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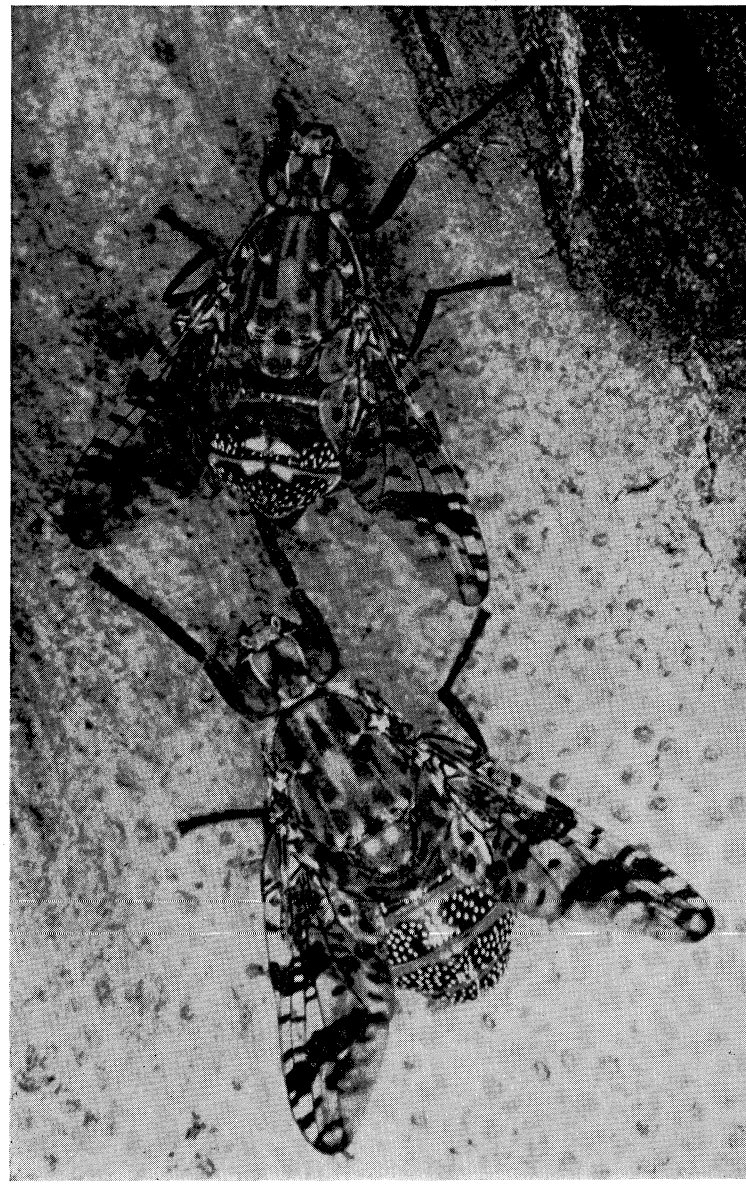

A pair of *Euprosopia subula* (female above) on bark of *Eucalyptus* sp., McCarr's Creek, near Sydney.

[Photo: D. Clyne, black and white print: A. Healy.]

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MEMOIR 15

The Australian Platystomatidae (Diptera, Schizophora) with a Revision of Five Genera*

By

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The Australian Museum, Sydney

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Contents

ABSTRACT

A general survey is made of the Australian flies of the family Platystomatidae on the basis of large collections of preserved material and type specimens in European museums. Some information is provided on the biology and habits of the group. The distribution and abundance of the family in the zoogeographic regions of the world is described and particular attention paid to the distribution of genera occurring in Australia, both within and outside the Australian continent.

The external morphology of the Platystomatidae is described in some detail and the principal trends in morphological diversity are outlined. The apparent relationships of the Platystomatidae to other families of Diptera are given together with their morphological basis. The family is defined and a scheme is presented for the division of the Platystomatidae into five subfamilies.

A key to the Australian genera of Platystomatidae is given and a list of the known Australian species is presented. The genera *Mesoctenia*, *Plagiostenopterina*, *Lamprogaster*, *Duomyia*, and *Euprosopia* are defined. Keys to the 139 recognized Australian species of these five genera are provided together with descriptions of the species. Distributional data and, when available, habitat data are recorded for each species.

I. INTRODUCTION

(A) General Observations

The Platystomatidae are a family of two-winged flies (Diptera) found in most vegetated parts of the world with the notable exception of the temperate zone of South America. The number of known world species is slightly less than 1,000.

