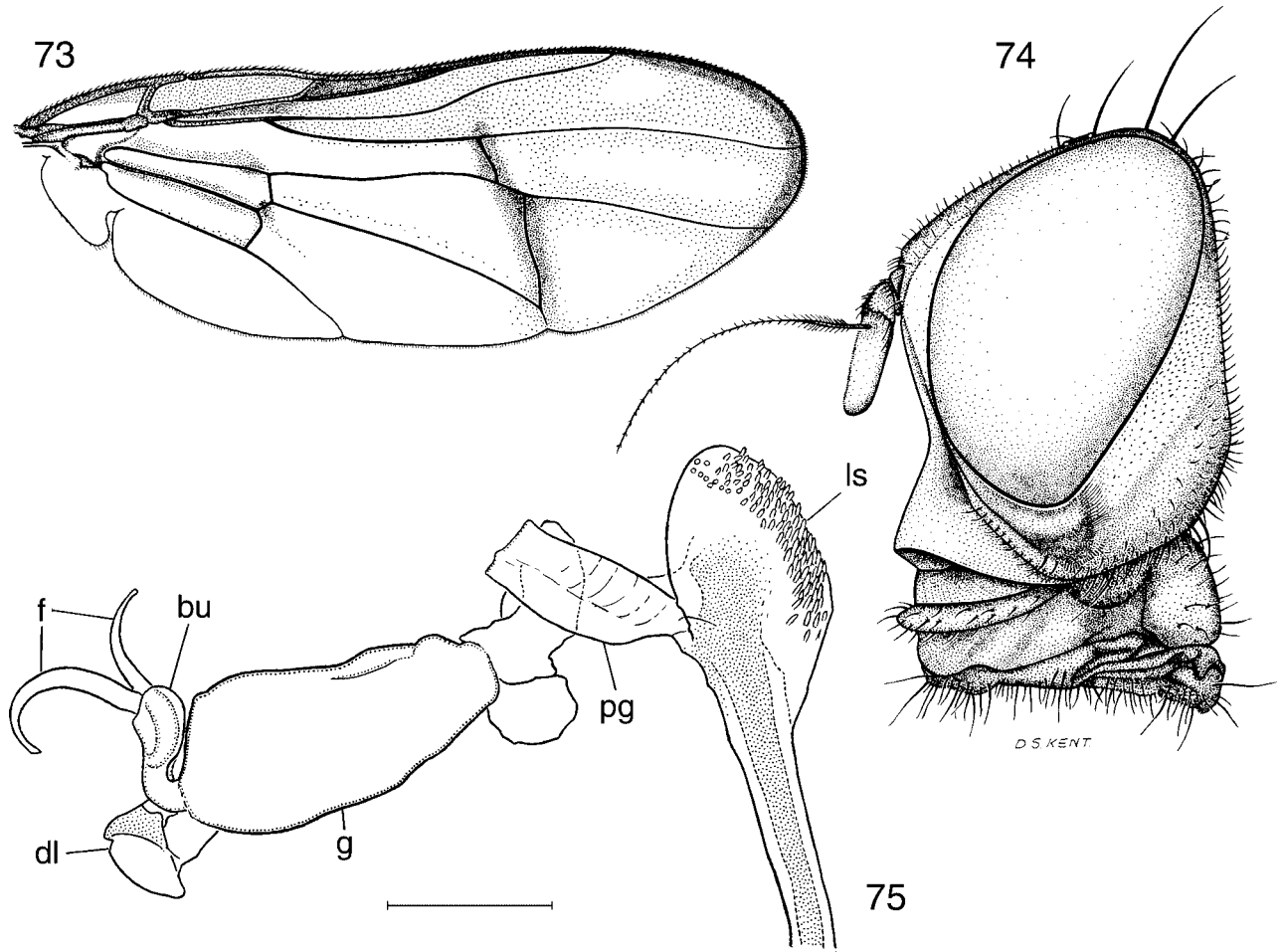
**Diagnostic description.** Scutellum with dorsal fine, translucent pubescence, without setulae; intermediate scutellar bristle not shorter than anterior scutellar; base of vein 1 with fine dorsal setulae (except in one undescribed species); squama forming a very short lobe, its area not or only slightly larger than that of axillary lobe. Female: abdominal tergite 4 greatly reduced, usually more or less concealed in dried material (less reduced, dorsally exposed, c. one sixth as long as tergite 3 in one undescribed species).

This subgenus includes all known species of *Bama*, described and undescribed, except *B. shinonagai*, described below.

#### Subgenus *Polimen* n.subgen.

**Type species:** *Bama shinonagai* n.sp.

**Diagnostic description.** Scutellum setulose dorsolaterally, bare medially, glossy, without dorsal pubescence or pruinose; intermediate scutellar bristle much smaller than anterior scutellar; base of vein 1 without dorsal setulae; squama forming a well-developed lobe, almost as full as a



**Figures 73–75.** *Bama (Bama)* “sp. A” (near Bulolo, AM). 73, wing. 74, head. 75, distal part of aedeagus (scale = 0.2 mm). Abbreviations: bu, bulb; dl, distal lobe; f, terminal filaments; g, glans; ls, terminal sclerotised lobe of stipe; pg, preglans.

semicircle. Female: abdominal tergite 4 c. one fifth as long as tergite 3, dorsally exposed; tergite 5 shorter.

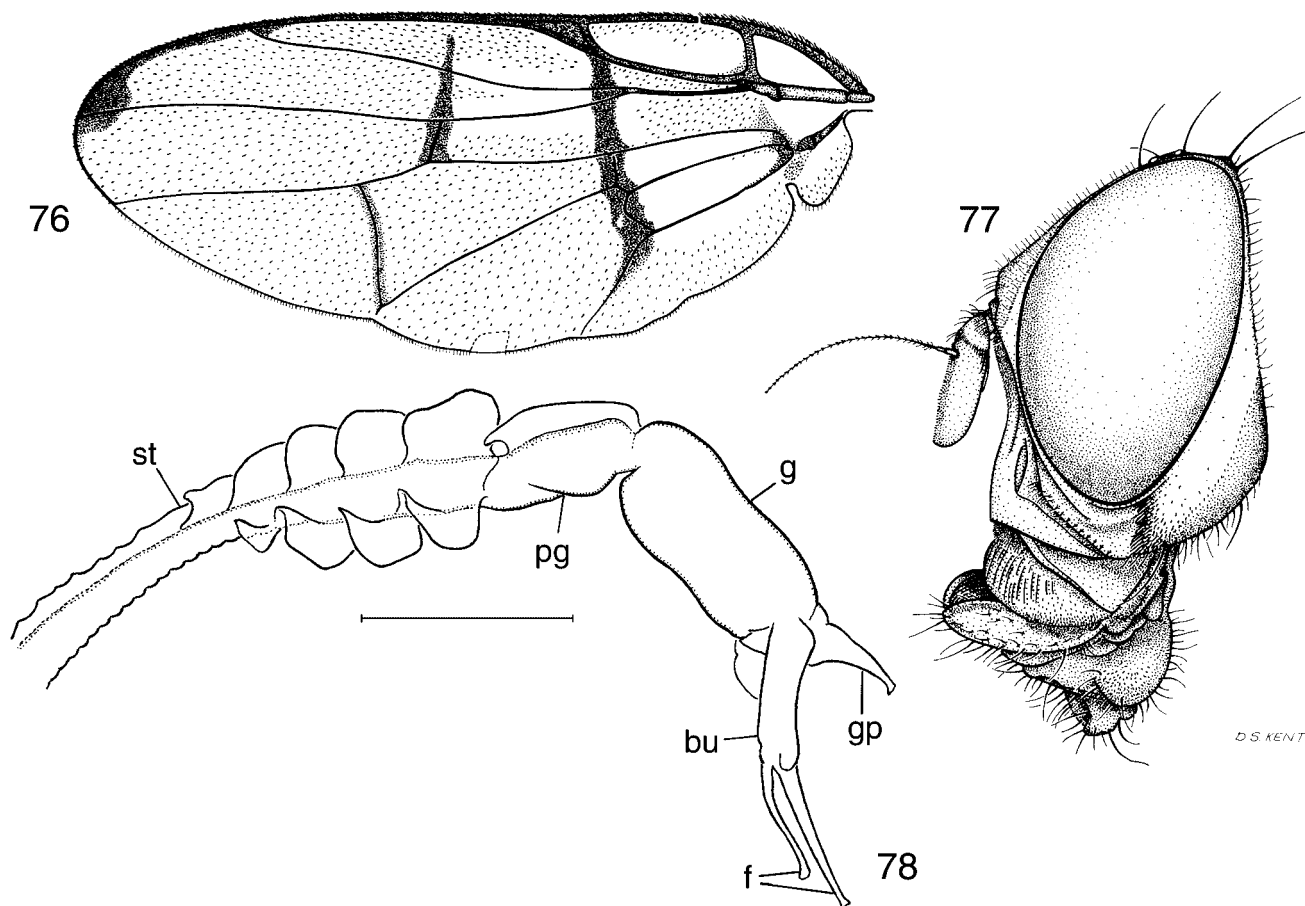
**Notes.** The subgeneric name is a Latin noun meaning polish, in reference to the glossy thorax, particularly the scutellum. It is neuter.

***Bama (Polimen) shinonagai* n.sp.**

Figs. 76–78

**Material examined.** HOLOTYPE, ♂, Papua New Guinea: Gumi near Bulolo, Morobe Province, 2010 m, 6.viii.1979, H.R. (AM). PARATYPES, Morobe Province: 1 ♀, same data as holotype (AM); 1 ♂, Mount Kaindi, near Wau, 1500–2200 m, 19.viii.1965, J.S., M.S. (BPB); 4 ♀♀, Nami Creek, near Wau, 10.vi.1962, 30.xii.1981, J.S., S.S. (AM, BPB, NSMT). Eastern Highlands: 1 ♀, 22 km SE of Okapa, 2100 m, 28.viii.1964, J.S., M.S. (BPB). Western and Southern Highlands: 1 ♀, Mount Wilhelm, 14.x.1957, J.H.B. (AM); 1 ♀, Mount Giluwe, N side Malgi, 2500 m, 25–30.v.1961, J.L.G. (BPB). Oro (Northern) Province: 1 ♂, 2 ♀♀, Myola, 2080 m, 13.ix.1985, 28–31.iii.1986, J.W.I. (AM, BM).

**Description** (♂, ♀). A stouter and somewhat smaller fly than most *Bama* species. *Coloration* largely blackish, with blue-tinted reflections. Postfrons largely dull brown-black; upper half of face, parafacial, and an extensive postorbital zone with greyish white pruinescence. Antenna tawny, with variable brown suffusion; segment 6 largely brown. Prelabrum dark brown; palpus orange tawny. Legs dark brown to blackish. Wing largely hyaline; stigmal section of subcostal cell dark brown; a brown stripe along costa from just before end of vein 2 to a little behind end of vein 3, narrow near vein 2, broadened where it crosses vein 3; base of first basal cell with brown mark; a dark brown transverse stripe covering anal and basal crossveins and extending forward to vein 1 near level of end of subcosta; a brown stripe covering anterior crossvein and, in female, usually extending forward to about confluence of vein 1 with costa, in male generally discontinuous in front of vein 3; a pale or indistinct brown stripe covering discal crossvein; squama pale creamy-translucent. Halter pale brown basally, largely blackish brown distally. Abdomen black; tergites 1–5 largely glossy, with bluish reflections.



**Figures 76–78.** *Bama (Polimen) shinonagai* n.sp. 76, wing. 77, head. 78, distal part of aedeagus (scale = 0.2 mm). Abbreviations: bu, bulb; f, terminal filaments; g, glans; gp, process of glans; pg, preglans; st, stipe.

**Head** 1.4–1.6 times as long as as wide; postfrons almost parallel-sided, c. 1.6 times as long as wide; height of cheek 0.16–0.18 of height of eye. Antenna: segment 3 mucronate or at least somewhat angular dorsoapically; segment 6, except at apex, with numerous hairs, many of them as long as its basal diameter, but not regularly seriate. Palpus of moderate length, rather broad.

**Thorax.** Mesoscutum c. as long as wide; scutellum more rounded and convex than in other species. Fore femur with numerous non-seriate posterior to posterodorsal bristles and long setulae and a series of large but not spinescent posteroventral bristles; mid femur with hairs on posteroventral surface much longer than elsewhere. Wing: section of costa on subcostal cell about as long as that on marginal cell; first costal cell almost bare; second costal cell microtrichose to variable extent, particularly so anteriorly and distally; first posterior cell largely microtrichose, often with narrow bare zones; submarginal cell with bare zone just beyond base; first basal cell with a bare zone on each side of sub-basal band; first posterior and discal cells entirely microtrichose; second basal and anal cells largely bare, except on pigmented areas; alula microtrichose, except on an anterior zone of variable size; cell-4 index = 0.65–0.68; second section of vein 4 with slight concave curvature; anal crossvein with abrupt but not angular bend approximately

at anterior third; distal section of vein 6 with sigmoid curvature.

**Abdomen.** Male: tergite 4 slightly shorter than tergite 3; tergite 5 at least as long as tergite 3; sternite 5 transverse, not medially cleft. Female: tergites as given for subgenus. Male postabdomen: surstyli elongate; outer surstylus with broadly rounded, setulose terminal section beyond apex of inner surstylus; the two prenisetae of inner surstylus with numerous parallel ridges; distal part of stipe of aedeagus with two series of overlapping foliose lobes, each with free margin minutely serrulate; preglans distinct, sclerotised, with a smooth-margined membranous wing on its whole length; glans stoutly ovoid-cylindrical, distally with a membranous lobe; the two terminal filaments very unequal, longer one slightly shorter than glans; cerci much shorter than surstyli, joined for their whole length.

**Dimensions.** Total length, ♂♂ 4.8–5.4 mm, ♀♀ 5.0–6.0 mm; length of thorax, ♂♂ 2.5–2.6 mm, ♀♀ 2.5–3.0 mm; length of wing, ♂♂ 6.2–6.7 mm, ♀♀ 6.4–7.2 mm; length of glans of aedeagus 0.23 mm.

**Distribution.** New Guinea: highlands of mainland Papua New Guinea up to 2500 m (specimen labelled “Mount Wilhelm” perhaps from significantly greater altitude).



**Notes.** *Bama* (*Polimen*) *shinonagai*, the only known species of its subgenus, is distinguished from other species by the subgeneric characters given above. It is the only species of *Bama* that runs to couplet 55 in the key to genera.

The specific epithet refers to Dr S. Shinonaga, who collected material of this species.

### Genus *Laglaisia* Bigot

Figs. 5, 79

*Laglaisia* Bigot, 1878a: 25. Type species (monotypy) *L. caloptera* Bigot.

**Description.** See Hendel (1914a). An additional feature of all species available to me is the presence of fine setulae ventrally on the free margin of the scutellum, as in *Cleitamia*. In the few species for which the aedeagus is known, the preglans is simple, the tunic is elongate, and the paired terminal filaments are moderately short.

**Distribution.** New Guinea: mainland only. These flies are widely distributed and occur through a considerable range of altitudes, but most seem to be narrowly localised and are infrequent in collections.

**Notes.** The generic name was introduced as new several times by Bigot with variable spelling. Evenhuis (1989) has determined the earliest description and spelling as given above, though I have previously used the spelling *Laglaizia* (McAlpine, 1973a; 1982).

The key to species by Malloch (1939a) is an elaborated translation of that of Hendel (1914b). *Laglaisia* includes six described species, and I have seen c. nine additional species.

Males of *Laglaisia* generally have the head-capsule laterally produced into eye-stalks, which are usually less attenuated than in Fig. 5. An undescribed species (1 ♂, BPB) is exceptional in lacking eye-stalks.

The habits and biology are almost unknown, but Parsons (1984) records *L. bironi* Hendel as resting on the uppersides of leaves of low-growing plants in well shaded primary forest, and provides excellent colour photographs of the living flies.

### Genus *Cleitamoides* Malloch

Figs. 80–82

*Cleitamoides* Malloch, 1939a: 106–107. Type species (original designation) *Cleitamia kerteszi* Hendel.

**Description.** This genus was briefly characterised by Malloch. Osten Sacken (1881a) and Hendel (1914a) did not separate the group from *Cleitamia*, though Hendel noted several points of disagreement of *C. kerteszi* and *C. lituratus* (Walker) with other *Cleitamia* species. Because there are numerous diagnostic differences between *Cleitamoides* and *Cleitamia* not mentioned by Malloch, I indicate these in Table 2.

*Male postabdomen* of type species (*C. kerteszi*): outer surstylus of moderate length, its free apical section moderately slender, obtuse, slightly exceeding apex of inner surstylus; aedeagus with rather long, glabrous stipe; preglans complex, well sclerotised; glans moderately long, irregularly subcylindrical, at apex with large, elongate, partly sclerotised lobe sheathing a slender process; tunic well sclerotised, with short, pubescent terminal lobe; terminal filaments subequal, stout, distally tapered, each slightly shorter than glans; cercus broad, apically emarginate, extensively setulose on outer surface, with anteroapical graduated comb of rather short to long setulae.

**Distribution.** New Guinea: mainland; Aru; Normanby Island.

**Notes.** Three species of *Cleitamoides* are listed by Malloch (1939a) and by Evenhuis (1989). To these is now added *Cleitamoides trigonalis* (de Meijere, 1913) n.comb. (from *Cleitamia*). This generic position is clear from the description and comparison given by de Meijere. There appear to be two additional probably undescribed species in Papua New Guinea (Oro Province; Normanby Island; both in AM), but a careful study of individual and geographic variation and sexual dimorphism will be necessary to determine more precisely the number of valid species.