Until recently it was usual to regard the group as a subfamily of the family Otitidae (Ortalidae) but specialist opinion has now swung towards giving the Platystomatidae family rank. Though clearly related to other "acalyptrate" families of Diptera, the very large squamae (calyptrae) of certain forms have led some authors to mistake them for calyptrates (e.g. Walker, 1849; Ôuchi, 1939).

Use of the family-group name Platystominae in Hendel's monographic treatment (1914a, 1914b) has stabilized the name of this group (now corrected to Platystomatidae). Universality of usage since that time clearly makes substitution of any alternative name undesirable. However, Wiedemann referred to the family "Achiidarum", using the name in the genitive case, in 1830. Bigot (1852) used a family name Achiadae, and Walker (1857) also used a subfamily name Achiides before Schiner (1864) introduced the name Platystominae.

Unlike the related family Tephritidae (Trypetidae) the Platystomatidae are of very slight economic importance so far as is known. However a species of *Rivellia* has been recorded as causing significant damage to a pasture legume in Queensland (Diatloff, 1965). Perhaps species of *Duomyia* play a role in pollination of some *Eucalyptus* species.

For the purposes of this work the limits of Australia have been interpreted in the political sense. Thus I include the six Australian states and the Northern Territory, but external territories of Australia are excluded. The Torres Strait Islands are included as part of the state of Queensland and Lord Howe Island is part of the state of New South Wales. Norfolk Island is excluded as an external territory. For practical reasons I do not use political boundaries for defining New Guinea, but apply the term to the main island of New Guinea together with only the most closely adjacent small islands. Thus defined New Guinea includes three zones: West New Guinea (West Irian); North East New Guinea (the Sepik, Highland, Madang, and Morobe Districts of the Trust Territory of New Guinea); and the Australian Territory of Papua. New Guinea material is only treated here when it is desirable to do so for comparative purposes.

Up to the present approximately 65 valid species of Platystomatidae have been recorded as occurring in Australia. Possible synonymy among the recorded nominal species of *Rivellia* might reduce this number slightly.

(B) Materials and Methods

The total number of specimens of Australian Platystomatidae available for this work is well over 5,000. Most types of previously described species have been examined and reassessed.

In the lists of material examined I have abbreviated the names of museums and collections as follows:

AM	Australian Museum, Sydney.
BM	British Museum (Natural History), London.
BPB	Bernice P. Bishop Museum, Honolulu, Hawaii.
CNC	Canadian National Collection, Entomology Research Institute, Ottawa.

CSIRO	Australian National Insect Collection, Commonwealth Scientific and Industrial Research Organisation, Canberra.
DEI	Deutsches Entomologisches Institut, Eberswalde, East Germany.
GLB	Collection of Dr G. L. Bush, University of Texas, Austin.
MNM	Természettudományi Múzeum, Hungarian National Museum, Budapest.
NMV	National Museum of Victoria, Melbourne.
NSWDA	New South Wales Department of Agriculture, Rydalmere.
OXN	Hope Entomology Collection, University Museum, Oxford.
PM	Muséum National d'Histoire Naturelle, Paris.
QM	Queensland Museum, Brisbane.
SAM	South Australian Museum, Adelaide.
SPHTM	School of Public Health and Tropical Medicine, University of Sydney.
UQ	Entomology Department, University of Queensland, Saint Lucia, Brisbane.
USNM	United States National Museum, Washington, D.C.
WM	Naturhistorisches Museum, Vienna.
ZMB	Zoologisches Museum der Humboldt–Universität, Berlin.

The names of the following collectors are abbreviated to the initials: J. H. Ardley, T. L. Bancroft, E. B. Britton, A. N. Burns, G. L. Bush, T. G. Campbell, P. B. Carne, C. E. Chadwick, D. H. Colless, I. F. Common, M. F. Day, F. P. Dodd, A. L. Dyce, K. English, F. Evans, W. W. Froggatt, M. Fuller, N. Geary, M. and V. Gregg, H. Hacker, G. H. Hardy, E. J. Harris, D. E. Havenstein, R. Helms, G. A. Holloway, C. M. Kelsall, K. H. Key, A. M. Lea, Z. R. Liepa, R. Lossin, D. K. McAlpine, I. M. Mackerras, G. Monteith, A. Musgrave, A. Neboiss, K. R. Norris, S. J. Paramonov, F. A. Perkins, E. F. Riek, C. N. Smithers, A. Snell, R. Straatman, K. L. Taylor, N. B. Tindale, A. L. Tonnoir, R. E. Turner, M. S. Upton, J. P. Verreaux, A. R. Wallace, M. Wallace, F. E. Wilson, W. W. Wirth, I. C. Yeo.