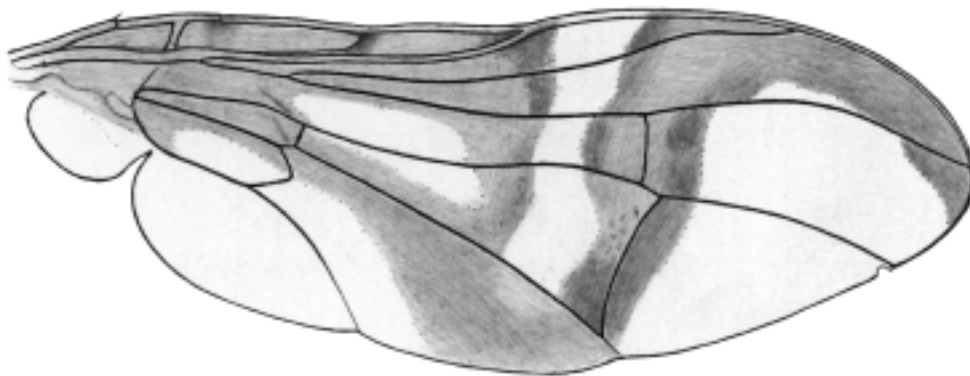
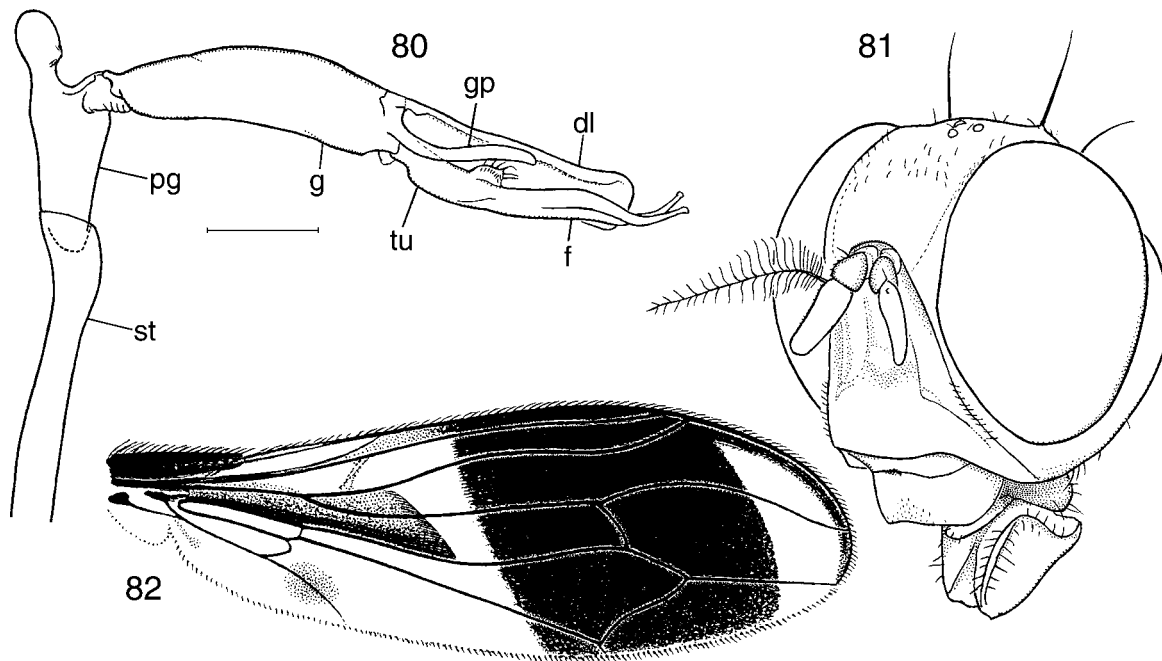


Figure 79. *Laglaisia* "sp. 5" (Gumi, AM), wing.

**Table 2.** Characters separating *Cleitamia* and *Cleitamoides*.

| <i>Cleitamia</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <i>Cleitamoides</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Fronto-orbital bristle present</li> <li>• Humeral bristle present</li> <li>• Mesopleural bristle present</li> <li>• Scutellum with two or three pairs of large bristles</li> <li>• Scutellum with minute setulae below free margin</li> <li>• Membranous zone between hind coxae and abdominal sternite 1 broad</li> <li>• Vein 2 distally converging with vein 1, but most closely approximated to vein 1 shortly <b>before</b> terminating in costa</li> <li>• Anal crossvein strongly bent at or only slightly in front of mid-length</li> <li>• Male: basal part of costa not swollen</li> <li>• Male: posterior margin of tergite 5 with two pairs or more extensive fringe of curved bristles, some at least half as long as tergite</li> </ul> | <ul style="list-style-type: none"> <li>• Fronto-orbital bristle absent</li> <li>• Humeral bristle absent</li> <li>• Mesopleural bristle absent</li> <li>• Scutellum with one pair of large and one of small bristles</li> <li>• Scutellum without setulae below margin</li> <li>• Membranous zone between hind coxae and sternite 1 narrow</li> <li>• Vein 2 most closely approximated to vein 1 where it meets costa (most males), or not closely approximated to vein 1 distally (females)</li> <li>• Anal crossvein strongly bent at about anterior third of length</li> <li>• Male: basal part of costa inflated, obliterating first costal cell</li> <li>• Male: posterior margin of tergite 5 with slightly differentiated fringe of small bristles less than a quarter as long as tergite</li> </ul> |



**Figures 80–82.** *Cleitamoides kerteszi* (Hendel). 80, distal part of aedeagus (scale = 0.2 mm). 81, head. 82, wing of male. Abbreviations: dl, distal lobe; f, terminal filament; g, glans; gp, process of glans; pg, preglans; st, stipe; tu, tunic. Fig. 82 after Hendel (1914a), retouched.

### Genus *Cleitamia* Macquart

Figs. 83, 84

*Cleitamia* Macquart, 1835: 440. Type species (monotypy) *Ortalis astrolabei* Macquart (note that Boisduval's publication of the name *O. astrolabei* is slightly later than that of Macquart, see Evenhuis, 1989).

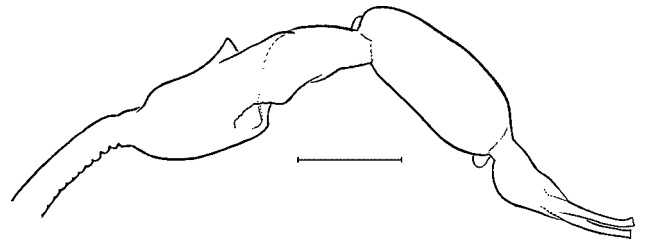
*Poticara* Walker, 1861b: 248–249. Type species (monotypy) *P. triarcuata* Walker (= *Ortalis astrolabei* Macquart).

**Description.** The description by Hendel (1914a) is largely adequate, providing that the particular characters attributed to *Cleitamia liturata* (Walker) and *C. kerteszi* Hendel are excluded, as these are now placed in *Cleitamoides*. See also Table 2 for some additional characters.

**Male postabdomen.** Aedeagus (where examined) with glabrous stipe; preglans sharply differentiated from stipe, without lobes; glans ovoid, with terminal lobe long or vestigial; terminal filaments short, equal or subequal, with basal tunic.

**Distribution.** New Guinea: widely distributed, but apparently endemic.

**Notes.** *Cleitamia* includes more than 20 species, several of which are undescribed. The last published key to species is that of Malloch (1939a). *Cleitamia trigonalis* de Meijere does not belong in this genus (see under *Cleitamoides*). *Cleitamia astrolabei* (Fig. 83) is a widely distributed and conspicuous insect of New Guinea forests.



**Figure 83, 84.** 83 (above), *Cleitamia astrolabei* (Boisduval), male; after Hendel (1914a), retouched. 84 (below), *Cleitamia astrolabei*, distal part of aedeagus (scale = 0.2 mm).

### Genus *Loriomyia* Kertész

Fig. 85

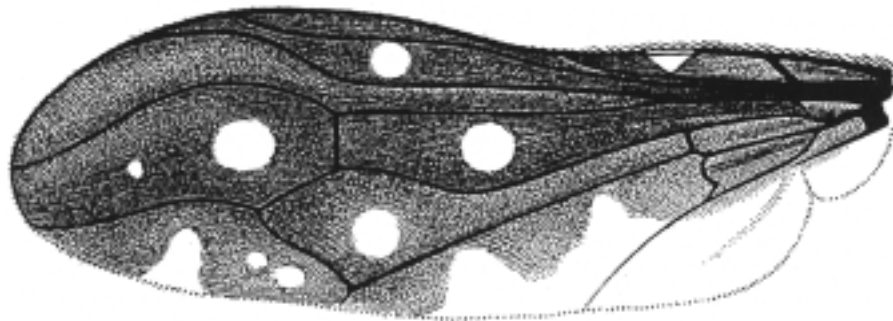
*Loriomyia* Kertész, 1899: 567. Type species (monotypy) *L. guttipennis* Kertész.

*Loriomyia*.—Hendel, 1914a: 75–76.

**Description** (♂, ♀ unknown). Hendel's description is excellent, and, as no material is available to me, I can only add that the stem vein (base of vein 1) is bare dorsally (*L. Papp*, in litt.).

**Distribution.** New Guinea: only known from Moroka (Meroka), E of Sogeri, Central Province, Papua New Guinea.

**Notes.** The type and only included species is, to my knowledge, not represented in recent collections, and is only known from the type material (MNM). This is surprising, as the insect is of conspicuous appearance, and the Sogeri district is one of the entomologically better known parts of Papua New Guinea.



**Figure 85.** *Loriomyia guttipennis* Kertész, wing. After Hendel (1914a).

Despite the resemblance to certain tropical tephritids in coloration and the contour of the anal crossvein, I think that Hendel (1914a) was probably correct in placing *Loriomyia* near *Cleitamia* in the Platystomatinae. *Loriomyia* differs from *Cleitamia* in having two pairs instead of one pair of fronto-orbital bristles, much reduced outer vertical bristles, a pair of prescutellar acrostichal bristles, no setulae on the scutellum, and the anal cell acutely produced. In these features of thoracic vestiture, *Loriomyia* resembles *Bama*, but differs from the latter in having only two pairs of scutellar bristles, no posteroventral bristles on fore femur, veins 1 and 2 approximated shortly before their distal ends, and the anal cell acutely produced. In some undescribed *Bama* species the anal crossvein has a somewhat sigmoid course, which suggests an early stage in the development of the condition present in *Loriomyia*. However, these *Bama* species have the characteristic dorsal setulae on the stem vein, which are absent in *Loriomyia*, and the venation is not otherwise very like that of *Loriomyia*.

*Loriomyia guttipennis* should be readily distinguishable from other Australasian platystomatids by the wing markings (Fig. 85).

### Genus *Terzia* n.gen.

**Type species:** *Terzia saigusai* n.sp.

**Description** (♂, ♀ unknown). Medium-sized, quite elongate, rather long-legged flies.

**Head** slightly higher than long, with generally reduced hairing; face concave in profile, without median carina; lower end of facial ridge with few minute hairs; parafacial narrow, without hairs; occipital region broadly, strongly convex; the following bristles present: well-developed inner vertical, one very small fronto-orbital, small postgenal; the following bristles absent: outer vertical, postvertical, ocellar, lateral occipital. Antenna, excluding arista, about as long as face on median line; segment 2 short and subconical; segment 3 narrowly ovate; segment 6 slender, with short pubescence near base only. Prelabrum moderately large, anteriorly convex; palpus moderately large.

**Thorax** deep and rather narrow, largely shining, with very little pruinescence and reduced hairing; mesoscutum with almost all hairs restricted to five longitudinal series; humeral callus with one or two small hairs only; scutellum moderately small, slightly convex dorsally, with few fine hairs; postscutellum very deep; metathoracic postcoxal bridge deep and well sclerotised; zone between metathoracic spiracle and halter with pile-like pubescence and several setulae other than those on margin of spiracle; the following bristles present: pair of outstanding, approximated paramedian scapulars, 1+1 notopleurals, postalar, large apical and small sublateral scutellar, one ventral sternopleural in front of mid coxa; other thoracic bristles absent. Legs all quite long, fore one least so; femora slender, but less so than in *Angitula*, with reduced hairing, except towards apices. Wing elongate, slightly narrowed basally; membrane bare on much of first costal cell, smaller basal

zone of submarginal cell, anal cell, alula; section of costa on subcostal cell much shorter than that on first costal cell or marginal cell; humeral break of costa very indistinct; second basal cell more than half as long as discal cell, towards its distal end wider than either first basal or anal cell; vein 3 with scattered dorsal setulae, more crowded basally; anterior crossvein meeting vein 4 slightly before mid-length of discal cell; distal section of vein 4 arched, converging with vein 3 from level of discal crossvein, but slightly diverging from vein 3 apically; vein 5 without setulae; axillary lobe undeveloped; squama vestigial, without lobe.

**Abdomen** slender, only slightly narrowed basally. See under *Terzia saigusai* for further details.

**Distribution.** Solomon Archipelago: New Georgia.

**Notes.** *Terzia* is known to me from a unique male example of the type species. This is unfortunate, as the taxon is of unusual phylogenetic interest (Saigusa, unpublished note in BPB cabinet).

My study of the general morphology of *Terzia* indicates that it is a moderately derived taxon of the subfamily Platystomatinae. If one were to eliminate the more obvious apomorphies (discussed below), the resulting character combination would be not very different from that of the genus *Rivellia*, with, perhaps, *Tarfa* occupying an intermediate stage. Though I have not examined the aedeagus, the outer surstylus of *Terzia*, with its elongate, subtriangular apical section, is remarkably like that found in numerous platystomatine species (e.g., in the genera *Achias*, *Bama*, *Duomyia*, *Laglaisia*, *Plagiostenoptera*, etc.), but I have seen no similar condition in other subfamilies.

*Terzia* is remarkable for the number of character states that it shares with the “angituline” genus *Angitula* (now including *Angituloides* and *Giraffomyia*), including absence of the outer vertical bristle, great reduction of the hairing of the humeral callus, mesoscutum, and mesopleuron, the deep, glossy metathoracic postcoxal bridge, the virtual absence of the axillary lobe, and the presence of both pile-like pubescence and setulae on the narrow sclerite between the metathoracic spiracle and base of the halter. These conditions I judge to be all or nearly all synapomorphies indicating close relationship of *Terzia* to *Angitula*. However it lacks certain of the peculiar features of *Angitula*, viz. the very prolonged occipital region of the head (though it has a more convex occiput than most platystomatine genera), the loss of the normal anterior convexity of the mesoscutum, the enlargement of the pronotum, the presence of a pair of elongate setiferous horns on the scutellum, the ventral prolongation of the membranous cleft in an almost straight line, and the greater attenuation of the femora. This constitutes a set of distinctive apomorphic character states defining the clade formerly known as “Angitulinae” (e.g., Malloch, 1939b, Hennig, 1940a, McAlpine, 1973a).

From the above combinations of apomorphic character states, I deduce that *Terzia* is the sister group of the genus *Angitula* s.l. (including *Angituloides* and *Giraffomyia*). But the general morphology of *Terzia* does not admit of its

removal from the Platystomatinae. Therefore the “angituline” genera, including *Terzia*, are considered to form a subordinate group within the subfamily Platystomatinae.

The generic name recalls A.J. Engel Terzi, formerly of the British Museum (Natural History), whose illustrations are a significant contribution to dipterology.

***Terzia saigusai* n.sp.**

Figs. 86, 87

**Material examined.** HOLOTYPE, ♂ (unique), Solomon Archipelago: Munda, New Georgia Island, 1–30 m, 20.vii.1953, J.L.G. (BPB).

**Description** (♂). *Coloration.* Head and thorax orange-fulvous. Vertex with large dark brown semicircular median blotch, immediately behind ocelli. Thorax without dark markings. Legs fulvous; tarsi brownish tawny, slightly darker distally. Wing hyaline, with uniform yellowish tinge; distal section of subcostal cell yellowish brown; large brown apical spot on costa extending from vein 2 to vein 4. Halter fulvous with brown apical spot. Abdomen shining fulvous; tergite 5 dark brown on about posterior two-thirds.

*Head.* Eye c. 0.71 as long as high; height of cheek c. 0.18 of that of eye.

*Thorax.* Fore femur with two stoutly spinescent postero-ventral bristles on distal third; mid tibia with elongate apical ventral spur c. 1.3 times as long as greater diameter of tibia. Wing: anal cell on vein 4 c. 0.59 times as long as discal cell on vein 4; cell-4 index = 0.47.

*Abdomen.* Syntergite 1+2 c. 0.47 times as long as tergite 3; tergite 5 c. 1.2 times as long as tergite 3, slightly longer than tergite 4. Outer surstylus considerably exceeding inner surstylus in length, with elongate, subtriangular apical section.

*Dimensions.* Total length 6.7 mm; length of thorax 2.3 mm; length of wing 6.1 mm.

**Distribution.** As given for genus.

**Notes.** The specific epithet refers to Toyohei Saigusa, of Fukuoka, Japan, whose percipient comment on relationships of this species is noted above.



Figure 86. *Terzia saigusai* n.sp., head.

**Genus *Angitula* Walker**

*Angitula* Walker, 1859: 123. Type species (monotypy) *A. longicollis* Walker.

*Angitula*.—Osten Sacken, 1881a: 481–483. Error or emendation—5 usages.

*Giraffomyia* Sharp, 1899: 391–392. Type species (monotypy) *G. willeyi* Sharp. N.syn., but retained as subgenus.

*Angituloides* Hendel, 1913: 345. Type species (original designation) *A. austeni* Hendel. N.syn., but retained as subgenus.

*Angitulina* Enderlein, 1936a: 227, 228. Type species (original designation) *Elaphomyia polita* Saunders (probably = *Angitula longicollis* Walker).

*Hammatopelma* Enderlein, 1936a: 227, 228. Type species (original designation) *H. nigra* (sic) Enderlein.

*Meachina* Enderlein, 1936b: 241. Type species (original designation) *M. violacea* Enderlein.

**Description.** Medium-sized to rather large elongate flies, somewhat resembling micropezids, with glossy black thorax and abdominal tergites, and reduced hairing and bristling.

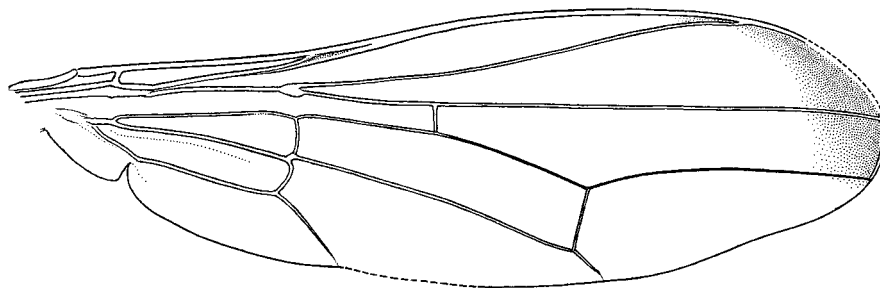


Figure 87. *Terzia saigusai*, wing.

*Head* generally longer than high, with pair of either epistomal processes or cheek processes in males of some species; eye rounded, but sometimes ventrally emarginate in males; postfrons slightly excavated between summits of eyes, extending only slightly in front of eyes in profile; face in part concave in profile, without distinct median carina, either slightly convex below without prominent epistomal margin, or with epistomal margin prominently protruded and, in some males, greatly expanded, or, in male of *A. nigra*, with a long, spatulate lobe on each side; inner vertical bristle large to quite small; outer vertical small or minute but usually discernible; postgenal bristle minute or absent; fronto-orbital and postvertical bristles absent; supracervical setulae strongly developed, on a transverse cervical tubercle. Antenna: segments 1 and 2 short; segment 3 c. two to three times as long as wide or longer, not potentially attaining centre of epistomal margin; segment 6 bipectinate, with rather long rays, or short-haired, or partly bare. Prelabrum moderately shallow, well separated from epistomal margin by membranous zone; palpus variably developed; proboscis stout, with broad labella.