For study of external features, dry pinned specimens were used. The aedaegus can be examined in such specimens by relaxing over damp sand in a sealed plastic container for 2 or 3 hours, then placing a drop of 5 per cent trisodium phosphate (Na_3PO_4) at the apex of the abdomen under the microscope and carefully extending the aedeagus. This often involves splitting tergite 5 longitudinally a little to the right of the centre. Specimens should not be relaxed for longer periods or discoloration is likely to result, particularly with species of *Euprosopia*. For more detailed examination of cuticular genitalic structures the abdomen is removed and immersed in cold lactic acid for several days till the muscle is cleared and the cuticle extended. Lactic acid is also an ideal medium for microscopic examination of the genitalia. Specimens are not left indefinitely in lactic acid as gradual bleaching and deterioration takes place after several months. Genitalia are stored in phials of glycerine with plastic stoppers together with label data and number corresponding to that on the pinned specimen.

Measurements were made with a squared eyepiece (graticule), calibrated by comparison with a millimetre scale on the stage of the microscope. It was not found possible to make direct measurements of the long and often coiled terminal filaments of the aedeagus in this way as they could not be straightened. The method used was as follows. The aedeagus was placed in lactic acid in a Petri dish and gently flattened under the weight of a small square of glass cut from a microscope slide. The specimen was placed under the microscope and viewed through a squared eyepiece. An outline drawing of the distal part of the aedeagus with filaments was prepared on squared paper so that the scale was known. Measurements of the length of the filaments in the drawing were made with an opisometer and expressed as a fraction or multiple of the length of the sclerotized glans.

The scanning electron microscope was used for study of some cuticular structures. The technique is outlined by Hockley (1968). The image obtained is remarkable for its clarity and depth of focus, the latter being far superior to that obtained with a light microscope.

(C) Acknowledgements

Firstly I would like to thank Mr R. G. Davies for his help and advice during the preparation of this work. Also Mr B. Cogan, Dr P. Freeman, Mr A. Pont, and Mr K. G. V. Smith of the British Museum (Natural History) for access to the collections and facilities and help offered while working at the Museum. I am indebted to Dr C. N. Smithers of the Australian Museum, Dr D. H. Colless of CSIRO Division of Entomology, Mr G. Monteith of the Entomology Department, University of Queensland, Mr A. Neboiss of the National Museum of Victoria, Mr G. F. Gross and Mr N. McFarland of the South Australian Museum for loan of the Australian material of Platystomatidae in the collections under their care. Dr G. L. Bush also made available material in his collection. I am grateful to Dr L. Tsacas and Dr L. Matile of the Muséum National d'Histoire Naturelle, Paris, Dr A. Kaltenbach of the Naturhistorisches Museum, Vienna, Dr F. Mihályi and Dr A. Soós of the Természettudományi Muzéum, Budapest, Mr G. C. Steyskal and Dr C. W. Sabrosky of the U.S. National Museum, Washington, D.C., for study facilities in these museums. Dr H. Schumann made available types from the Zoologisches Museum der Humboldt-Universität zu Berlin, and Dr G. Morge those from the Deutsches Entomologisches Institut.

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Assistance with field work in Australia was given by Mr R. Lossin and Mr G. A. Holloway of the Australian Museum, while Mrs K. Kota carried out much of the laborious processing of material. Mr Holloway also provided invaluable notes on his field observations of Platystomatidae.

Mr H. E. Goto, Dr B. Martin, and Mrs M. Culpan gave substantial assistance with work involving use of the scanning electron microscope.

Thanks are due to the Trustees and Director, Dr F. H. Talbot, of the Australian Museum for financing the return trip from Sydney to London. Study at museums in Continental Europe was facilitated by grants from the University of London Grants Council and the Department of Zoology, Imperial College, through Professor T. R. E. Southwood.