*Thorax* pyriform, slender anteriorly, remarkably deep posteriorly; prothorax, especially pronotum, together with lateral cervical sclerites and associated membranous surfaces forming a variably long neck, which holds head well away from mesoscutum; pronotum otherwise variable in structure and sometimes sexually dimorphic; prosternum anteriorly truncate or variably narrowed, without precoxal bridge; mesoscutum broad posteriorly, somewhat narrowed anteriorly; scutellum with pair of elongate setiferous horns (as in Diopsidae); subscutellum little developed; post-scutellum deep, convex; anterior section of sternopleural suture aligned (almost vertically) with membranous cleft (as in Micropezidae-Eurybatini), posterior section sometimes detached from anterior section; metathorax produced behind the halteres dorsally and ventrally into a short posterior cylinder, which supports the abdomen; metathoracic postcoxal bridge very deep and strongly sclerotised; metapleura and metasternum together forming a prominence to which hind coxae are attached (as in Megamerinidae, Syringogastridae, etc.); thoracic cuticle almost devoid of pruinescence, but with densely pubescent zone between metathoracic spiracle and halter; hairing of thorax greatly reduced, but dorsocentral series of small hairs present; scutellum usually with few fine hairs; thoracic bristles all very small or undifferentiated from hairs, except for moderate-sized bristle at apex of each scutellar horn. Legs long and slender (fore coxa particularly so) without bristles, except for long apicoventral spur on mid tibia; mid femur with a series of variably developed suberect posterior hairs, except in *A. willeyi*. Wing elongate, basally narrowed, with few markings, mainly along costa; subcosta distally straight, free from costa, strongly sclerotised; anterior

crossvein meeting vein 4 near mid-length of discal cell; veins 3 and 4 apically subparallel, somewhat arched; second basal and anal cells each much more than half as long as discal cell; anal crossvein curved throughout, variable in length; alula, axillary lobe, and squama virtually absent.

*Abdomen* elongate, sometimes clavate and anteriorly petiolate; tergites largely or partly with reduced hairing. Male: tergites 4 and 5 generally about as long as tergite 3; outer surstylus simple, somewhat exceeding inner surstylus; stipe distally with linear band of short or long pubescence within longitudinal groove; glans short and stout, with one or two pairs of membranous distal lobes; paired terminal filaments subequal in length, varying from very short and stumpy to much longer than glans (in *A. nigra*), arising from sclerotised tunic. Female: tergites 4 and 5 either almost as long as tergite 3, or much shortened; spiracles 4 and 5 situated close below lateral margins of their tergites; tergite 6 short but sclerotised; ovipositor sheath moderately long; aculeus slender, obtuse.

**Distribution.** Moluccas. New Guinea. Bismarck Archipelago. Solomon Archipelago. Further details are given under the subgenera.

**Notes.** *Angitula*, as here delimited, was divided into six genera by Enderlein (1936a, 1936b), who included these taxa in his subfamily Angitulinae of the Phytalmiidae. Hennig (1940a), in dissolving the family Phytalmiidae, referred the Angitulinae as a whole to the Platystomatidae. He listed the species according to Enderlein's generic placements, but stated in his discussion of Angitulinae: "There is therefore to be recognized only one genus, *Angitula* Walk., with at most several subgenera" (my translation). Malloch (1939b), Steyskal (1950, 1952a), McAlpine (1973a), and Evenhuis (1989) accepted three angituline genera, *Angitula*, *Angituloides*, and *Giraffomyia*. Korneyev (1994), in excluding "the *Giraffomyia* group" from the *Angitula* alliance (as Angitulinae), was surely misled into interpreting certain character states (given by McAlpine, 1973a) as relevant to higher classification. I here treat these as three subgenera of the genus *Angitula*, on account of: (1) the unambiguous monophyly of *Angitula* s.l.; (2) the necessity of downgrading the subfamily Angitulinae sensu Enderlein to infra-tribal status, taking into consideration the apparent phylogenetic proximity of the outgroup *Terzia*; (3) the range of variation in other polytypic platystomatid genera, including variation in aedeagal and female abdominal structure (examples in *Duomyia*, *Chaetorivellia*, *Euprosopia*, *Lenophila*, *Rhytidortalis* and *Senopterina*); (4) the constant, easily recognized diagnostic characters of *Angitula* s.l.; and (5) the distinctive general appearance for the whole genus.

#### Key to subgenera of *Angitula*

- 1 Inner vertical bristle very small, or at least not much larger than outer vertical; vein 2 meeting costa well beyond level of discal crossvein; anterior extremity of abdominal tergite 1+2 with pair of conical or thorn-like processes, each sclerotised all round ..... *Angitula*

- Inner vertical bristle large, in contrast to vestigial or undifferentiated outer vertical; vein 2 meeting costa near or before level of discal crossvein; anterior extremity of tergite 1+2 with pair of low, rounded gibbosities, each open to thoraco-abdominal membrane on anterior side ..... 2
- 2 Pronotum deeply bilobed, without ante-pronotum; mesoscutum with anterior median finger-like process, bearing pair of apical bristles and projecting between lobes of pronotum (Fig. 92) ..... *Angituloides*
- Pronotum not very deeply bilobed, with, at least in male, distinct ante-pronotum; mesoscutum without anterior median process ..... *Giraffomyia*

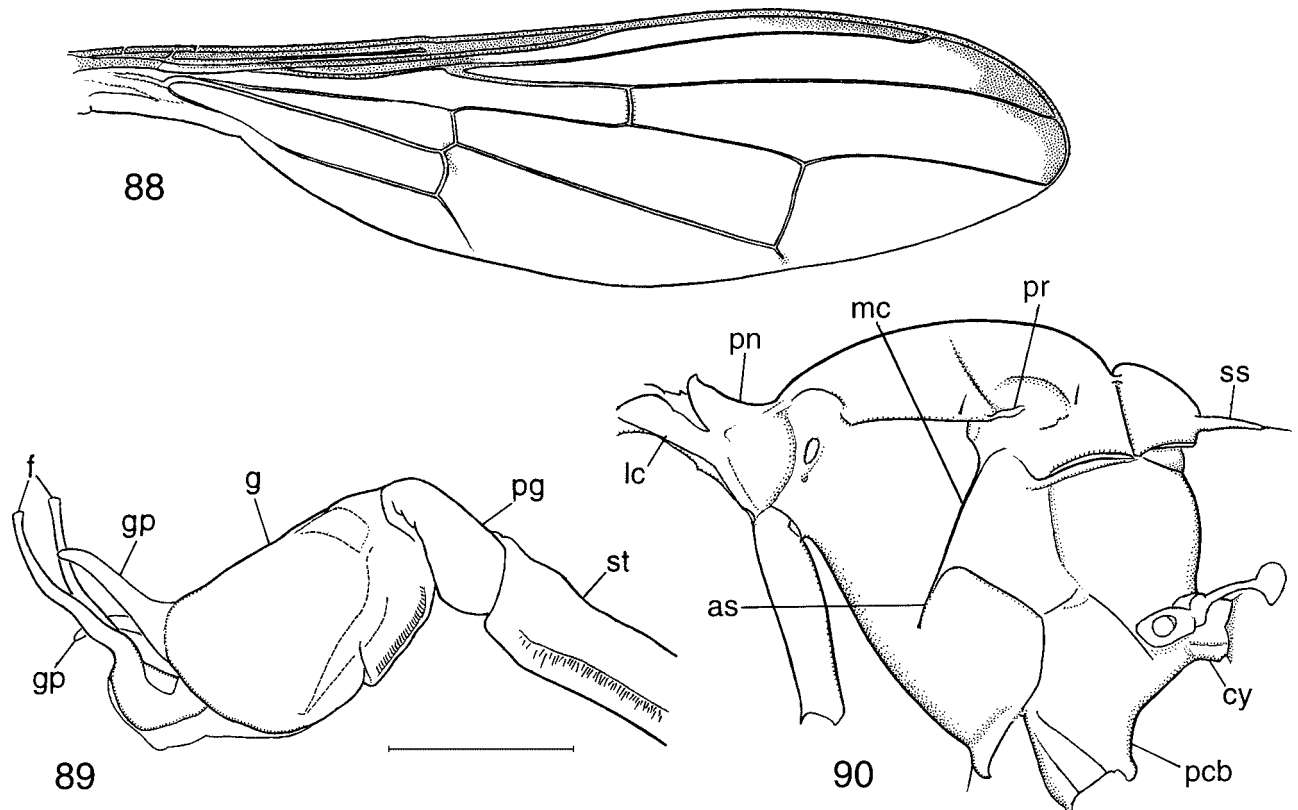
**Subgenus *Angitula* s.str., n.stat.**

Figs. 88–90

*Angitula* Walker, 1859: 123. Type species (monotypy) *A. longicollis* Walker.  
*Angitulina*, *Hammatopelma*, and *Meachina* are synonyms, as detailed for the genus.

**Description** (principal diagnostic features only). Inner vertical bristle very small, or at least not much longer than outer vertical; antennal segment 3 usually c. three times as long as wide or longer; segment 6 bipectinate, with longer rays c. half as long as width of segment 3 or longer; palpus rather long, reaching approximately to anterior margin of prelabrum; pronotum moderately prolonged in front of

mesoscutum, its anterior margin generally rounded, entire, and slightly curved upwards, without well defined ante-pronotum; mesoscutum without anterior median process; hind trochanter without ventral tubercle; vein 2 meeting costa well beyond level of discal crossvein; submarginal cell much wider than marginal cell at and beyond level of anterior crossvein; second basal cell at broadest part about as wide as anal cell; syntergite 1+2 at anterior extremity with pair of slender, strongly raised tubercles; abdominal spiracles 4 and 5 each with opening concealed by a tuft of pubescence; male: glans of aedeagus (where known) without terminal, sclerotised scoop-like lobe; paired terminal filaments each more than half as long as glans; female: tergite 6 usually quite short and, except in species with tergite 5 reduced, concealed by tergite 5.



**Figures 88–90.** *Angitula (Angitula) longicollis* Walker. 88, wing. 89, distal part of aedeagus. 90, thorax. Abbreviations: as, anterior section of sternopleural suture; cy, metathoracic cylinder; g, glans; gp, process of glans; lc, lateral cervical sclerite; mc, membranous cleft; pcb, metathoracic postcoxal bridge; pg, preglans; pn, pronotum; pr, postnotopleural ridge; ss, scutellar spine (paired); st, stipe.

**Distribution.** Moluccas: Halmahera, Bacan (Batchian), Seram. New Guinea: widely distributed on mainland, Misool, Aru, Normanby Island.

**Notes.** The subgenus *Angitula* includes those species listed by Evenhuis (1989) under the genus *Angitula*. Steyskal (1952a) gave a key to the species that he could identify from literature, but the species level taxonomy remains very unclear. Material of *A. (Angitula) longicollis* Walker here illustrated is identified from Steyskal's key, not from examination of type material. I am not yet convinced that *A. polita* (Saunders) is a synonym of *A. longicollis*. If the Bacan record of *A. longicollis* is due solely to Walker (1861c), it is based on a misidentification. Material from Bacan in AM and NMWC, probably identical with Walker's, belongs to a quite distinct species.

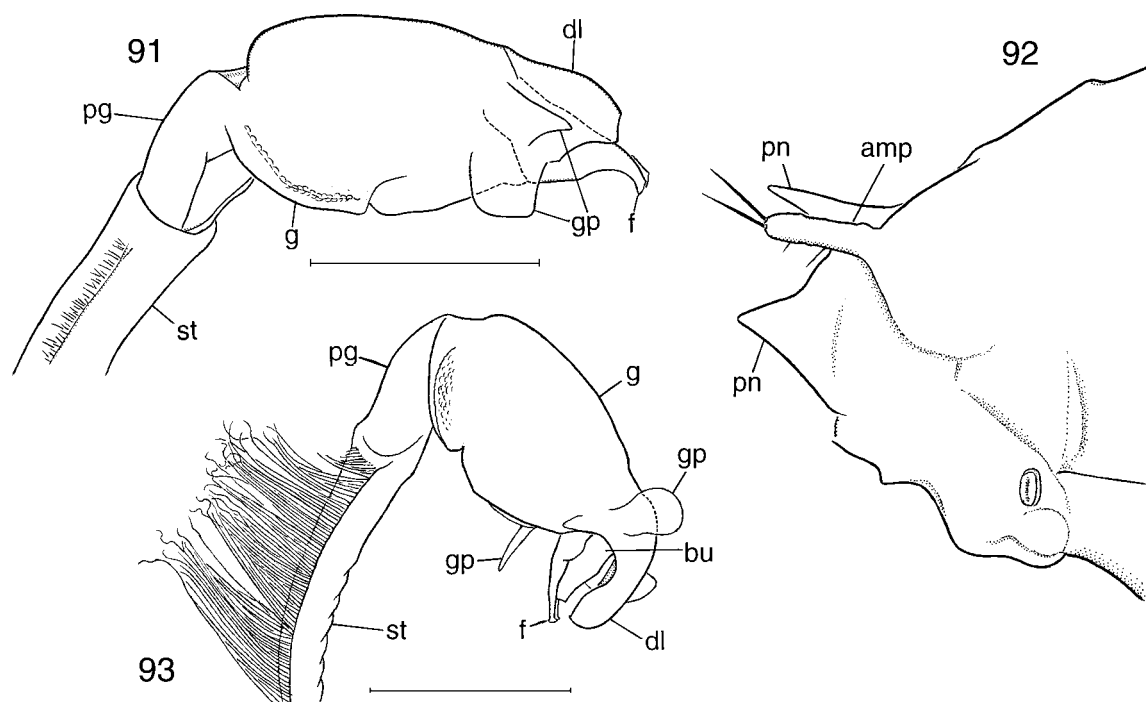
Secondary sexual modifications of the male head capsule vary greatly in this subgenus. Some species, e.g., *A. longicollis*, have little or no modification. Males of *A. krombeini* Steyskal have the epistomal margin of the face expanded into a broad plate. Those of *A. nigra* (Enderlein) have the epistomal margin produced into a pair of large, spatulate processes (erroneously referred to as cheek appendages). The only recorded male of *A. polita* (Saunders) has a pair of very small cheek processes.

### Subgenus *Angituloides* Hendel n.stat.

Figs. 92, 93

*Angituloides* Hendel, 1913: 345 (as genus). Type species (original designation) *A. austeni* Hendel.

**Description.** Inner vertical bristle large; outer vertical vestigial; antennal segment 3 c. twice as long as wide; segment 6 irregularly short-haired dorsally, mainly on basal third, almost bare ventrally; palpus shorter than in *Angitula* s.str., less reduced than in *Giraffomyia*; pronotum very deeply divided into two subtriangular lobes, without antepnotum; mesoscutum with median finger-like process bearing pair of apical bristles, and projecting anteriorly between lobes of pronotum; hind trochanter with tooth-like ventral process in male, present as vestige in female; vein 2 meeting costa slightly before level of discal crossvein; submarginal cell not wider than marginal cell near level of anterior crossvein; second basal cell at broadest part narrower than anal cell; syntergite 1+2 at anterior extremity with pair of low, rounded gibbosities; abdominal spiracles 4 and 5 each with almost glabrous sclerotised ring; male: stipe of aedeagus with very long, brush-like pubescence; glans with sclerotised scoop-like distal lobe; paired terminal



**Figures 91–93.** 91, *Angitula (Giraffomyia) willeyi* (Sharp), distal part of aedeagus (scale = 0.2 mm). 92, *Angitula (Angituloides) austeni* (Hendel), anterior part of thorax, dorsolateral view; 93, distal part of aedeagus (scale = 0.2 mm). Abbreviations: amp, anterior median process of mesoscutum; bu, bulb; dl, distal lobe of glans; f, terminal filament (paired); g, glans; gp, processes of glans; pg, preglans; pn, lobes of pronotum; st, stipe.



filaments quite small, partly concealed by lobe of glans; female: tergites 4 and 5 large; tergite 6 quite short but apparently permanently exposed.

**Distribution.** Solomon Archipelago: Bougainville; New Georgia; Santa Isabel; Malaita; Guadalcanal; San Cristoval (Makira). There is a likelihood that populations also live on other islands of this Archipelago.

**Notes.** Only one species of *Angituloides*, *Angitula* (*Angituloides*) *austeni* (Hendel) n.comb., has been recognized, despite the wide distribution of the subgenus. Hendel's holotype was without adequate localisation ("Salomons-Inseln"). At present I have before me only material from Bougainville (♂, ♀) and Guadalcanal (3 ♀♀). These specimens agree closely, the only characters which appear likely to differentiate these insular populations being the black orbital stripe and fine occipital spotting of the Bougainville specimens, which are absent in those from Guadalcanal. A further study of geographic variation is desirable, but, on present data, such variation seems likely to be infraspecific.

The few recorded males show no modifications of the head capsule, but the hind-trochanteral process is distinctive.

#### Subgenus *Giraffomyia* Sharp n.stat.

Figs. 6, 91

*Giraffomyia* Sharp, 1899: 391–392 (as genus). Type species (monotypy) *G. willeyi* Sharp.

**Description.** Inner vertical bristle large; outer vertical bristle vestigial; antennal segment 3 c. twice as long as wide or somewhat less; segment 6 irregularly short-haired on almost entire length; palpus very small; thorax generally more elongate than in other subgenera; pronotum always prominently developed, usually longer in large males than in females, not deeply divided as in *Angituloides*, generally with freely projecting anterior part differentiated as antepronotum (Speight, 1969), less distinct in some females; mesoscutum without trace of median anterior process and associated bristles; hind trochanter without ventral process (in available material); vein 2 meeting costa near or slightly before level of discal crossvein; submarginal cell not or only slightly wider than marginal cell near level of anterior crossvein; second basal cell at broadest part narrower than anal cell; syntergite 1+2 at anterior extremity with at most pair of low, rounded gibbosities; abdominal spiracles 4 and 5 each with almost glabrous sclerotised ring (in available material); stipe of aedeagus with band of minute pubescence only; glans with sclerotised scoop-like distal lobe; paired terminal filaments very short and stout; female: tergites 4 and 5 large; tergite 6 quite short but apparently permanently exposed.

**Distribution.** Bismarck Archipelago: Manus; Los Negros; New Ireland; New Britain. Solomon Archipelago: Vella Lavella; Malaita (or Mala); Florida; Guadalcanal; Ugi (Uki); Ulawa.

**Notes.** New combinations for nominal species resulting from reduction of *Giraffomyia* to subgeneric status are: *Angitula* (*Giraffomyia*) *nigripes* (Steyskal), *Angitula* (*Giraffomyia*) *regularis* (Malloch), *Angitula* (*Giraffomyia*) *irregularis* (Malloch), *Angitula* (*Giraffomyia*) *solomonensis* (Malloch) (the above all from Solomon Archipelago), and *Angitula* (*Giraffomyia*) *willeyi* (Sharp) (from New Britain, Bismarck Archipelago).

I have on hand very little material from the Solomons and the above is a largely non-critical list. However, I do not think that Evenhuis (1989) is likely to be correct in raising *Giraffomyia regularis* var. *perfecta* Malloch to specific status. The variation in size of the male cheek processes described by Malloch in *A. (G.) regularis* is to be expected among individuals of the one species population, and is also seen in the large series of *A. (G.) willeyi* in AM. Also Evenhuis's synonymy of *A. (G.) irregularis* under *A. (G.) solomonensis*, perhaps on the basis of an ambiguous comment by Steyskal (1950: 96), seems unwarranted without further evidence, the two names applying to separate insular populations.