II. BIOLOGY AND HABITS

Adults

Many species of Platystomatidae have characteristic resting places which may serve as rendezvous points for courtship. Tree trunks are a usual resting place for many species of *Euprosopia*, *Loxoneuroides varipennis*, *Achias kurandana* and *Achias australis*, and probably for a number of species of *Lamprogaster*. On the Port Hacking River to the south of Sydney *Euprosopia subula* may often be seen in numbers on rock surfaces either on the bank or on projecting rocks in midstream. Much further north at Finch Hatton Gorge the same species was taken on trunks of palms and trees. Perhaps local conditions determine this difference in habits, as the tree-trunks along the Port Hacking River are rather densely shaded. On the other hand rock surfaces at Finch Hatton Gorge may become very hot in the tropical sun. At Kurnell, near Sydney, *E. tenuicornis* and *E. anostigma* occur together on the main trunks of various native and introduced trees. *E. filicornis* shows a distinct preference for settling on the lower branches of *Cupaniopsis anacardioides* in the same area. At Otford, south of Sydney, *Euprosopia megastigma* appeared to rest mainly on foliage of trees, and despite intensive searching was never swept from herbage or observed on tree-trunks. It was also taken in numbers on wet stones at the edge of a small stream which it apparently visits briefly for drinking. *Achias australis* and *Achias kurandanus* often rest on tree-trunks, the latter showing a preference for *Ficus* trees. When large numbers occur together most of the individuals may be males. On one such occasion females of *A. kurandanus* were eventually found by sweeping foliage of nearby trees. In this genus, as in a number of other platystomatid genera I have observed, there is a strong preference for resting on the lower surface of the leaf. Possibly males of *Achias* congregate on tree-trunks where they wait for receptive females. The females only visit the tree-trunks when ready to copulate. As males can presumably copulate effectively at frequent intervals their numbers on the trunks will be much greater than those of females which need only copulate occasionally (perhaps, as in some other Diptera, only once in a lifetime) for maximum reproductive activity. Near Cardstone *Lamprogaster viola* was seen on tree-trunks and was also swept from low foliage. *L. violacea* (in New Guinea and Queensland), *L. tricauda* (Mary's Creek), *L. indistincta* (Mulgrave River), and *L. stenoparia* (Kuranda and Mulgrave River) rest on lower surfaces of leaves of trees. *Lasioxiria* sp. at The Crater, Atherton Tableland, rests on the large leaves of *Alocasia macrorrhizos* (Araceae). At least four species of *Lenophila* (but not *L. dentipes*) rest on leaves of *Xanthorrhoea* spp., always selecting the larger or more prominent plants.

While walking on a surface some platystomatids exhibit a characteristic manner of movement. The wings are extended horizontally and moved backwards and forwards with a rowing motion. At the same time the proboscis is alternately raised and extended. This behaviour has been especially noted in *Pogonortalis* and *Rivellia* but is, I think, common to a number of other genera. Similar wing movements occur in several other acalyptrate families. The mode of carrying the wings at rest differs among different genera and species of Platystomatidae. In *Duomyia*, *Microepicausta*, and *Rhytidortalis rugifrons* the wings are folded roof-wise along the abdomen with their posterior margins uppermost and almost touching above the median line of the abdomen. In the *miliaria* and *ventralis* groups of *Euprosopia* the manner of holding the wings is somewhat similar, but in the *tenuicornis* and *separata* groups of the genus the wings are held horizontally, slightly spread so that their long axes form a V. In the *scatophaga* group the position of the wings is usually intermediate, their costal margins being held a little lower than the posterior margins which almost meet over the abdomen. In *Angitula longicollis* the wings are extended horizontally almost at right angles to the body much of the time. Platystomatid species which mimic Hymenoptera may have unusual habits. *Xenaspis* sp. in New Guinea folds its wings longitudinally, thus increasing its resemblance to a

vespid wasp. *Achiosoma nigrifacies* in New Guinea and a related species in Queensland greatly increase their resemblance to Vespidae by extending the forelegs in front of the head and waving them rapidly like the antennae of wasps. This habit is shared by the tephritid fly *Phytalmia wallacei* which also mimics wasps in New Guinea.