The numerous specimens of subgenus *Giraffomyia* available from the Bismarck Archipelago appear to represent at least four species, of which only *A. (G.) willeyi* is yet described.

Elongate cheek processes of various structure are present in larger males of perhaps all species of this subgenus (e.g., Fig. 6).

#### Subfamily Scholastinae

The subfamily has been characterised by McAlpine (1973a). While there remains an element of doubt as to whether the group is monophyletic, its distinction from the Platystomatinae is unambiguous.

Because the genera *Asyntona* and *Chaetorivellia* include both species with female tergite 5 much reduced and species with tergite 5 well developed, it is possible that the reduced condition is not in the groundplan of the subfamily. In *Lenophila*, female tergite 6 is small but by no means vestigial, so it appears that either absence of tergite 6 is not in the groundplan of the subfamily, or that *Lenophila* is misplaced here.

The Australasian genera included at present are: *Lenophila*, *Chaetorivellia*, *Tomeus*, *Pterogenia*, *Neohemigaster*, *Paryphodes*, *Scholastes*, *Trigonosoma*, *Zygaenula*, *Mesoctenia*, *Naupoda*, *Asyntona*.

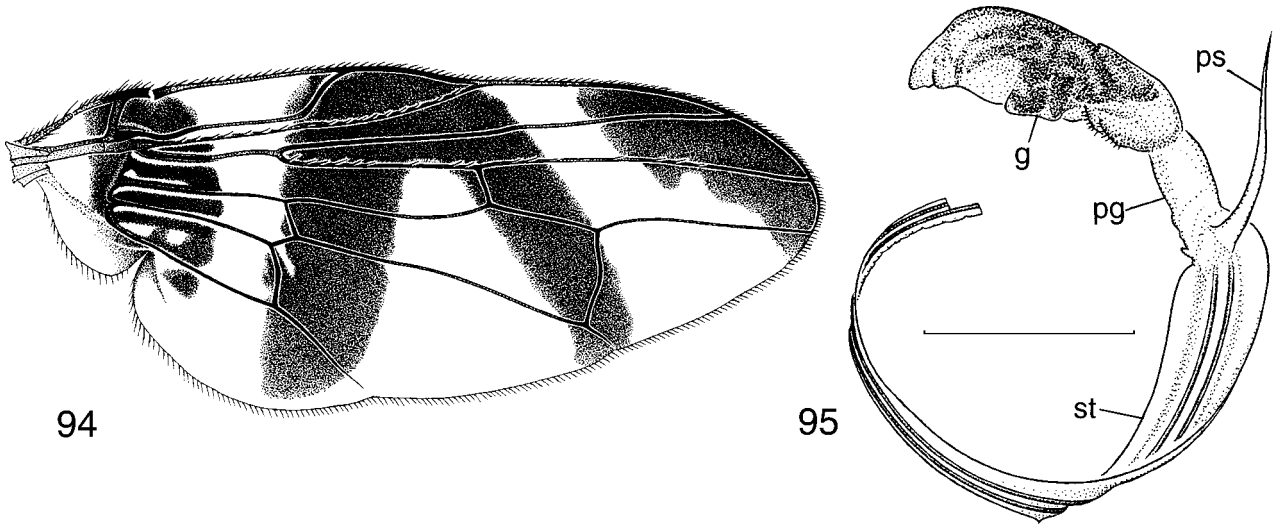
#### Genus *Lenophila* Guérin-Ménéville

Figs. 94–96

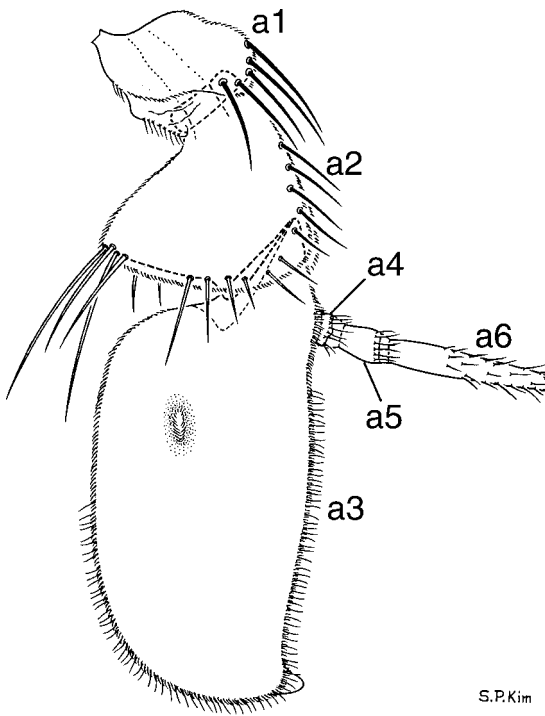
*Lenophila* Guérin-Ménéville, 1843: 200; McAlpine & Kim, 1977: 314–314. Type species (monotypy) *Ceratitis dentipes* Guérin-Ménéville = *Ortalis dentipes* Macquart.

*Celeator* Loew, 1873: 4; Hendel, 1914a: 113–115. Type species *Ortalis dentipes* Macquart = *Tephritis strigipennis* Macquart (designated Hendel, 1914a).

**Description.** Hendel (1914a) gave a detailed description, which I supplement as follows.



**Figures 94–95.** *Lenophila secta* McAlpine & Kim. 94, wing. 95, aedeagus (scale = 0.25 mm). Abbreviations: g, glans; pg, preglans; ps, distal process of stipe; st, stipe. Illustrations by S.P. Kim.



**Figure 96.** *Lenophila coerulea* (Macquart), antenna. a1–a6, antennal segments one to six.

*Legs.* Hind tibiae with male-restricted modifications of form and vestiture which differ in each species (McAlpine & Kim, 1977: figs. 9–14).

*Male postabdomen.* Aedeagus: stipe with terminal appendage tapering to a fine point; preglans distinct; glans large, with complex sclerotisation, without terminal filaments.

*Female postabdomen.* Tergites 5 and 6, often also tergite 4, variably reduced; ovipositor sheath (tergosternite 7) moderately long; aculeus slender, not depressed and blade like.

**Distribution.** Australia: apparently endemic.

The species are widely distributed in less arid parts of temperate Australia, including all states, but apparently are not present in Northern Territory. Three species are of limited occurrence in tropical Queensland. *Lenophila achilles* McAlpine & Kim extends to southern Tasmania (Bruny Island, AM).

**Notes.** The genus, which includes six known species, was reviewed by McAlpine & Kim (1977).

The bold pattern of the wing strongly resembles that of certain tephritid genera, particularly *Ceratitis* Malloch (see Hardy, 1967), and also the otitid *Dyscrasis* Aldrich (see Hernandez-Ortiz, 1988). This pattern, which is usually found in combination with a convex, glossy, black scutellum, also occurs in two undescribed species of *Atopognathus*. The common features of these flies could be due to mimicry of jumping spiders (Salticidae), an idea first mentioned to me by G. Daniels (see also Mather & Roitberg, 1987).

Adults of five of the species are almost invariably found on leaves of *Xanthorrhoea* spp. (Xanthorrhoeaceae) and for some it has been demonstrated that larvae live in the damaged or rotting trunk of this plant. On the other hand *L. dentipes* (Macquart) is not found on *Xanthorrhoea* and there is evidence of association with *Eucalyptus* sp. (Myrtaceae) and *Macrozamia* sp. (Zamiaceae). C.E. Chadwick (pers. comm.) reared numerous adults of *L. dentipes* from larvae living in the caudex of *Macrozamia communis* damaged by larvae of the weevil *Melanotrane internatus* (Pascoe) (Curculionidae).

**Genus *Chaetorivellia* de Meijere**

Fig. 97

*Chaetorivellia* de Meijere, 1913: 376; Hendel, 1914a: 128–129.  
Type species (monotypy) *Ortalis punctifascia* Walker.

**Description.** Hendel (1914a) keyed the genus and gave a detailed description, which I supplement as follows:

*Male postabdomen.* Aedeagus: stipe without terminal appendage; preglans distinct; glans not forming a simple capsule, but with complex sclerotisation and no terminal filaments.

*Female postabdomen* of two markedly different types (a and b). (a): tergite 5 large, at least as long as tergite 4; aculeus slender, not blade-like. (b): tergite 5 much reduced, more or less concealed in dried specimens; aculeus broad, blade-like. (a) and (b): aculeus with pair of small, terminal scale-like processes.

**Distribution.** Moluccas: Ternate; Halmahera (Gilolo); Bacan (Batchian); Ambon (Amboina). New Guinea: widely distributed on mainland. Solomon Archipelago: Bougainville. There are no records for Australia and the Bismarck Archipelago.

**Notes.** Hendel (1914a) gives *Ortalis trifasciata* Doleschall (described from Amboina) as the type species of *Chaetorivellia*, but *C. punctifascia* (Walker) (described from Gilolo) is the only nominal species originally included by de Meijere. Hendel considered these two nominal species as synonyms, but I do not consider the synonymy to be demonstrated as yet. The nominal species *Ortalis tarsalis* Walker, 1861c is also referred to *Chaetorivellia* (n.comb.) from examination of holotype (Batchian or Bacan, A.R.W., OX).

There are probably at least four distinct species of *Chaetorivellia* in collections, but species-level taxonomy in the genus needs further study. The great variation in female abdominal morphology is remarkable, but there is comparable variation in some larger genera of the family.

**Genus *Tomeus* n.gen.**

**Type species:** *Tomeus wyliei* n.sp.

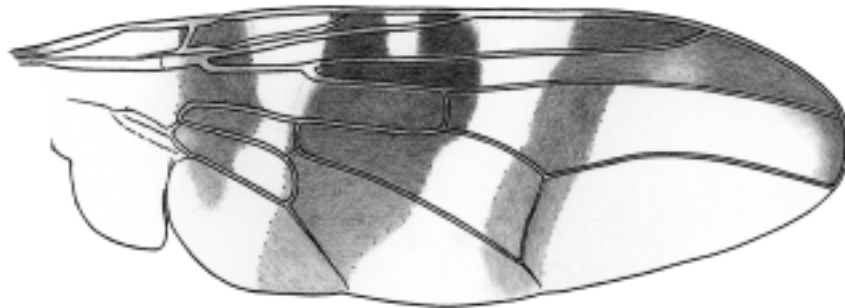
**Description** (♂, ♀). Stout flies, conforming to the characterisation of the Scholastinae (McAlpine, 1973a: 26) except in features of the aculeus. Cuticle of head, thorax and abdomen largely dull and densely pruinescent.

*Head* much higher than long in profile, slightly wider than high; eye much higher than long; face slightly concave near centre, slightly convex below; parafacial on lower half with numerous non-seriate hairs; the following bristles present: outer vertical, quite small inner vertical, two fronto-orbitals, postgenal; postvertical bristle absent. Antenna, excluding arista, about half as long as face; segment 6 with non-seriate hairs on whole length. Prelabrum small; palpus of moderate size.

*Thorax.* Mesopleuron without strong gibbosity on upper part; scutellum rounded in outline, longer than a semicircle, somewhat depressed, extensively haired on dorsal surface and much of lateral surface; subscutellum convex, but small; the following thoracic bristles present: humeral, 1+1 or 0+1 notopleurals, small supra-alar, large postalar, posterior intra-alar, sometimes prescutellar acrostichal, two (posterior) pairs of scutellars, mesopleural. Legs moderately short and stout; femora not notably thickened; fore and hind femora with a few weak dorsal bristles, other femoral bristles undifferentiated; mid tibia with rather short, stout terminal spur. Wing essentially similar to that of *Scholastes*; vein 1 without setulae before level of humeral crossvein; vein 5 without setulae dorsally; all veins without ventral setulae; squama moderately small, almost semicircular, its area not greater than well-developed axillary lobe.

*Abdomen* ovoid, broadest across segment 2. Male postabdomen: tergite 5 c. as long as tergite 4. Female postabdomen: tergite 4 large; tergite 5 much reduced; tergite 6 apparently reduced to pair of minute plates; aculeus broad, strongly depressed, obtuse.

**Distribution.** New Guinea: Papua New Guinea—mainland.



**Figure 97.** *Chaetorivellia* sp. (Laloki, Papua New Guinea, AM), wing.

**Notes.** *Tomeus* belongs in the subfamily Scholastinae and is most similar to *Neohemigaster*, *Pterogenia*, and *Scholastes*. It differs from all these in its smaller squama and broad, flattened ovipositor complex. It further differs from *Neohemigaster* in the bare vein 5, more strongly curved anal crossvein, and large, exposed tergite 4 of the female abdomen. It differs from *Pterogenia* (at least the Australasian species) in the short, non-seriate hairing of the arista, bare base of vein 1 before humeral crossvein, bare vein 5, and more curved anal crossvein. It also differs from *Scholastes* in the arista as above, in the absence of dorsocentral, sternopleural, and anterolateral scutellar bristles, the undifferentiated posteroventral bristles of the fore femur, the apically desclerotised subcosta, and the large, exposed tergite 4 of the female abdomen. In general appearance *Tomeus* is reminiscent of some species of the mainly African genus *Paryphodes*, but is distinguishable from the only known Australasian species by the absence of the sternopleural and anterior scutellar bristles, the simple epistomal margin of face, the much less prominent subscutellum, the non-incrassate hind femur, the simpler contour of the posterior crossvein, the absence of setulae on vein 5, etc.

The generic name is from the Greek *tomeus*, a cutting instrument, in reference to the aculeus, and is masculine.

#### *Tomeus wyliei* n.sp.

Figs. 98–103

**Material examined.** HOLOTYPE, ♂, Papua New Guinea: Stony Logging Area, near Bulolo, Morobe Province, 765 m, 17.vii.1979, H.R. (AM). PARATYPES, Papua New Guinea: 1 ♂, same data as holotype (AM); 1 ♀, Upper Manki Logging Area, near Bulolo, Morobe Province, 5000 ft (c. 1500 m), iii.1973, F.R.W., P.S. (AM); 1 ♀, Brown River, near Port Moresby, Central Province, x.1960, J.L.G., (on) palm (BPB).

**Description** (♂, ♀). *Coloration.* Head largely ochraceous; ocellar spot black; postfrons and face with brown markings as in Fig. 98; occiput with brown suffusion. Antenna ochraceous, with brown suffusion on segments 2 and 3. Prelabrum and palpus brown. Thorax predominantly dull blackish brown; mesoscutum with dark to mid-grey pruinescence forming three very diffuse longitudinal bands; scutellum with broad U-shaped yellow band; humeral callus with yellowish zone extending as a band along upper margin of mesopleuron; lower part of mesopleuron with slight tawny suffusion. Fore and mid coxae predominantly brown; hind coxa predominantly ochraceous; femora ochraceous with brown suffusion most strongly developed on distal part of ventral surface; tibiae pale ochraceous with brownish sub-basal zone and usually trace of preapical zone; tarsi pale yellow. Wing with brown markings and suffusion as in Fig. 100. Halter pale yellow. Abdominal tergites 1 to 4 dull tawny with variable median and lateral marginal brown suffusion; tergite 5 of male brown laterally, tawny medially; ovipositor sheath brown to tawny.

*Head* as given for genus; height of cheek 0.15–0.19 of height of eye.

*Thorax.* Mesoscutum c. 0.86 times as long as wide, very densely pruinescent-pubescent and extensively setulose. Wing: entire membrane microtrichose; length of second basal cell c. 0.72 of length of discal cell.

*Abdomen.* Male postabdomen: outer surstylus broad, simple, ensheathing inner surstylus, with few fine setulae; inner surstylus shorter, with two large prenisetae; stipe of aedeagus broad, ribbon-like; preglans almost undifferentiated; glans with large rounded concave lobe (not visible in Fig. 103), and solid, sclerotised apical horn-like process; cavity of glans with lining partly densely papillose-rugose; cercus with numerous long, non-seriate setulae.

*Dimensions.* Total length, ♂ 5.7 mm, ♀ 5.1–6.3 mm; length of thorax, ♂ 2.5–2.6 mm, ♀ 2.4–2.9 mm; length of wing, ♂ 5.5 mm, ♀ 5.4–6.0 mm; length of glans (excluding entire apical process) 0.23 mm.

**Distribution.** As given for genus.

**Notes.** The specimens from Stony Logging Area were found on leaves of *Musa* (native banana).

The specific epithet refers to F. Ross Wylie, who collected material of this and other interesting Diptera in Papua New Guinea.

#### Genus *Pterogenia* Bigot

Figs. 104–106

*Pterogenia* Bigot, 1859: 312. Type species (designated Hendel, 1914a: 20) *P. singularis* Bigot.

*Agastrodes* Bigot, 1859: 311. Type species (monotypy) *A. niveitarsis* Bigot.

*Elachigaster* Rondani, 1875: 431–432. Type species (monotypy) *E. albitarsis* Rondani (= *Agastrodes niveitarsis* Bigot).