Platystomatid flies are attracted to a number of substances for feeding purposes. I have seen the following species on flowers: *Duomyia decora* (on *Leptospermum*), *Rhytidortalis rugifrons* (on *Kunzea* and other plants), *Rivellia* sp. (on unidentified cultivated plant). Specimens of *Lenophila* sp. (near *coerulea*) have been taken on flowers of *Xanthorrhoea* by R. Mulder. Hennig (1945) records *Platystoma* on decaying fruit and I have observed *Plagiostenopterina* on broken cucurbitaceous fruit. Hennig also mentions *Platystoma* as attracted to vinegar. R. Lossin and I collected specimens of *Lamprogaster flavipennis* apparently eating sweat. Species of *Euprosopia*, *Rivellia*, Genus C, *Plagiostenopterina*, and occasionally *Duomyia* and *Lenophila* have been taken on fresh mammalian faeces (cow, horse, dog, possum, man) to which they are apparently attracted for feeding. Some other genera, notably *Lamprogaster* and *Achias*, seem not to be attracted to faeces when they are plentiful in its vicinity. *Rivellia* and *Euprosopia* spp. are attracted to decaying snails and to ammonium sulphide solution. *Rivellia viridulans* is known to obtain honey-dew from aphides by stroking them with the forelegs in the manner of an ant (Hennig, 1945).

Detailed observations of courtship or mating have been made for very few species. Piersol (1907) has made observations on *Rivellia boscii* and Michelmore (1928) described copulation in *Platystoma seminationis*. In the former there appears to be no complex preliminary courtship and the wings of the male are vibrated during copulation (as they probably would be at other times). In both species mentioned it seems that the male feeds the female by regurgitation while mounted. Mr G. A. Holloway informs me that he has observed courtship and mating in *Lenophila dentipes* on the trunk of a smooth-barked *Eucalyptus* species. He states: "I noticed several pairs before copulation facing each other for up to five minutes, but I was not able to get too close. They do *not* wave their wings before copulation." The author is at present making further studies of the sexual behaviour of platystomatids.

Seasonal Occurrence of Adults

The data on seasonal occurrence is very incomplete for Australian species. Most collectors' labels bear dates indicating summer occurrence of adults (December to March) but some genera and species appear exceptional in this respect. Most species of *Euprosopia*, *Achias*, and *Lamprogaster* are to be found only in the summer months and are not to be found in the same habitat at other times. In the case of *Euprosopia scatophaga* at Upper Allyn and *Duomyia* spp. at Iluka, only females were found in March. It is probable that these either emerge later or live longer than the males.

Lamprogaster hilaris has been found only from late February to May and appears to be an autumn-flying species. These, and many other forms, both in tropical and temperate latitudes are probably univoltine. Adults of *Euprosopia macrotegularia* have been collected in October, November, December, January, and May in the Cairns district (latitude 17° S). This suggests that the species passes through at least two generations annually. The closely related *E. subula* is to be found only in summer at Royal National Park, near Sydney (latitude 34° S.), where it is apparently univoltine. Adults of *Pogonortalis doclea* may be found in every month in coastal areas near Sydney, the species being evidently multivoltine. Species of *Rivellia* occur as adults in winter as well as summer in various parts of New South Wales including Mount Wilson (altitude 3,000 feet), and are presumably multivoltine. No cases are known to me of species which fly principally or exclusively in the winter months.

Larvae

Hennig (1945, 1952) has listed the recorded habitats of platystomatid larvae. These are very diverse and include fresh, damaged, and rotting vegetable material (including roots and bulbs), human corpses, and humus soil. Steyskal (1965a) has recorded larvae of *Poecilotraphera* spp. from guava, sugar cane, rice and maize. Diatloff (1965) has recorded larvae of *Rivellia* sp. in fresh and rotting root nodules of the pasture legume *Glycine javanica* in Queensland, causing considerable damage. Label data from a few reared specimens provide some information on larval habitat. A specimen of *Duomyia* (*?tomentosa*) in poor condition was reared from a mandarin (*Citrus*) in Queensland. A reared specimen of the closely related *D. pallipes* from Uriarra, near Canberra, is labelled "pupa in sand." A specimen of *Euprosopia megastigma* collected at Roseville near Sydney, 14th October, 1957, by Miss K. English bears the following information: "Larva found eating curl grub pupa. Oct. 24 had pupated. Nov. 29 emerged deformed." Two specimens of *Lenophila* sp. (near *coerulea*) from Ballandean, near Stanthorpe, were bred from a rotting grass-tree (*Xanthorrhoea*) by H. Jarvis. A series of *Scholastes bimaculatus* in the Australian Museum is labelled "Ex imported coconuts." I have observed a specimen of *Pogonortalis doclea* newly emerged on an indoor pot plant, the soil of which had been taken a short time previously from Dee Why near Sydney. The larvae of *Elassogaster sepsoides* attack the egg capsules of *Locusta migratoria* in the Philippines (Lopez, 1934), and presumably have similar habits elsewhere in the range of this species.

Mr G. A. Holloway informs me that he has observed apparent oviposition by *Euprosopia tenuicornis* and *Lenophila dentipes* at Blue Lagoon Reserve, near The Entrance, New South Wales, in March, 1969. This is mentioned here as probably indicative of larval habitat. On the shaded side of a *Eucalyptus* tree he found more than forty females of both these species which appeared to be ovipositing in the sap that was exuding from beetle damage under a piece of dead bark. On investigation he found dipterous larvae in the sap, but those preserved do not resemble the known larvae of Platystomatidae. Attempts at rearing were unsuccessful.

Natural Enemies

No predators or parasites of this family appear to be recorded previously. In New Guinea I have collected several adult platystomatids parasitized by Strepsiptera. In some cases the stylopized individuals had triungulin-stage larvae attached to the legs. The platystomatid genera affected include *Brea*, *Mesoctenia*, *Naupoda*, and an unnamed genus (near *Scholastes*).

According to Riek (1970), who has examined this material, the parasites should probably be referred to the subfamily Elenchinae of the Halictophagidae.

A specimen of *Lamprogaster corusca* taken indoors at Bayview, N.S.W., by Mr L. C. Haines is affected by the parasitic fungus *Empusa*.

I have observed the remains of a specimen of *Pogonortalis doclea* in a spider's web. Platystomatids are no doubt frequently eaten by such general predators of flying insects.

III. GEOGRAPHIC DISTRIBUTION

The family Platystomatidae is best represented in the tropical, subtropical and warm temperate areas of the Old World. In the New World the family is less well represented; in fact it is very poorly represented if the almost cosmopolitan genus *Rivellia* is excluded from consideration. Steyskal (1965) listed 41 species from America north of Mexico of which 34 are species of *Rivellia*. In 1968 he recorded 25 species from America south of the United States, of which 11 belong to *Rivellia*. No species are known from America south of the tropics.

Africa is the continent with the greatest number of known platystomatid species, the approximate number of described species being 240 (calculations based on figure for Otitidae s.l. given by Steyskal, 1960). The Oriental Region (excluding the Papuan Subregion) appears also to have a large representation of Platystomatidae but this is less well known than the Ethiopian fauna.

The Palearctic Region on the other hand has a very restricted platystomatid fauna. Despite the richness of the adjacent Ethiopian and Oriental faunas, these appear to have produced only a few temperate-adapted offshoots to the north. *Platystoma* is the only endemic Palearctic genus and *Rivellia* is the only other generally distributed genus in the region. The Oriental-Australian genus *Euprosopia* has several species in the eastern Palearctic.

The approximate number of valid described species recorded from New Guinea (excluding the Moluccas and Bismarck Archipelago but including Waigeo, Key, and Aru Islands) is 126, most of which are mentioned by Malloch (1939a). This number is nearly twice as great as the number of valid described species previously recorded from Australia and numbers of undescribed species have been seen from New Guinea. It is therefore evident that New Guinea has a greater concentration of platystomatid species than any other part of the world of similar area. The Papuan Subregion is also interesting for the number of characteristic Papuan genera which at most extend beyond New Guinea only to a few nearby island groups or to North Queensland. Some of these genera are of very bizarre form, e.g. *Angitula, Laglaizia, Achiosoma, Asyntona.*

There is a relatively small Oceanic element in the Platystomatidae. The closely related genera *Giraffomyia* and *Angituloides* form a Melanesian component, related to the Papuan *Angitula*. They are accompanied by the more widespread *Scholastes* in this part of the Pacific. The genus *Pseudorichardia* occurs only on oceanic islands and is widely distributed in the Pacific. It appears to have no closely related forms on any major land mass. New Zealand has only two known species of Platystomatidae both belonging to the endemic genus *Zealandortalis*, which is perhaps related to the widely distributed *Rivellia* (Harrison, 1959).

In Australia there are 23 known genera and 212 known species (including described and undescribed forms). It is probable that further genera will be found within Australian limits in the more northerly of the Torres Strait Islands, some of which are very close to the New Guinea coast. The genera occurring in Australia may be divided into 6 groups according to their world distribution patterns.