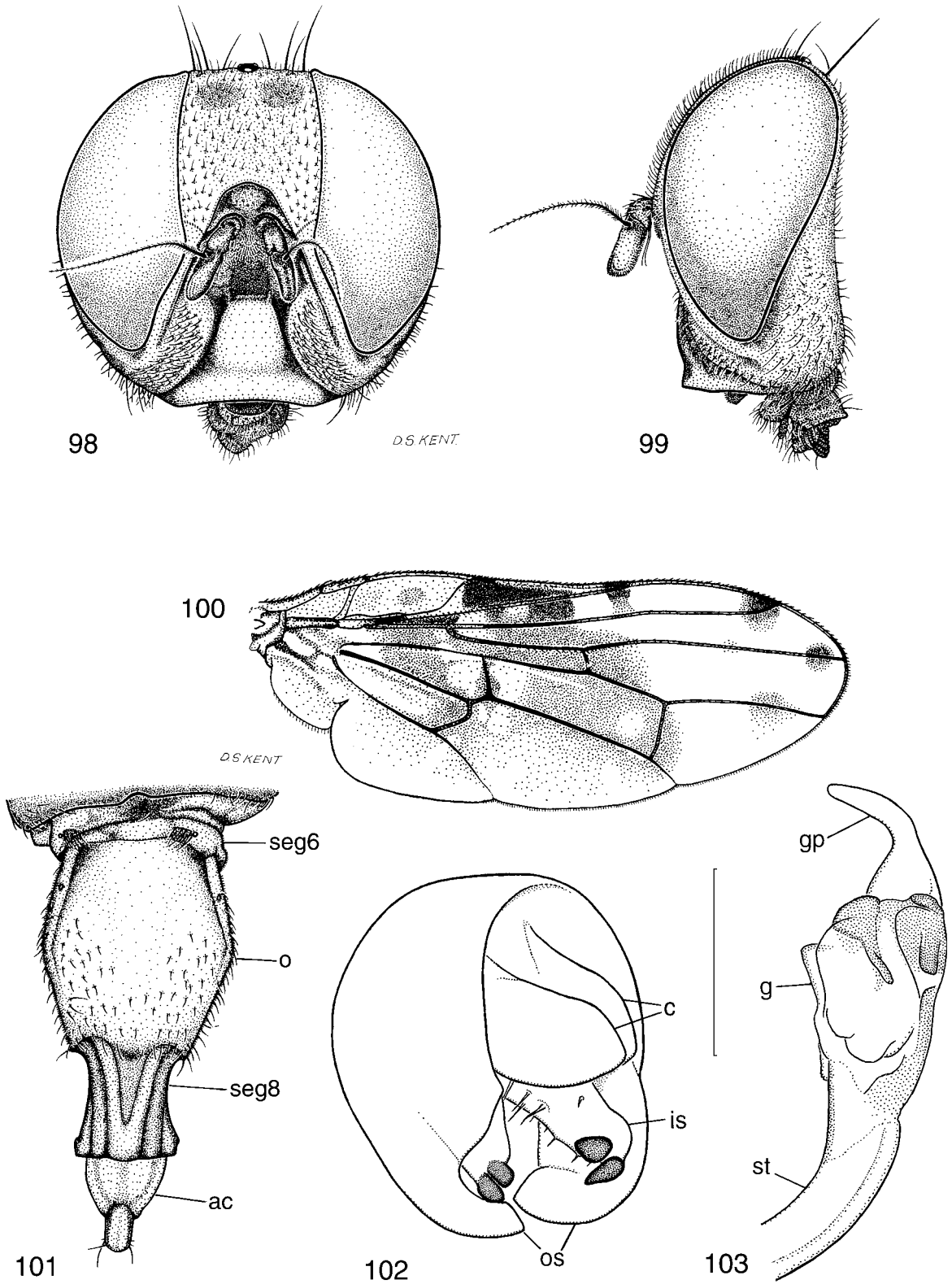
*Ditomogaster* Rondani, 1875: 431, 433. Type species (monotypy) *D. xanthomera* Rondani (= *Pterogenia dayak* Bigot).

**Description.** The detailed description by Hendel (1914a: 141–144) remains valid, so long as the particular characters now attributed to *Neohemigaster* spp. are omitted. I supplement Hendel's description as follows.

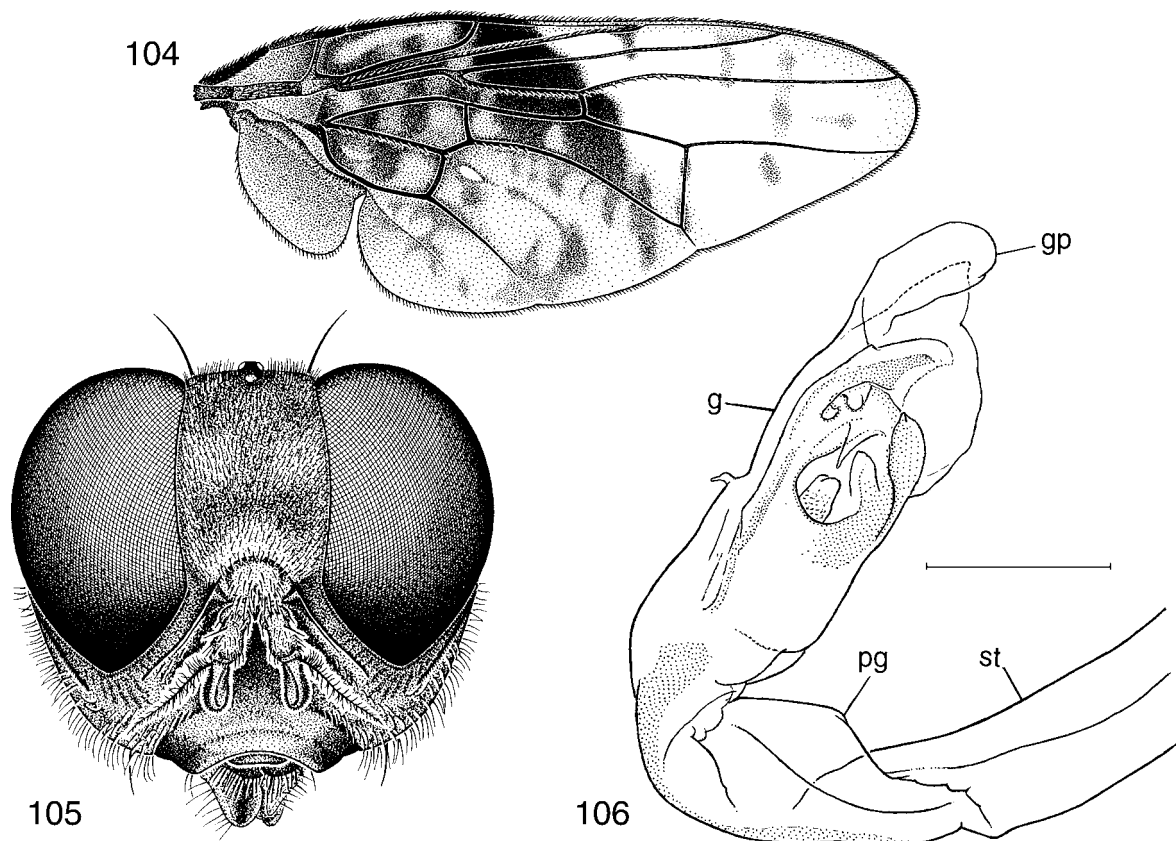
*Head.* Area between antennal sockets forming a narrow ridge; face generally without rounded gibbosity at each lateroventral extremity, at least in females; inner vertical and fronto-orbital bristles generally absent. Antenna generally reaching not much more than halfway from basal socket to centre of epistomal margin of face. Prelabrum generally attenuated anteriorly, sometimes joined to face by small median sclerite; palpus usually well developed, sometimes very broad, in one species minute.

*Thorax.* Prosternum usually larger and less truncated anteriorly than in *Neohemigaster*; subscutellum large, usually markedly less convex than in *Neohemigaster*. Wing: vein 1 always with group of dorsal setulae on basal part, before humeral crossvein (as in *Euprosopia*).

*Abdomen.* Tergite 2 variable, but usually without median



**Figures 98–103.** *Tomeus wyliei* n.sp.. 98–99, head. 100, wing. 101, female postabdomen, dorsal view. 102, epandrium and associated structures, posterolateral view. 103, distal part of aedeagus (scale for Figs. 102, 103 = 0.2 mm). Abbreviations: ac, aculeus; c, cerci; g, glans; gp, terminal process of glans; is, inner surstylus; o, ovipositor sheath (tergosternite 7); os, outer surstylus; seg6, seg8, abdominal segments six and eight; st, stipe.



**Figures 104–106.** 104, *Pterogenia nubecula* Hendel, wing; 105, *Pterogenia* “sp. A” (Mulgrave River, AM), head; illustrations by S.P. Kim. 106, *Pterogenia pectoralis* Hendel, distal part of aedeagus (scale = 0.1 mm). Abbreviations: g, glans; gp, terminal process of glans; pg, preglans; st, stipe.

tubercle on posterior margin. Female: tergite 4 usually well sclerotised, but shorter than tergite 3; tergite 5 vestigial; ovipositor sheath generally short, well sclerotised, subcircular in cross-section; aculeus attenuated.

**Distribution.** Australasian Region: Moluccas; New Guinea; Bismarck Archipelago (New Britain, AM); Solomon Archipelago (Bougainville, AM); Australia (Queensland, New South Wales). Oriental Region (widely distributed).

**Notes.** Numerous Australasian species are listed by Evenhuis (1989) and Oriental species by Steyskal (1977). Some of these are now transferred to *Neohemigaster* (q.v.), and the generic position of others remains to be determined.

The keys to species of Hendel (1914b) and Malloch (1939a) are very incomplete. Frey (1930) gave a key to the Philippine species.

*Pterogenia* is differentiated from other Australasian genera of Scholastinae by the presence of setulae on the stem vein (base of vein 1 before level of humeral crossvein). It most resembles *Neohemigaster*, q.v. for comparative data.

Adults of several Australian species are found on rotting logs or tree stumps infested with boring Coleoptera in rain forest. These may be oviposition sites.

### Genus *Neohemigaster* Malloch

Fig. 107

*Hemigaster* Rondani, 1875: 431. Type species (monotypy) *H. albovittatus* Rondani. Preoccupied Brullé, 1846 (Hymenoptera). *Neohemigaster* Malloch, 1939a: 100, 126–127. New name for *Hemigaster* Rondani. Type species (automatic) *H. albovittatus* Rondani.

**Description.** Resembling *Pterogenia*, as redescribed by Hendel (1914a). The following are the most notable features:

**Head** somewhat anteroposteriorly compressed, largely pruinose and non-shining; facial ridge with few setulae at lower end; area between antennal sockets flat or slightly concave, margined on each side by a slight ridge which is decurrent on to face for short distance; face without median carina, but slightly convex medially on upper part, with a rounded gibbosity at each lateroventral extremity; outer vertical bristle well developed; inner vertical present or absent; postvertical and fronto-orbital bristles absent. Antenna extending c. halfway from basal socket to centre of epistomal margin of face; arista usually subplumose for

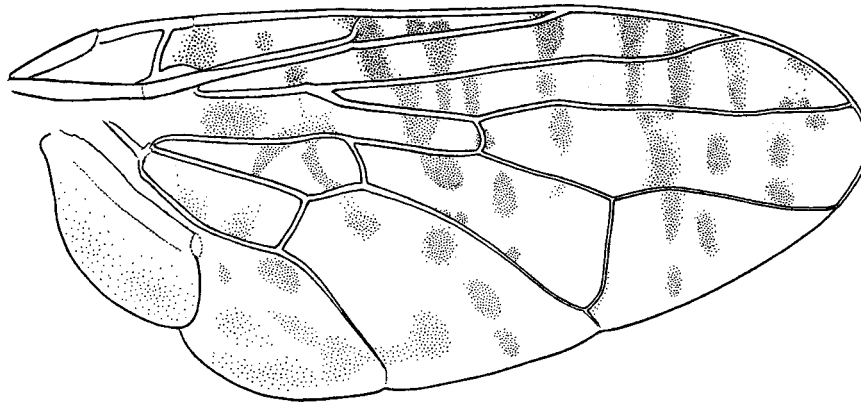


Figure 107. *Neohemigaster* “sp. 1” (Awala, Papua New Guinea, AM), wing.

most of length. Prelabrum small, but well sclerotised; palpus well developed, usually rather broad.

*Thorax* largely dull, pruinose; prosternum usually very short and broad; subscutellum usually large and very convex; the following bristles generally present: humeral, 1+1 notopleurals, supra-alar, postalar, posterior intra-alar, usually three pairs of unequal scutellars situated on posterior part of scutellum, mesopleural; dorsocentral small or absent; prescutellar acrostichal bristle absent. Legs: fore femur with short or rudimentary dorsal and posteroventral bristles. Wing with very diverse brown markings; vein 1 with dorsal setulae only beyond level of humeral crossvein, bare basally; vein 5 setulose dorsally on basal section, sometimes also setulose more distally; squama larger than axillary lobe.

*Abdomen* short and rather broad; posterior margin of tergite 2 with median raised tubercle. Male: tergites 4 and 5 well developed. Female: tergite 3 very large; tergites 4 and 5 minute or desclerotised; ovipositor sheath depressed, keeled along each side; aculeus very slender, not depressed.

**Distribution.** Australasian Region: New Guinea. Oriental Region: widely distributed in Indonesia and Malaysia, possibly also Philippines and Taiwan.

**Notes.** Species of this genus were included in *Pterogenia* in all the writings of de Meijere and Hendel, and characters for separating these genera were first given by Malloch (1939a). It has therefore been difficult to place some of the described species without examination of types.

In my experience, species of *Neohemigaster* can be separated from those of *Pterogenia* by the absence of dorsal setulae on the basal part of vein 1 (stem vein), the flattened or slightly concave zone between the antennal sockets, the small rounded gibbosity, present even in females, at each lateroventral extremity of face, the great reduction of abdominal tergite 4 in the female, and the depressed, laterally keeled ovipositor sheath. The greater convexity of the subscutellum in *Neohemigaster* may be a valid difference, but needs checking for more species. The presence of the inner vertical bristle in *Neohemigaster* and the absence of the median tubercle on abdominal tergite 2 in *Pterogenia* are not consistent enough for generic

segregation. In the male of an undescribed species of *Neohemigaster* (“sp.1” in AM) from Papua New Guinea the postgenal region on each side bears a stout, forwardly directed lamella, reminiscent of that of *Pterogenia singularis* Bigot.

The type species, *Neohemigaster albovittata* (Rondani), was redescribed from the holotype female by Hendel (1914b: 322–324) and the head and wing figured (1914a: pl. 12, fig. 231; pl. 13, fig. 232). Originally from Sarawak, East Malaysia, Malloch (1939a: 127) recorded a male of *N. albovittata* from Sandakan, Sabah. My knowledge of this species derives from the publications of Hendel and Malloch.

In addition, I have seen the following species referable to *Neohemigaster*: *Neohemigaster fascifrons* (de Meijere, 1916) n.comb., Java (AMST); *Neohemigaster guttata* (Walker, 1856) n.comb., as determined and redescribed by de Meijere (1916: 85–86), Singapore and Sumatra (AMST); *Neohemigaster* “sp.1”, Papua New Guinea (Morobe, Oro, and Central Provinces, AM); *Neohemigaster* “sp.2”, Sumatra (AM). Malloch (1939a: 127) mentioned two unnamed species of *Neohemigaster* from Sibuyan Island, Philippines. From the original descriptions, it seems probable that *Pterogenia eurysterna* Hendel (1914b: 319–321) from Taiwan, and *P. glabrina* Hendel (1914b: 318–319) from Sarawak are referable to *Neohemigaster*. Thus it appears that as many as nine species of *Neohemigaster* exist in collections. The described Oriental species are listed by Steyskal (1977) under *Neohemigaster* and *Pterogenia*.

I have collected females of *Neohemigaster* “sp.1” in a rubber plantation in Papua New Guinea on trunks of *Hevea brasiliensis*, at wounds probably made by boring Coleoptera. H. Roberts found both sexes of the same species in a natural rainforest habitat, the specimens being labelled “ex Xanthophyllum” (AM).

### Genus *Paryphodes* Speiser

*Paryphodes* Speiser, 1911: 251. Type species (original designation)

*P. omega* Speiser.

*Styellodiscus* Enderlein, 1912: 372. Type species (original designation) *S. perforatus* Enderlein.

*Simomesia* Enderlein, 1912: 373. Type species (original designation) *Simomesia tigrina* Enderlein (= *Scholastes nepticula* Loew).

**Description.** See Hendel, 1914a.

**Distribution.** Australasian Region: New Guinea—north-east, new record for Region. Afrotropical Region: mainland Africa—mainly tropical; Madagascar (specimen of a typical *Paryphodes* in NMWC; a further species doubtfully referred here in AM).

**Notes.** Hendel (1914b) gave a key to species, and Steyskal (1980) listed the species with additions and revised synonymy. The latter recognized 17 species, all from Africa.

Judging from the numerous Afrotropical specimens that I have examined, the only New Guinea species is reasonably typical of the genus. In addition to characters given in the key to genera, it differs from the species of *Scholastes*, which have a similarly developed sternopleural bristle, in having the postfrons c. twice as long as wide (much less than twice as long in *Scholastes*), and without the anterior transverse ridge present in *Scholastes*; two fronto-orbital bristles (instead of one); antennal segment 6 with numerous, quite short, non-seriate hairs on most of length (instead of being relatively sparsely long-bipectinate); dorsocentral bristles vestigial (instead of in one or more well-developed pairs); fore femur with short posteroventral bristles, scarcely longer than dorsal bristles (instead of much longer than any dorsal bristles); hind femur much thicker than mid femur (instead of scarcely thicker); vein 2 not undulated (instead of strongly undulated near mid-length); basal section of vein 5 dorsally setulose (instead of bare); anal crossvein nearly straight (instead of distinctly curved); tergite 5 of male as long as tergites 3 and 4 together (instead of no longer than tergite 3).

The record for Papua New Guinea is unexpected in the absence of any records from the Oriental Region. As the species are relatively small and inconspicuous for platystomatids, it is possible that they have been overlooked in some countries. As far as I can judge, the species from New Guinea is distinct from any of the described African ones. The possibility that it may be introduced by man is acknowledged.

*Paryphodes hospes* n.sp.

Fig. 108–110

**Material examined.** HOLOTYPE, ♂ (unique), Papua New Guinea: Bainyik, near Maprik, East Sepik Province, 21.xii.1963, D.K.M. (AM).