(1) Almost cosmopolitan genus: *Rivellia.*

(2) Widely distributed Old World tropical genera: *Pterogenia, Naupoda, Elassogaster, Plagiostenopterina.*

(3) Oriental–Australian genera: *Rhytidortalis, Pogonortalis, Euprosopia.*

(4) Papuan–Australian genera: *Microepicausta, Lamprogaster.*

(5) Papuan genera of restricted Australian occurrence: *Lasioxiria*, *Asyntona*, *Mesoctenia*, *Brea*, *Achias*, *Achiosoma*, genus A.

(6) Endemic Australian genera: *Lenophila*, (?) *Scotinosoma*, *Loxoneuroides*, *Duomyia*, genus B, genus C.

Several of the genera occurring in Australia are restricted to the tropical north-east coast of Queensland. Most of these genera are to be classed as primarily Papuan, because of their better representation in that subregion. They are all inhabitants of rain forest and riverine forest (see list of Papuan genera above). The genera *Plagiostenopterina*, *Elassogaster*, and *Pterogenia*, though mainly occurring in the wet tropical zone of Queensland have marked extensions outside this zone in Australia, and also have extensive distributions outside Australia. A possibly endemic Australian genus, which I have designated genus B in the generic key, has only been collected in tropical rain forest in Queensland. The endemic genus *Loxoneuroides* is a tropical and subtropical rain forest form of coastal eastern Australia, and *Scotinosoma* is perhaps confined to the same areas. An endemic unnamed genus ("genus C") is known only from the temperate rain forests of central eastern New South Wales.

The genus *Rivellia* is very widely distributed over the Australian continent but occurs mainly in forested areas. It is probably absent from arid parts. *Lamprogaster* has a similar distribution to *Rivellia*, occurring mainly in forests and woodlands, but is more restricted within this general habitat. One species occurs in low rainfall areas of western New South Wales, perhaps only in the vicinity of rivers. *Duomyia* also occupies much the same areas as *Rivellia* but is known to occur in arid areas as well. It is the only genus of the family known from Central Australia and occurs in all parts of Australia where platystomatids have been collected. *Euprosopia* is represented mainly in Eastern Australia but one species extends west to Darwin in the north and another to Adelaide in the south. Together with *Lamprogaster*, *Duomyia*, and *Rivellia*, it is represented at higher altitudes in the Australian Alps. A specimen of *Euprosopia alpina* n.sp. has been collected at an altitude of 7,300 feet near the summit of Australia's highest mountain. *Pogonortalis* occurs throughout coastal eastern Australia and also in the southwest. It is the only genus which is common in urban gardens in the eastern states. The Australian species *P. doclea* (Walker) has been introduced into California (Steyskal, 1961).

A group of species is restricted to the vicinity of coastal sand dunes. Here it would appear to be edaphic conditions rather than climate which determine distribution. Some species of this group are threatened by habitat destruction through rutile mining in eastern Australia. The components are *Microepicausta*, the *cribrata* group of *Rhytidortalis*, and certain species of *Duomyia* and *Rivellia*. The pale coloration of some of these forms is perhaps an adaptation to the sandy environment.

The temperate heathlands and xeromorphic scrubs of southern Australia have some characteristic forms. The genus *Lenophila* is more or less restricted to this habitat, as is possibly the *rugifrons* group of *Rhytidortalis*.

The fauna of Lord Howe Island, 350 miles east of the coast of northern New South Wales in the warm temperate zone, is especially interesting as the island is considered to have been isolated from other land masses since the beginning of the Tertiary. The five genera of Platystomatidae, each represented by a single known species on the island, have almost certainly reached there by dispersal across the ocean. *Pogonortalis howei* Paramonov and *Duomyia howensis* n.sp. though endemic to Lord Howe Island are each very closely related to mainland Australian species. *Naupoda insularis* Paramonov is less closely related to the only other Australian species of its genus. *Naupoda* is also represented in Fiji and elsewhere in the Pacific. It evidently has considerable powers of dispersal. The genus which I have referred to as genus A in the generic key is known from a single specimen from Lord Howe Island, and a quite distinct undescribed species in New Guinea. A possible explanation for these isolated occurrences is the extinction of the group elsewhere through increased competition or predation. If a formerly

widespread form crossed the sea to become established on a remote island, its chances of escaping these pressures would be increased. The status of the Lord Howe Island form of *Rivellia* has not yet been investigated. As stated above the genus is well represented on the Australian mainland.