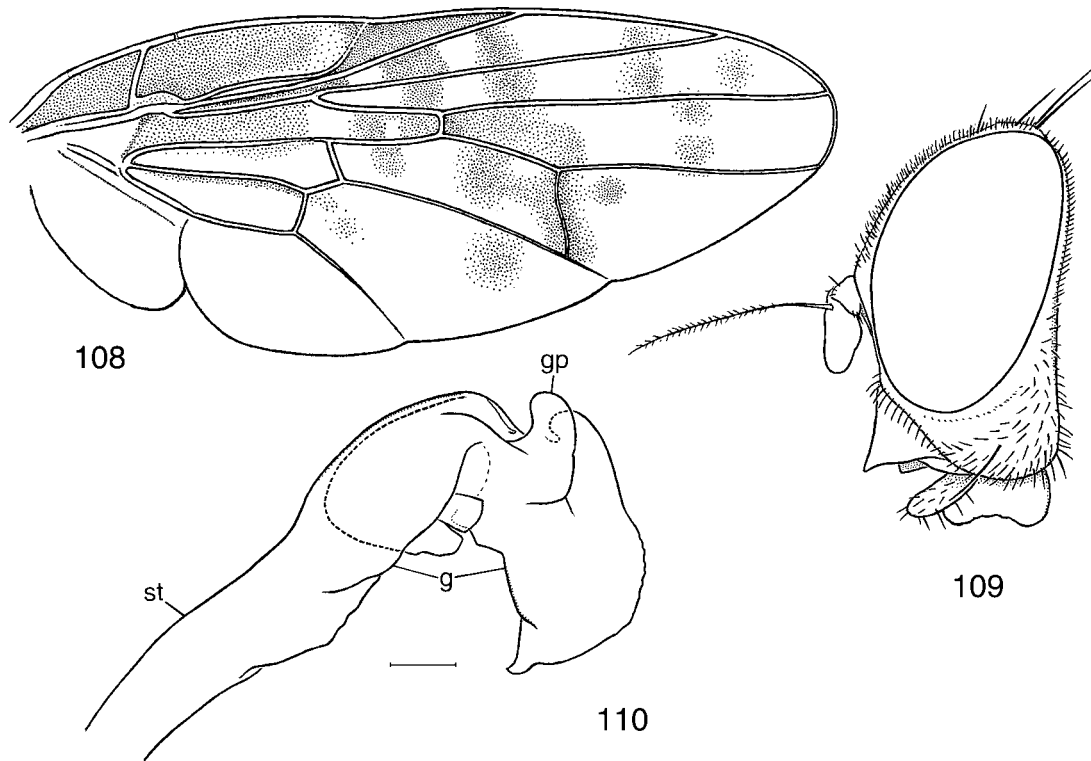
**Description** (♂, ♀ unknown). *Coloration.* Head dull fulvous; postfrons with pair of parallel brown stripes clear of orbits on posterior two-fifths, dilated and connected posteriorly but not quite reaching vertex; a pair of less distinct brownish marks at anterior third of postfrons; face with brown mark near centre, not extending its full width; occiput largely dark brown. Antenna fulvous, with slight brownish suffusions; segment 6 brown except at fulvous base. Palpus and prelabrum dull fulvous. Thorax dark brown, largely pruinulent and little shining; humeral callus with two yellow marks, upper one smaller and a little extended posteriorly above anterior notopleural bristle, lower one extending over upper part of mesopleuron; mesoscutum with very indistinct pair of grey dorsocentral

stripes; scutellum with dull yellow arcuate marginal zone not extending on to anterior half. Femora brownish tawny, fore and mid ones a little darker except towards apices; fore tibia yellow, with tawny suffusions; mid tibia tawny, with brownish band beyond middle and yellow apex; hind tibia largely yellowish, with tawny base; tarsi pale yellow, without apical darkening. Wing hyaline or subhyaline except as follows: a pale uneven brownish suffusion in both costal cells; stigmal section of subcostal cell yellowish brown, slightly paler distally; marginal cell with basal streak, a small brown blotch at base of vein 2, two larger brown blotches near middle, and a small brownish blotch near distal end; submarginal cell with two brown blotches adjoining large brown blotches in marginal cell, a less intense brownish mark adjoining distal blotch in marginal cell and an indistinct brown mark between last and apex; first basal cell tinged with brown on basal half, distally with two brown blotches, one of which is terminal; first posterior cell unevenly suffused with brown on basal third, with pair of brownish blotches about halfway between dark basal zone and apex and a faintly indicated blotch between this pair and apex; second basal and anal cells with faint suffusion only, but the latter with brown streak along vein 5; discal cell with brownish blotch at about basal quarter and extensive irregular distal brown suffusion which is clear of vein 5 except near discal crossvein; second posterior cell suffused with brown mainly near discal crossvein and with sub-basal blotch near vein 4, with very indistinct suffusion distally; third posterior cell with faint general suffusion and an indistinct blotch beyond middle near vein 5; axillary lobe and squama dull creamy. Halter yellowish, with brown capitellum. Abdominal tergites largely thinly pruinulent and somewhat shining, tawny to brownish tawny; pleural membrane fulvous.

*Head.* Postfrons evenly convex in profile, its length (antennal sockets to vertex) about twice as great as width near mid-length; ptilinal suture narrowly arched; parafacial bare; facial ridge not expanded below, where it has few setulae in two irregular series; face with no distinct carina, somewhat explanate on central lower part, slightly projecting below, but with epistomal margin sharply reflexed to face ventrally; antennal grooves broad and shallow; upper postocular area very narrowly visible in profile, margined by a very regular series of closely placed postocular setulae; the following cephalic bristles well developed: inner and outer vertical, two pairs of fronto-orbitals, postgenal; postvertical small; ocellar and lateral occipital absent. Antenna about half as long as face on median line; segment 6 long and slender, with very short hairs on whole length. Prelabrum deeply sclerotised at sides, much attenuated anteriorly; palpus moderately broad.

*Thorax.* Mesoscutum c. 0.85 times as long as wide; scutellum somewhat flattened dorsally, with numerous dorsal and some lateral setulae; mesopleuron moderately convex on upper part; subscutellum very convex and prominent (tachinid-like); the following thoracic bristles well developed: humeral, 1+1 notopleurals, supra-alar, postalar, posterior intra-alar, mesopleural, sternopleural, three pairs of normal scutellars, and a series of c. nine





**Figures 108–110.** *Paryphodes hospes* n.sp. 108, wing. 109, head. 110, distal part of aedeagus (scale = 0.05 mm). Abbreviations: g, glans; gp, medial process of glans; st, stipe.

ventrolateral shorter bristles or enlarged setulae on each side of scutellum; dorsocentral vestigial; prescutellar acrostichal absent. Fore and mid legs rather short; hind leg longer; fore femur with numerous non-seriate dorsal bristles, and a series of moderately long posteroventral bristles; mid femur more slender, with a series of posteroventral bristles; hind femur longer and much stouter than other femora, not curved, without strong bristles; mid tibia with one moderately large apical ventral spur; mid basitarsus elongate, much more than half as long as whole tarsus. Wing: entire membrane microtrichose; both costal cells unusually broad, with costa more arched on these cells than usual (compare figs. 50, 52, 53, 55–57 of Hendel, 1914b); vein 2 almost straight, except at origin; vein 3 with faint undulation near middle of distal section; length of second basal cell c. 0.87 of length of discal cell, both measured on vein 4; vein 4 index = 0.47; second section of vein 4 with very slight curvature; distal section of vein 4 with slight sigmoid curvature, becoming parallel with vein 3 apically, 2.0 times as long as penultimate section; discal crossvein moderately oblique, with sigmoid curvature, c. 1.7 times as long as distal section of vein 5; anal crossvein with almost imperceptible curvature; basal section of vein 5 with nine or ten dorsal setulae; axillary lobe and squama both moderately large and rounded.

**Abdomen.** Tergite 2 setulose mainly near posterior margin, with small median group of larger setulae on margin and more extensive lateral group of larger setulae; tergites 3 and 4 short; tergite 5 larger, almost uniformly setulose, somewhat narrowed posteriorly, as long as tergites 3 and 4 together. Aedeagus (Fig. 110): stipe moderately long, slightly expanded distally, but otherwise without differentiated preglans; glans moderately compact but constricted and partly desclerotised near middle, distal section with complex, asymmetrical sclerotisation, but no elongate processes, basal section with cup-like cavity containing complex fibrous structure (detail not shown in figure).

**Dimensions.** Total length 4.4 mm; length of thorax 2.3 mm; length of wing 3.9 mm; length of glans of aedeagus 0.24 mm.

**Distribution.** Papua New Guinea—lowlands of East Sepik Province.

**Habitat.** Tall rainforest remnant. I am informed that this forest at the Agriculture Station, Bainyik, was later cleared.

**Notes.** In the key to *Paryphodes* species of Hendel (1914b: 253–254), *P. hospes* runs imperfectly to *P. tigrinus* Enderlein, but differs in having the thorax predominantly dark brown instead of clay yellow and the second section

of vein 4 shorter and much less curved. (*P. tigrinus* is a junior synonym of *P. nepticula* (Loew), according to Steyskal, 1980). Of the other species with yellowish marking on the scutellum, *P. duus* Steyskal has the second section of vein 4 longer and more curved and the wing much more extensively shaded with brown; *P. conspurcatus* Hendel has the distal section of vein 4 relatively short, the costa less arched over the costal cells, and the wing markings quite different (Hendel, 1914b: fig. 56); *P. compticeps* Enderlein has extensive yellow striping on the mesoscutum, black-brown abdomen (male), and a broad dark brown band covering "pterostigma" and anterior crossvein, all in disagreement with *P. hospes*. From the above it seems very probable that *P. hospes* is distinct from any of the described African species of *Paryphodes*, though most of these were also described from very little material. Of the Afrotropical species of *Paryphodes* that I have examined (in NMWC, PM, and other collections), none has the setulae on vein 5 or the well differentiated series of ventrolateral bristles on the scutellum seen in *P. hospes*, but there are numerous described species not yet examined for these features.

The holotype has a female strepsipteran or stylops projecting from the pleural membrane of the abdomen. Parasitism does not appear to have affected the morphology of the host fly, as is also the case in other styloped platystomatids examined. Perhaps these parasites are referable to the family Dipterophagidae (see Drew & Allwood, 1985).

The specific epithet is Latin for stranger or visitor, on account of the unexpected occurrence of this Afrotropical genus in New Guinea.

## Genus *Scholastes* Loew

Figs. 111, 112

*Scholastes* Loew, 1873: 38. Type species (generally accepted as original designation, but see note below) *Platystoma cincta* Guérin-Méneville.

*Chaetostichia* Enderlein, 1924: 133–134. New synonym. Type species (original designation) *C. aduncivena* Enderlein.

*Chaetostichia*.—Enderlein, 1924: 133. Variant spelling of above, here interpreted as an incorrect original spelling.

**Description.** See Hendel (1914a). I add the following.

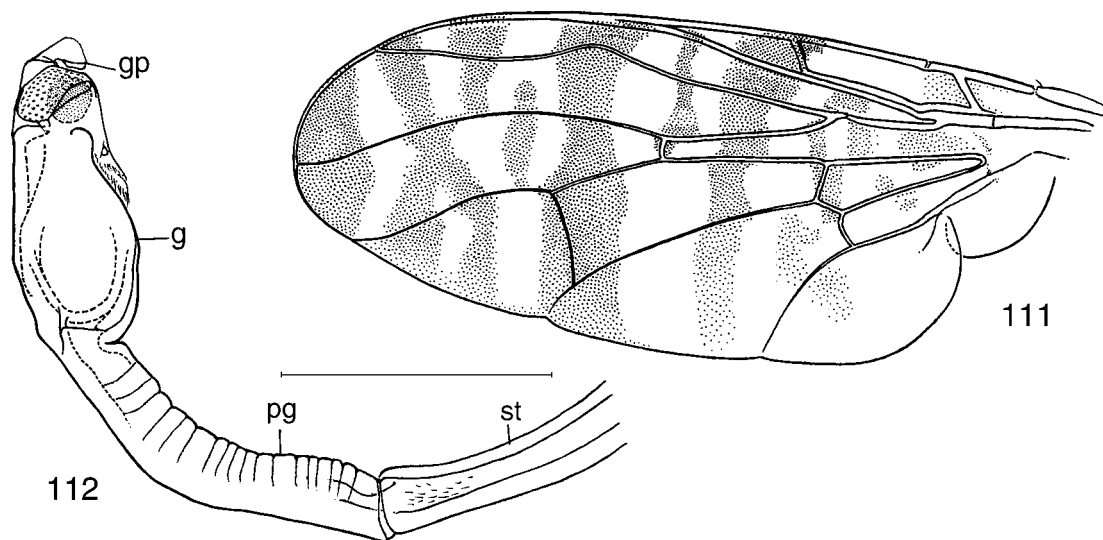
*Wing.* Stem vein without dorsal setulae before level of humeral crossvein.

*Male postabdomen.* Epandrium with thick lobe on each side, which overlaps base of outer surstylus; aedeagus with long stipe; preglans undifferentiated; glans rather small, with complex apical structure and no terminal filaments.

*Female abdomen.* Tergite 3 very large; tergite 4 vestigial; tergites 5 and 6 vestigial or absent; aculeus slender, not compressed.

**Distribution.** Australasian Region: Micronesia; Moluccas; New Guinea; Bismarck Archipelago; New Caledonia; Fiji; Tropical Polynesia; probably not established in Australia. Oriental Region. Afrotropical Region: Seychelles only.

**Notes.** I follow universal usage in accepting *Platystoma cincta* Guérin-Méneville as the type species, though this is at least questionable under the ICZN. Although Loew (1873)



**Figures 111–112.** 111, *Scholastes taylori* Malloch, wing. 112, *Scholastes cinctus* (Guérin-Méneville), distal part of aedeagus (scale = 0.5 mm). Abbreviations: g, glans; gp, terminal process of glans; pg, preglans; st, stipe.

stated that this was his type species, he simultaneously indicated that *Scholastes* was introduced as a replacement name because *Pachycephala* Doleschall was preoccupied. Such dual implications are to be resolved by Article 66.8 of ICZN (1999), especially as *P. cincta* was not among the species originally included in *Pachycephala* Doleschall. If *Pachycephala mohnikei* Doleschall is the type species of *Scholastes* (through designation by Enderlein, 1924 as type species of *Pachycephala* Doleschall, for which both *Scholastes* and *Oncoscelia* Enderlein are replacement names, see above under *Euprosopia*), then *Scholastes* becomes a junior subjective synonym of *Euprosopia* Macquart. The disused name *Chaetostichia* Enderlein would then become the valid name for the genus which includes *P. cincta* and allied species. As *Scholastes auctorum* is the type of a currently used subfamily name, this substitution is undesirable.

*Scholastes*, *Paryphodes*, and *Lenophila* are the only Australasian platystomatid genera with a sternopleural bristle (sometimes undeveloped in *Lenophila*). *Scholastes* is distinguished from the other two by having an irregular transverse ridge on the postfrons a little above the ptilinal suture, and by having vein 2 strongly undulated opposite the termination of vein 1. For other distinguishing characters see under *Paryphodes* and the key to genera.

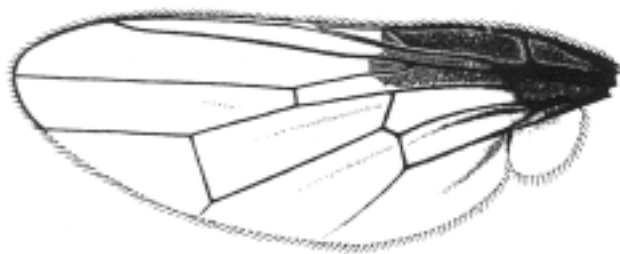
Evenhuis (1989) lists 11 Australasian species of *Scholastes*. A further four possibly valid, mainly Oriental species have been listed (Steyskal, 1977 and 1980). I am not aware of any undescribed species in collections. I have examined type material of *Chaetostichia aduncivena* Enderlein in MNB, labelled “?Java”. It is typical of *Scholastes* (n.comb.), but I have not determined its specific status. Keys to species have been given by Hendel (1914b), Curran (1936), and Malloch (1939a).

The larvae of *Scholastes lonchifer* Hendel (often incorrectly given as *lonchifera* or *lonchiferus*) and *S. bimaculatus* Hendel are recorded as infesting coconuts (*Cocos nucifera*; Auberton & Cheesman, 1929; McAlpine, 1973a).

### Genus *Trigonosoma* Gray

Fig. 113

*Trigonosoma* Gray, in Griffith & Pidgeon, 1832: 774. Type species (monotypy) *T. perilampiformis* Gray (correctly *perilampiforme*). *Tropidogastrella* Hendel, 1914a: 18, 134–136. Type species (original designation) *T. tropida* Hendel.



**Figure 113.** *Trigonosoma cristiventre* (Gerstaecker), wing. After Hendel (1914a).

**Description.** See Hendel (1914a).

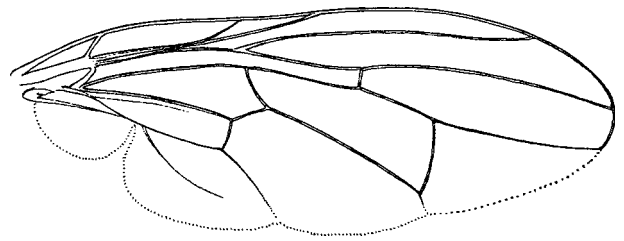
**Distribution.** Australasian Region: Moluccas—Ambon. Oriental Region: widely distributed. Steyskal (1977) gives also Ceram (or Seram), but he is mistaken in including Ceram in the unrestricted type locality of *T. cristiventre* (Gerstaecker). Gerstaecker (1860) gives “Amboina” (= Ambon) only.

**Notes.** *Trigonosoma cristiventre* (Gerstaecker) from the Moluccas is the only recorded Australasian species. The records of this species from the Philippines by Frey (1930) need careful checking. Steyskal (1971) gave a key to species.

### Genus *Zygaenula* Doleschall

Fig. 114

*Zygaenula* Doleschall, 1859: 117. Type species (monotypy) *Z. paradoxa* Doleschall.  
*Gorgopis* Gerstaecker, 1860: 180–184. Type species (original designation) *G. bucephala* Gerstaecker.  
*Gorgopsis* Schiner, 1868: 229. Unjustified emendation for *Gorgopis* Gerstaecker.



**Figure 114.** *Zygaenula paradoxa* Doleschall, wing. After Hendel (1914a).

**Description.** The redescription by Hendel (1914a: 138–139) is generally apt, even though he included species now referred to *Mesoctenia*. I have no material on hand for a revised description.

**Distribution.** Australasian Region: Moluccas (Ambon). Oriental Region: Philippines. The ranges of *Zygaenula* and *Mesoctenia* appear to be separated by Lydekker’s Line.

**Notes.** *Zygaenula* closely resembles *Mesoctenia*, but the mid femur of the former is neither much thickened nor ventrally spinose. Only the type species, *Z. paradoxa* Doleschall (= *Gorgopis bucephala* Gerstaecker) is recognized.

**Genus *Mesoctenia* Enderlein**

Figs. 9, 115, 116

*Mesoctenia* Enderlein, 1924: 130–131. Type species (original designation) *M. ralumensis* Enderlein (= *Zygaenula coalescens* Hendel).

**Description.** See McAlpine (1973a).

**Distribution.** New Guinea: widely distributed on mainland; Aru. Bismarck Archipelago: New Britain; Manus. Australia: Queensland.

**Notes.** I have seen at least six species of *Mesoctenia*, and provided a provisional key to five of these (McAlpine, 1973a).

Hendel (1914a, 1914b) included *Mesoctenia* spp. in the genus *Zygaenula*, but Enderlein established the separate genus *Mesoctenia* for species with thickened, ventrally spinose mid femur. Malloch (1939a) accepted Enderlein's genus. Without material of the type species of *Zygaenula* for study, I am uncertain if this generic separation of *Mesoctenia* on a single character is justified. The wing illustration of *Zygaenula paradoxa* by Hendel (1914a, here copied as Fig. 114) suggests some venational differences from available *Mesoctenia* spp., but I am unable to confirm these at present.

G.A. Holloway and the author collected more than 20 specimens of *Mesoctenia australis* McAlpine on a young palm (Arecaceae) at Thornton Range, Queensland, in 1967. As a majority of these were soft, newly eclosed specimens, it is likely that the immature stages were also associated with the palm.

**Genus *Naupoda* Osten Sacken**

Figs. 117–120

*Naupoda* Osten Sacken, 1881b: 135. Type species (monotypy) *N. platessa* Osten Sacken.

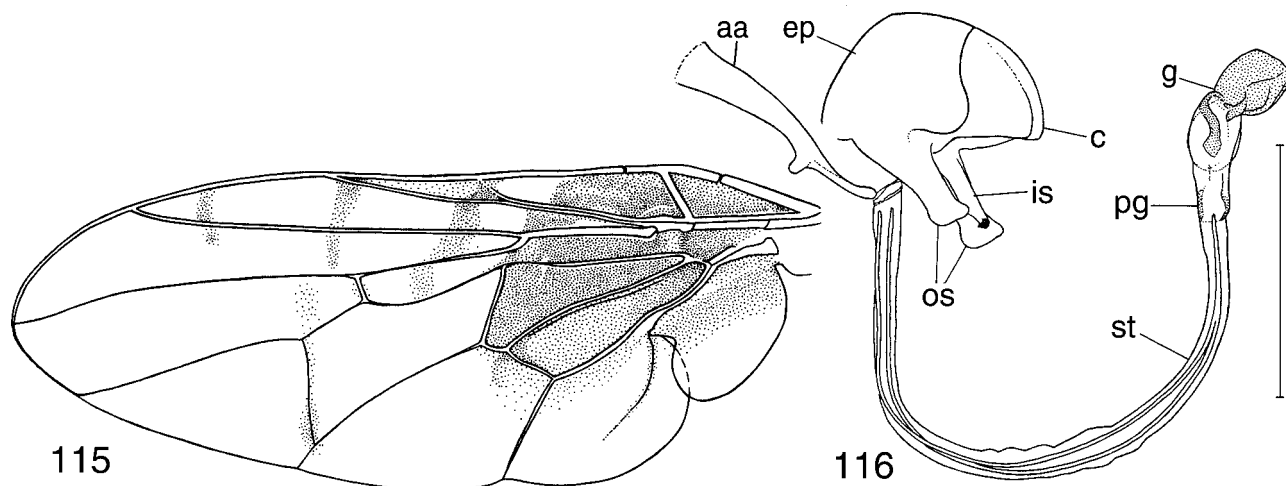
**Description.** See Hendel (1914a) for a detailed description, to which I add the following.

**Male abdomen.** Tergites 4 and 5 well sclerotised, but shorter than tergite 3; epandrium without distinct lateral lobe; outer surstylus with pair of moderately small terminal prensisetae; aedeagus with moderately long stipe; preglans forming separate sclerite; glans well developed, with complex, variable sclerotisation; terminal filaments absent; cercus with moderately long, rather few to numerous, irregularly placed setulae.

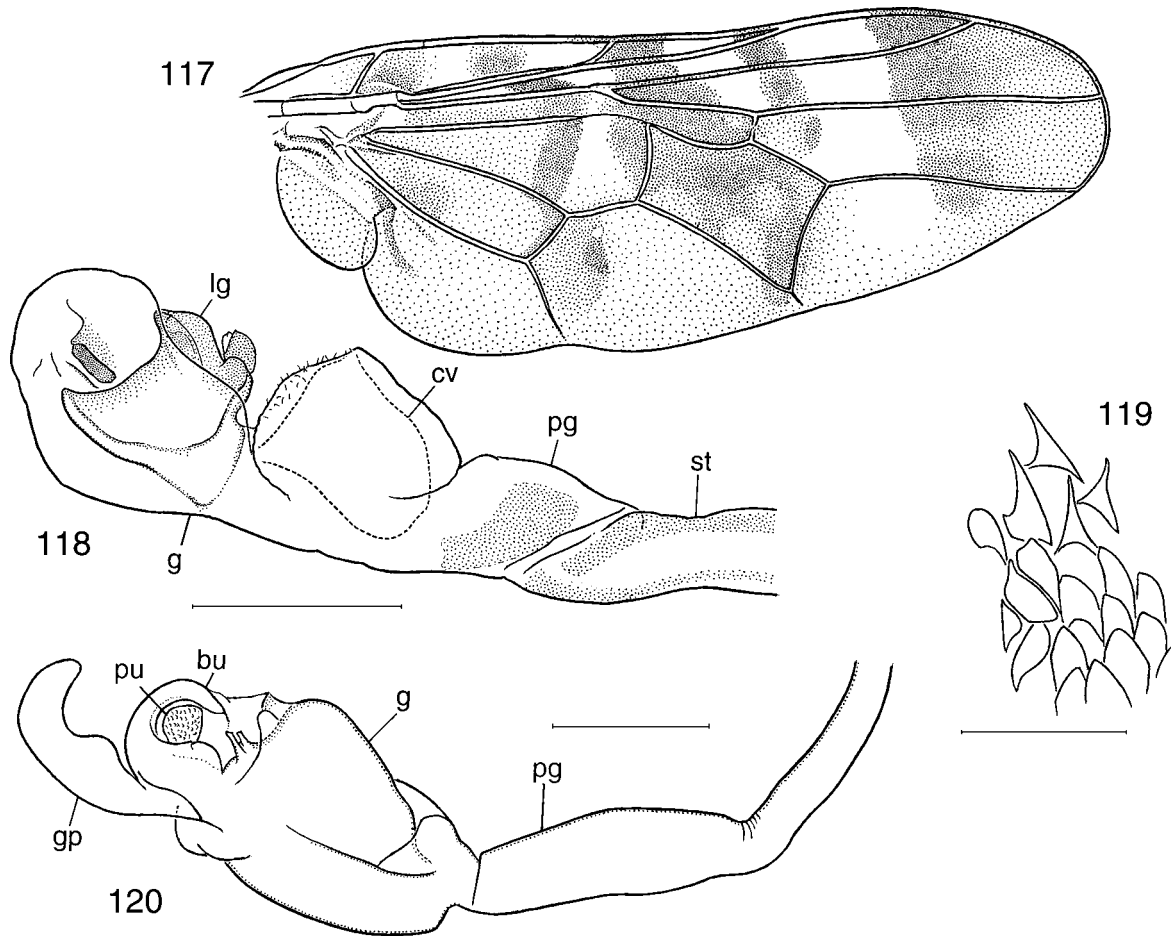
**Female abdomen.** Tergite 3 large; tergites 4 and 5 completely desclerotised (probably so in all true *Naupoda* spp.); ovipositor sheath depressed, keeled on each lateral margin; aculeus slender.

**Distribution.** Australasian Region: New Guinea; Solomon Archipelago—Choiseul, Malaita; Australia—east coast as far south as Richmond River district, Lord Howe Island. Oriental Region: widely distributed. Afrotropical Region: widely distributed in African tropics; Madagascar.

**Notes.** The Fijian species *Naupoda simmondsi* Bezzi was misplaced in this genus and is here transferred to the new genus *Phlyax*, q.v. The Oriental species *N. strigifera* de Meijere, *N. ypsilon* van der Wulp, and *N. ypsilonoides* de Meijere are apparently misplaced in *Naupoda*, from examination of type material (AMST), and their generic placement needs further study.



**Figures 115–116.** *Mesoctenia australis* McAlpine. 115, wing. 116, male external genitalia, setulae omitted from epandrium and cerci (scale  $f=0.5$  mm). Abbreviations: aa, aedeagal apodeme; c, cercus; ep, epandrium; g, glans; is, inner surstylus; os, outer surstylus; pg, preglans; st, stipe.



**Figures 117–120.** *Naupoda nudiseta* (Bezzi). 117, wing. 118, distal part of aedeagus (scale = 0.2 mm). 119, scales from lining of cavity of glans, acuminate ones nearest rim (scale = 0.025 mm). 120, *Naupoda platessa* Osten Sacken (?) (Luzon, BPB), distal part of aedeagus (scale = 0.1 mm). Abbreviations: bu, bulb; cv, cavity of glans; g, glans; gp, terminal process of glans; lg, sclerotised lobe of glans; pg, preglans; pu, pustulose sclerite; st, stipe.

The most typical species of *Naupoda* available to me are the Oriental *N. platessa* Osten Sacken, *N. imitans* de Meijere, and an undetermined species from West Malaysia. I place these in the subgenus *Naupoda* s.str. The known Australasian species all differ from *Naupoda* s.str. in several significant characters as shown in Table 3, and are here placed in the new subgenus *Gonga*. The subgeneric placement of the Afrotropical species (see Steyskal, 1980) and the few remaining Oriental species (see Steyskal, 1977) remains to be worked out. I have examined the aedeagus in *N. (Naupoda) platessa* Osten Sacken (or near, Luzon), *N. (Gonga) nudiseta* (Bezzi), and *N. (Gonga) regina* Hendel (Queensland population), and have found great structural differences between all three. *Naupoda (G.) nudiseta* differs from the other two in that the basal part of the glans contains a capacious, distally open cup-like cavity lined with several hundred densely packed scales (Figs. 118, 119), which is absent in the other two (compare Fig. 120).

Adults of *Naupoda regina* Hendel have been observed

several times on foliage of rainforest trees in Australia. Bezzi (1928) quoted label data for *N. nudiseta* (Bezzi) from Lord Howe Island as said to do damage to peaches and bananas. The report may be due to confusion with *Dacus* (or *Bactrocera*) spp. (Tephritidae) which abound on the island (author's observations).

#### Subgenus *Gonga* n.subgen.

**Type species:** *Pterogenia nudiseta* Bezzi.

**Description.** See Table 3 for characters distinguishing *Gonga* from *Naupoda* s.str. In addition, species of *Gonga* have the anterodorsal gibbosity of the mesopleuron less pronounced than in *Naupoda (Naupoda) platessa*, the anal crossvein more markedly oblique so that the posterodistal angle of the anal cell is much more obtuse than the anterodistal angle, the basal section of vein 5 not setulose (condition variable in *Naupoda* s.str.), the conjoined cerci

**Table 3.** Subgeneric characters in genus *Naupoda*.

| Subgenus <i>Naupoda</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Subgenus <i>Gonga</i>                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Fronto-orbital bristle absent</li> <li>• Epistomal margin of face narrowly reflexed to form a marginal ridge, which diverges from margin on each side</li> <li>• Peristomial series of setulae undifferentiated</li> <li>• Subcosta with very slight apical curvature</li> <li>• Discal crossvein bent abruptly just before anterior end</li> <li>• Basal section of vein 4 with weak, flexible point near distal third, sclerotised beyond this point</li> </ul> | <ul style="list-style-type: none"> <li>• Fronto-orbital bristle present</li> <li>• Epistomal margin of face simple</li> <li>• A differentiated series of fine anterior peristomial setulae present</li> <li>• Subcosta with strong apical curvature</li> <li>• Discal crossvein curved, but without abrupt bend</li> <li>• Basal section of vein 4 weakened along much of distal quarter</li> </ul> |

of the male mounted on distal end of the non-sclerotised proctiger (instead of occupying the whole of the sides of the proctiger as in *N. platessa*). The squama is much larger than the axillary lobe, as in *Naupoda* s.str., but in contrast to some species referred, perhaps incorrectly, to the genus *Naupoda*.

**Notes.** This subgenus includes the following species: *Naupoda (Gonga) nudiseta* (Bezzi) (syn. *N. insularis* Paramonov) from Lord Howe Island; *N. (Gonga) regina* Hendel from New Guinea and eastern Australia, and *N. (Gonga) ventralis* Curran from the Solomon Archipelago. These are all the Australasian species of the genus *Naupoda* known to me.

The subgeneric name is a contraction of the Greek *gongylos*, a sphere, and is feminine because of the termination.

### Genus *Asyntona* Osten Sacken

Figs. 3, 121

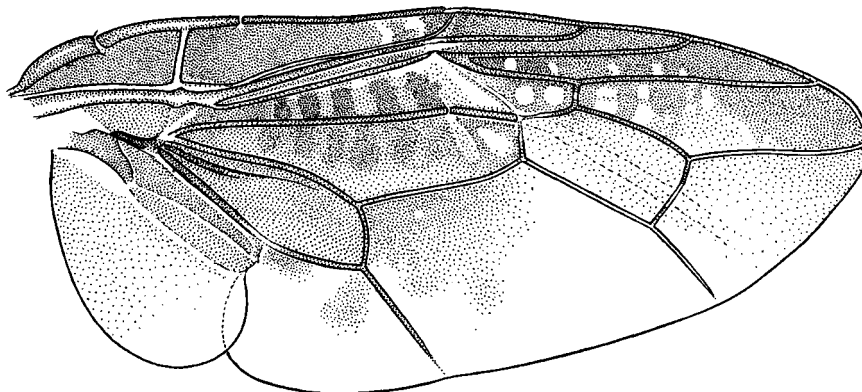
*Asyntona* Osten Sacken, 1881b: 135. Type species (monotypy) *A. doleschalli* Osten Sacken.

**Description.** See Hendel (1914a).

**Distribution.** Moluccas: Ambon; Kai Islands. New Guinea: mainland; Aru; Trobriand Islands. Solomon Archipelago: Bougainville; Tulagi (Florida Group); Guadalcanal. Queensland: Coen district northwards.

Malloch (1939a) recorded *Asyntona tetyroides* (Walker) from Philippine Islands, probably because Osten Sacken (1882) redescribed the supposed synonym, *A. doleschalli*, in a work on Philippine Diptera, which Malloch cited. However, Osten Sacken clearly gave the locality as “Amboina” (i.e. Ambon, Moluccas) for this species. I know of no other records of *Asyntona* from the Oriental Region, and I think the genus is endemic to the Australasian Region.

**Notes.** Hendel (1914b) and most subsequent authors have generally accepted only two species of *Asyntona*, viz. *A. flavipes* Hendel, with yellow head, and *A. tetyroides* (Walker) with predominantly blackish head, the names *A. doleschalli* Osten Sacken and *A. paradoxa* de Meijere being treated as synonyms of *A. tetyroides*. This interpretation is almost certainly not wholly correct. I have examined at least three dark-headed species (all in AM), but females and, perhaps, some diminutive males may be hard to place. The figures of Hendel (1914a: figs. 247–249, locality not given) may represent a fourth such species. Males (but perhaps not diminutives) of these species differ in armature of antennal segment 2 and of the hind trochanters. Further



**Figure 121.** *Asyntona* “sp. A” (Wewak, Papua New Guinea, AM), wing.

study of type material and comparative morphology is needed to enable specific identifications.

*Asyntona* resembles *Naupoda* but has a larger alula, more complex folding of the wing (Malloch, 1939a), and tergites 4 and 5 of the female abdomen well sclerotised. The fringe of numerous marginal scutellar bristles is distinctive.

A specimen of *Asyntona* sp. from Trobriand Islands (J.W.I., AM) is labelled “behind beach, forest”. Specimens of two distinct *Asyntona* spp. from Papua New Guinea (AM) have labels indicating that they were associated with *Pandanus* plants (Pandanaeae). Malloch (1940) recorded a specimen of *A. flaviceps* Hendel from Guadalcanal associated with *Pandanus*.

### Subfamily Trapherinae

**Description.** Fronto-orbital bristles well developed; lower end of facial ridge often broadened and with field of irregularly placed setulae; face usually with transverse convexity below, or with transverse ridge or gibbosity near middle; cheek often with linear stripe of outstanding pubescence along lower margin of eye. Arista usually long-bipectinate (with only short hairs in *Eopiara*). Palpus usually broad and rather short. Wing: subcosta usually nearly straight and gradually approaching costa distally or with very short, often desclerotised transverse distal section; second basal cell often much broader than first basal cell, which often has a pronounced bend near junction of basal crossvein with vein 4; vein 7 usually represented beyond alular incision by a long, sharp crease, often accompanied by pigment; squama forming a small lobe, or vestigial and without lobe. Male postabdomen (studied in only a few genera): aedeagus without glans and terminal filaments, sometimes very short for the family (e.g., *Xiriella* sp.), or long, strap-like, and rolled up when not in use (e.g., *Xiria* spp.); cerci usually short, joined to membrane for most of their length, usually numerous and quite irregularly setulose (except in *Phlyax*). Female abdomen: tergites 4 and 5 unreduced; tergite 6 usually broad and, though always short, often permanently exposed, sometimes vestigial; ovipositor sheath usually rather short; aculeus often broad and blade-like.

**Notes.** Very little has been published on the taxonomy and morphology of this subfamily, apart from simple characterisations of included taxa. Some brief attempts to define and justify the group have been made by Hendel (1914a), Steyskal (1965, 1990), and McAlpine (1973a). The above characterisation is intended to aid decisions as to included taxa, though it has an admittedly weak basis. Some genera are still known from very few specimens, e.g., *Aglaioptera* and *Eopiara*, which are only represented in HELS collection, so far as I am aware.

Previously described genera of Trapherinae include: *Lule* Speiser, *Microlule* Steyskal, *Piara* Loew, *Seguyopiara* Steyskal, *Traphera* Loew, in the Afrotropical Region; *Aglaioptera* Frey, *Eopiara* Frey new stat. (originally as subgenus of *Piara*), *Phasiomya* Walker (*Phasiomyia*, subsequent misspelling by Hendel, 1914a; syn. *Pachymyza* Frey), *Poecilotrapphera* Hendel, *Xiria* Walker, *Xiriella* Frey new

stat. (originally as subgenus of *Xiria*) in the Oriental Region.

Oriental records of the genera *Lule* and *Piara* (see Steyskal, 1977) are due to misplacement of species of *Phasiomya*, *Xiriella*, and *Eopiara*. In this connection, *Xiriella lunaris* (de Meijere, 1916) and *Eopiara chrysoptera* (Frey, 1964) are new combinations. *Lule speiseri* de Meijere, 1914 is a new synonym of *Phasiomya metallica* Walker, 1849, from my examination of types of these Oriental species. Also, *Eopiara elegans* (Frey, 1964) is a new combination (from *Lamprogaster*).

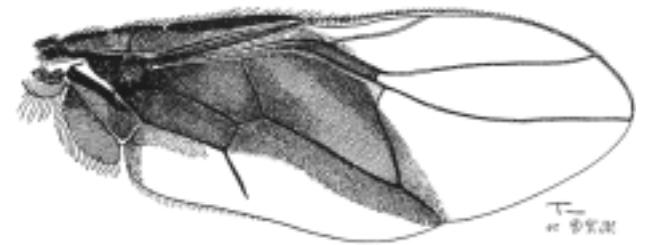
The new genus *Phlyax*, evidently endemic to Fiji, is the first known trapherine in the Australasian Region. The species recorded from New Guinea as *Xiria papuana* Hennig and *Xiria strigata* Hennig belong in the platystomatine genus *Bama*, q.v.

### Genus *Phlyax* n.gen.

Fig. 122

**Type species:** *Naupoda simmondsi* Bezzi.

**Description** (♂, ♀). Small very rotund dark metallic flies, with short moderately slender legs; habitus reminiscent of *Naupoda*.



**Figure 122.** *Phlyax simmondsi* (Bezzi), wing. Modified from A.J.E. Terzi, in Bezzi (1928).

**Head** somewhat anteroposteriorly compressed; median zone of postfrons bare on entire width, with a series of incurved setulae on each side of bare zone; face largely smooth, transversely concave near middle, with lower margin prominently projecting, and median carina reduced to a short tubercle between antennae; facial ridge slightly expanded below, where fine setulae form a narrow field instead of a single series; peristomial setulae relatively long, forming a single series and becoming shorter where they approach bottom of facial ridge; parafacial narrow, finely setulose at upper extremity; occiput convex on each side below, very broadly concave above; the following bristles present: inner and outer vertical, very small postvertical, small ocellar, two well-developed reclinate fronto-orbitals, weakly differentiated postgenal; lateral occipital bristle absent. Antenna (excluding arista) much shorter than face; segment 3 elongate-oval; segment 6 long-bipectinate on most of length. Palpus broad, of moderate length.

**Thorax** very broad, dorsally convex; mesoscutum 0.71–0.75 times as long as wide; scutellum very broad, without setulae, densely pubescent on free margins; posterior margin thin,

but not sharp; the following bristles present: humeral, 1+1 notopleurals, supra-alar, postalar, posterior intra-alar, prescutellar acrostichal, mesopleural, three pairs of scutellars of which those of apical pair are longer and separated from each other by nearly half width of scutellum; scapular, dorsocentral, and sternopleural bristles absent. Fore femur with a series of posteroventral bristles; femora otherwise without differentiated bristles or spines; mid tibia with long apical ventral spur and shorter anteroventral spur; tibiae otherwise unarmed. Wing with oblique crease enabling flexure of apical part as in *Naupoda* and *Asyntona*, but crease not entering discal cell; section of costa on second costal cell horizontally dilated, with microtrichia on dorsal surface in transverse rows, appearing like fine transverse striations; subcosta almost straight distally; vein 1 terminating close to subcosta; anterior crossvein short, meeting vein 4 near distal end of discal cell; discal crossvein strongly bent near anterior extremity; second basal cell much broader than anal cell; vein 5 without setulae; anal crossvein only slightly curved; distal section of vein 6 shorter than preceding section, not reaching margin; squama much reduced, without any lobe.

*Abdomen* broad, dorsally convex; tergites 4 and 5 unreduced in both sexes. Male postabdomen: epandrium with rounded posterolateral lobe on each side; outer surstylus slender, with minor setulae only; inner surstylus short and stout with two massive prensisetae; aedeagus shorter than epandrial complex, broad, largely membranous, with little apical sclerotisation and no glans or terminal filaments; cerci elongate, joined by membrane for entire length, each with only c. six setulae in a spaced longitudinal series. Female postabdomen: tergite 6 broad but very short, usually partly concealed in dried specimens; ovipositor sheath short and rather broad; aculeus with somewhat dilated basal section and parallel-sided, obtuse apical section.

**Distribution.** Fiji: Viti Levu Island (numerous localities, BPB, BM).

**Notes.** *Phlyax simmondsi* (Bezzi, 1928) n.comb., the only known species of *Phlyax*, was described in the genus *Naupoda*.

*Phlyax* differs from *Naupoda* in having: longer seriate peristomial setulae (these short or undifferentiated in *Naupoda*); arista long-bipectinate (instead of quite short-haired); scutellum without setulae (instead of extensively setulose dorsally); mid tibia with two unequal apical ventral spurs (instead of only one spur); section of costa on second costal cell broadly compressed (instead of slender, cylindrical); vein 1 closely approximated to end of subcosta (instead of diverging from subcosta distally); vein 3 bare (instead of dorsally setulose); anterior crossvein meeting vein 4 near distal end of discal cell (instead of, typically, near mid-length of discal cell); basal section of vein 4 without weak, flexible point (basal section of vein 4 with obvious flexible point or region beyond mid-length); oblique crease of wing membrane not entering discal cell (instead of intersecting discal cell); shorter, differently shaped second basal cell (compare Figs. 122 and 117), squamal lobe absent (instead of quite large), aedeagus short,

without glans (instead of relatively long with well-developed glans), each cercus in male with setulae restricted to a single, spaced series (instead of having many irregularly placed setulae); abdomen of female with tergites 4 and 5 well developed (instead of quite desclerotised).

*Naupoda ypsilon* Wulp, 1899 from Java resembles *Phlyax* in the proximity of the anterior and discal crossveins, but the venation does not otherwise resemble that of *Phlyax*. It and certain related species are misplaced in *Naupoda*, as noted under that genus.

Similarity between *Phlyax* and *Naupoda* may be due to convergence in features related to mimicry of Coleoptera, perhaps particularly of alticine (galerucine) chrysomelids. The partly folded distal section of the fly's wing suggests the exposed tip of an imperfectly folded beetle's wing.

*Naupoda* is typical of the subfamily Scholastinae, but certain features of *Phlyax* seem to indicate a relationship to the Trapherinae rather than the Scholastinae, notably the reduced squama, as in the trapherine genera *Aglaioptera* Frey and *Poecilotrapphera* Hendel, unreduced tergites of the female abdomen, and the very short aedeagus lacking the glans, which is rather like that of the one examined species of *Xiriella*. The only platystomatids known to lack the glans belong in the Trapherinae, but it is not yet known if this is the case in all included genera.

The venation of *Phlyax* is somewhat similar to that of the Afrotropical trapherine genus *Lule* Speiser, from which *Microlule* Steyskal is doubtfully generically distinct, in my opinion. *Phlyax* differs from *Lule* in the termination of vein 1 close to the subcosta, the absence of vein 7, even as a slightly pigmented crease, and the strong divergence of veins 3 and 4 distad of the discal crossvein. *Phlyax* has some resemblance to the Oriental genera *Phasiomya* Walker and *Xiriella* Frey, but differs from these in the dorsally hairless scutellum, bare vein 5, absence of visible vestige of vein 7 beyond the alula, and absence of the squamal lobe.

The name *Phlyax* (Latinised stem *phlyac-*) is Greek for jester. The gender is masculine.

## Genera unplaced to subfamily

### Genus *Apiola* McAlpine

Fig. 123

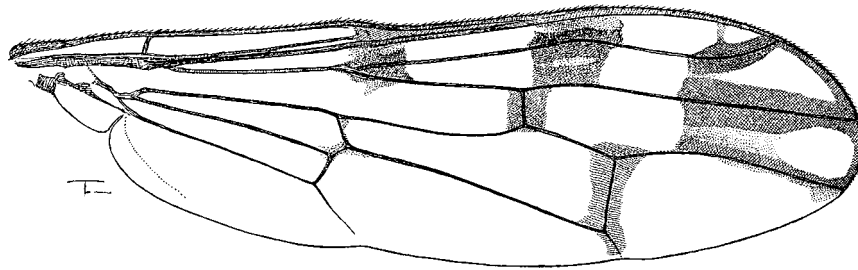
*Apiola* McAlpine, 1973a: 31. Replacement name for *Xenognathus* Malloch. Type species (automatic) *Xenognathus bryani* Malloch.

*Xenognathus* Malloch, 1930b: 225–226 (preocc. *Xenognathus* Gilbert, 1915). Type species (original designation) *X. bryani* Malloch.

**Description.** See Malloch (1930b). I have added (McAlpine, 1973a) that tergite 6 of the female abdomen, though much shorter than tergite 5, is well developed and not capable of being concealed below the latter, thus resembling *Angitula* (subgenus *Giraffomyia*) and *Xiria*.

**Distribution.** Tropical Polynesia: Western Samoa.





**Figure 123.** *Apiola bryani* (Malloch), wing. After A.J.E. Terzi, in Malloch (1930b).

**Notes.** Malloch (1930b) described two sympatric species, but expressed doubt as to their specific status. Lack of material has prevented further investigation of this question.

The male postabdominal structures of *Apiola* are undescribed, and, as there is no obvious close relationship to any other genus, its systematic position is hard to determine. The antennal features, including the form of segment 2, and the details of the ovipositor sheath and aculeus are reminiscent of some *Atopognathus* species, but, in the latter, tergite 6 is quite vestigial. With our present imperfect knowledge of the morphology of many platystomatid genera, I can only conjecture that its relationships may lie with such genera as *Atopognathus* and *Guamomyia*, which are difficult to place in the broader system.

*Apiola* is easily identified by the slender, ichneumonid-like habitus and obvious wing features (Fig. 123), in combination with the long-bipectinate arista, presence of ventral spinescent bristles on all femora, and absence of postgenal, mesopleural, and dorsocentral bristles.

The altitudes given by Malloch (2000–4000 feet = c. 600–1200 m) indicate a mountain habitat.

#### Genus *Atopognathus* Bigot

Fig. 4, 124

*Atopognathus* Bigot, 1881a: 47–48; 1881b: 24. Type species (monotypy) *A. platypalpus* Bigot.

*Dasiortalis* de Meijere, 1913: 378 (ex Hendel MS). Synonymised Hennig, 1940a. Type species (monotypy) *Ortalis contigua* Walker [= *Atopognathus complens* (Walker)].

*Dasyortalis*.—Hendel, 1914a: 129–131. Incorrect subsequent spelling of above.

*Lasioxiria* Hendel, 1914a: 12, 37–38. Type species (original designation) *L. hirsuta* Hendel. N.syn.

*Lasiopsila* Curran, 1936: 54. Type species (original designation) *L. fasciata* Curran [= *A. complens* (Walker)].

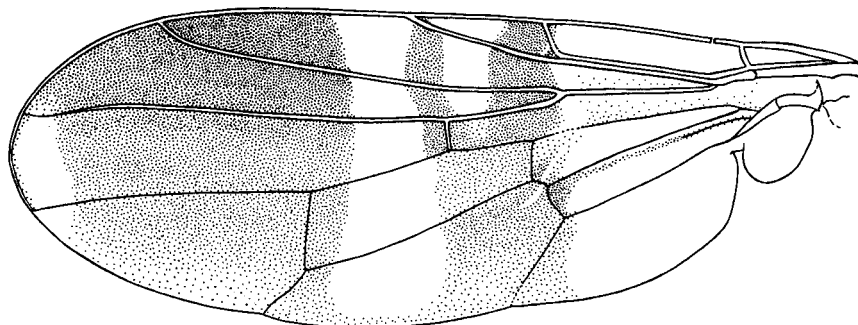
**Description.** Hendel (1914a) keyed the genus (as *Dasyortalis*) and gave a detailed description. Although this description did not take into consideration the characters of the species he included in *Lasioxiria*, it indicates much of the variation present in the genus, and is generally adequate. I add the following data to Hendel's description:

**Antenna.** Segment 6 well haired for most of length, either bipectinate or with irregularly placed hairs.

**Thorax.** Dorsocentral bristles one to about four pairs. Axillary lobe with fringe of long hairs, each >4 times as long as pubescence on vestigial squama, and not restricted to lower (squamal) region of lobe.

**Abdomen.** Male postabdomen: aedeagus with complex, sclerotised glans, without terminal filaments. Female postabdomen: tergite 5 large; tergite 6 much reduced, usually concealed; aculeus broad and blade-like, often acute, but sometimes obtuse or truncate.

**Distribution.** Moluccas: Ternate; Ambon. New Guinea: mainland—widely distributed; Aru; Normanby Island. Bismarck Archipelago: New Britain; Makada Island (Duke of York Group); New Ireland. Solomon Archipelago: Bougainville; Guadalcanal; Matema Island (Santa Cruz Group). Australia: Queensland.



**Figure 124.** *Atopognathus* "sp. C" (Queensland, AM), wing.

**Notes.** Hennig (1940a) examined type material of *Atopognathus platypalpus* Bigot, and, as a result, synonymised “*Dasyortalis*” under *Atopognathus*, noting that Bigot’s species seemed to be distinct from any treated by Hendel (1914b). Malloch (1939a) suggested the possibility of synonymy between *Lasioxiria* and “*Dasyortalis*”, but in his key used the presence of a pair of “rounded or oval elevations” below the antennal foveae in *Lasioxiria* to distinguish it from “*Dasyortalis*”. I find these elevations to be differentiated to a variable extent among the species of *Atopognathus*, but the variation does not provide a basis for sharp group distinctions. The type species of *Lasioxiria* is more elongate in habitus, wing, and cell proportions than *A. complens* (Walker) and closely related species, but again this variation does not clearly define major groupings.

One undescribed species (“sp. M” in AM, female only known) lacks setulae on vein 5 and has a series of long black bristles on the anterodorsal margin of antennal segment 3, but this species is linked through a related species, which is normal for *Atopognathus* in these features, to the rest of the genus. Several species with relatively narrow postfrons also have the fronto-orbital plates narrow. Bigot (1881b) described the male of *A. platypalpus* as “with the cheeks anteriorly, below the eyes, on each side uniappendiculate, with the appendages compressed, moderately erect, obovate ...” (my translation). The only male of the type series (OX) with head still present shows no such appendages, nor have I seen such structures in other *Atopognathus* species. Males of several species have broadened heads (Fig. 4).

A relatively large *Atopognathus* species (sp. J in AM), which lives in highlands of PNG, is very similar to *Lenophila* spp. in appearance, with its dark, shining body, glossy black scutellum, and characteristic wing stripes. The similarity is perhaps due to convergent mimicry of jumping spiders. It is distinguishable from *Lenophila* by its distinctly haired (ommatrichose) eyes, vestigial squama, sinuate vein 2, setulose vein 5, and, in the female, its unreduced tergite 5 and blade-like aculeus.

*Atopognathus* includes at least 20 species, many of them undescribed. *Atopognathus hirsutus* is a new combination for *Lasioxiria hirsuta* Hendel.

Hendel (1914a, 1914b) associated *Ortalis tarsalis* Walker, 1861c, from Batjan (Bacan, Moluccas), and *O. leucomera* Walker, 1864, from Misool (New Guinea), with “*Dasyortalis*”, without seeing material. *Ortalis tarsalis* belongs in *Chaetorivellia* (q.v.), but generic placement of

*O. leucomera* remains doubtful, as type material has not been seen.

J. Ismay has reared *A. complens* (Walker) from larvae living in a ginger stem damaged by a lepidopterous larva in Papua New Guinea (label data in AM). Adults of an undescribed *Atopognathus* sp. are commonly found on the large leaves of *Alocasia brisbanensis* (family Araceae) in or at the margins of rainforest on the Atherton Tableland, Queensland (author’s observations).

### Genus *Guamomyia* Malloch

Figs. 125–127

*Guamomyia* Malloch, 1942: 206. Type species (original designation) *G. fascipennis* Malloch.

**Description.** The following data amplify the description by Malloch.

**Head.** Postfrons coarsely but not densely setulose; inner vertical bristle smaller than and situated in advance of outer vertical; lower end of parafacial with patch of non-seriate setulae; cheek with a series of longer peristomial setulae, one of which corresponds in position to a vibrissa.

**Thorax.** Scutellar bristles two or three pairs. Wing: subcosta with distal section bent away from vein 1 at an obtuse angle, meeting costa at a very acute angle; anal crossvein strongly and rather evenly curved to almost straight.

**Male postabdomen.** Aedeagus with compact sclerotised glans, without terminal filaments.

**Female postabdomen.** Tergite 5 unreduced and exposed; tergite 6 apparently absent, though sternite 6 present; aculeus slender, not depressed, obtuse.

**Distribution.** Micronesia: Guam. Papua New Guinea: mainland. Bismarck Archipelago: Mussau; Lavongai (or New Hanover). Australia: Lord Howe Island. The genus is apparently absent from the Australian mainland, and the known distribution is discontinuous.

**Notes.** I have seen c. four species of *Guamomyia* but only one is yet described. The genus was previously mentioned and keyed as “genus A” (McAlpine, 1973a).

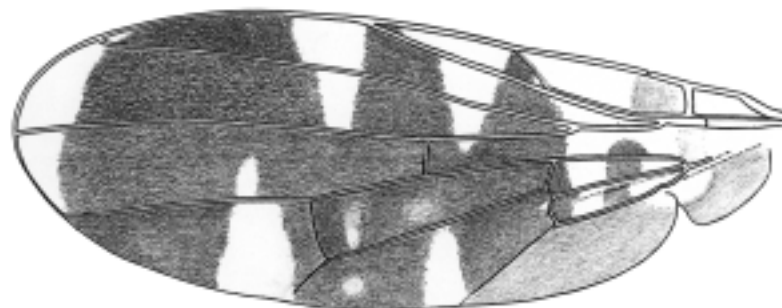
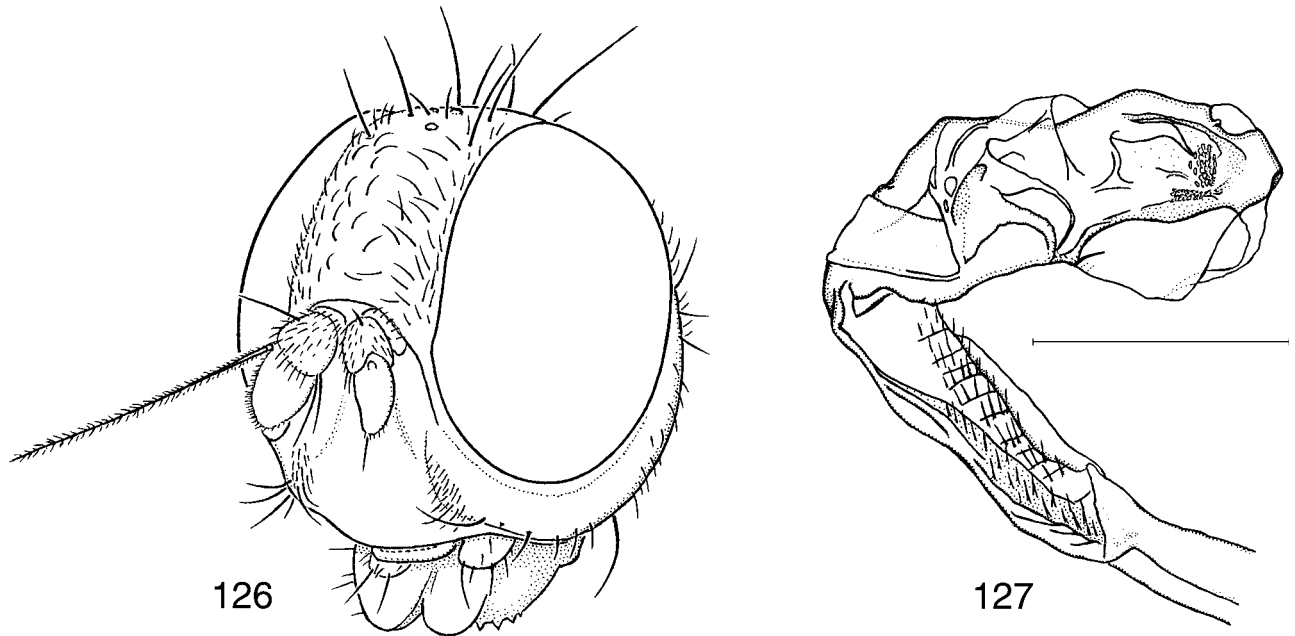


Figure 125. *Guamomyia* “sp. A” (Lord Howe Island, AM), wing.



Figures 126–127. *Guamomyia* “sp. A”. 126, head. 127, distal part of aedeagus (scale = 0.1 mm).

The late Z.R. Liepa reported in litt. (29.xii.1972) on her observations on the Lord Howe Island species: “They were all taken on *Pandanus* roots, and most were on the juicier, not yet earthed roots, and resembled the black spots on the roots so much that, unless they moved, you couldn’t see them.”

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Pagination for the principal reference is bold, reference is also made to keys (*italics*), and to illustrations (\*); abbreviations: nA = apparently not Australasian, sg = subgenus, syn = invalid generic synonym. Couplet numbers in the key to Australasian platystomatid genera (pp. 121–130) are given with page numbers between square brackets [page: couplet number].

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