With the exception of ten species mentioned below all the Australian species appear to be endemic. *Asyntona tetyroides* (Walker), *Naupoda regina* Hendel, *Lamprogaster violacea* (Macquart), *L. macrocephala* Hendel, *Euprosopia ventralis* (Walker) and *E. xanthops* n.sp. extend to New Guinea and a few of the adjacent islands. *Elassogaster sepsoides* (Walker), *Plagiostenopterina aenea* (Wiedemann), and *P. enderleini* Hendel have rather wide distributions, all extending to South East Asia. *Pogonortalis doclea* (Walker) is perhaps naturally endemic to Australia but has been recently introduced into California as mentioned above, and there is a record from Java (Hendel, 1914b).

IV. MORPHOLOGY

(A) Introductory

The structure of the higher Diptera (Series Schizophora) is in many respects very uniform. For this reason it is not the aim of this chapter to provide a comprehensive description of platystomatid structure. Instead an attempt is made to give a general review of outstanding characters of the Platystomatidae and to provide a basis for the descriptions of morphological diversity presented in the evolutionary and systematic studies. This applies as much to the studies of the cuticle and its processes made with the scanning electron microscope as to the classical methods of study.

(B) The Cuticular Surface

The visual impression of the surface texture of the cuticle has been much used as a taxonomic character in higher Diptera. Unfortunately there has been little attempt to define accurately the surfaces described as "pruinose", "dusted", "pubescent", etc. The present study has convinced the author that it is important to discriminate between kinds of surface texture for taxonomic purposes. The use of the scanning electron microscope (SEM) shows great promise in enabling the often rather vague visual impressions of surface texture to be more accurately defined. This approach has been only touched on here.

The cuticle, which covers the entire surface of the insect, is divisible into two main types—sclerotized and membranous, sometimes erroneously referred to as chitinized and non-chitinized. The former type, which is hardened by deposition of scleroproteins, is again divisible into catogories, according to the nature of its vestiture. There is also some diversification of the vestiture of membranous cuticle.

The simplest type of surface for sclerotized cuticle is smooth, without processes of any kind. When present in sufficiently large areas smooth cuticle presents a strongly shining appearance (regular reflection). Even where there is a dense vestiture on the cuticle, the spaces between the processes often appear almost smooth, with only slight irregularities under high magnification (fig. 97). That this is a fairly general condition in the higher Diptera is seen from the fact that initially dull cuticle frequently becomes shining when the vestiture is removed by rubbing or abrasion. This may happen under natural conditions when movement against the abdomen causes the posterior surfaces of the hind femora to become shiny, or when parts of the female abdomen are caressed by the male during courtship. It also happens when captured specimens are carelessly handled before mounting.

Cuticle which is devoid of vestiture may have its shining quality reduced or interrupted by fine sculpturing. This sculpturing generally takes the form of irregular pits, rugosity, or scratching, but may form a very regular grooving reminiscent of the convolutions of the skin on human fingertips. The latter type of grooving often occurs on the cheek region of the head in Platystomatidae. The dull, lustreless appearance of pruinescent cuticle is sometimes strengthened by sculpturing.

Two broad categories of hair-like cuticular processes are generally recognized, viz. *microtrichia* and *macrotrichia*. Microtrichia are superficial extensions of the cuticle, not individually connected with the subcuticular cells of the epidermis. They are immobile, being without a basal socket. Each macrotrichium arises from a specialized hypodermal trichogen cell and is often associated with a nerve cell. It is surrounded at its base by a membranous ring or socket enabling movement. A further difference between microtrichia and macrotrichia is in size. In the Platystomatidae microtrichia are generally less than 30μ

in length and macrotrichia are of greater length, but there may be slight overlap in size and this limit varies with the size of the insect. Many of the specialized sensory setae, though structurally allied to macrotrichia, are within the size range for microtrichia.

Microtrichia are of general occurrence on the wing surface where they are widely spaced and may be readily appreciated under the light microscope.

Pruinescence is a general term for vestiture which appears as a close, dust-like or powder-like covering on the cuticle more or less obscuring the surface shine under the light microscope. As the true structure of pruinescence is not readily discernible under the light microscope it is possible that more than one kind of vestiture is included under the term. Under the SEM pruinescence on the thoracic pleura and abdominal tergites of *Euprosopia* spp. is seen to consist of very short, curved, hair-like microtrichia (figs 98, 108). It is possible in other cases that the microtrichia constituting the pruinescence are scale-like, but this is yet to be demonstrated.

Microtrichia which are sufficiently long to be distinguishable at a magnification of x 100 to x 150 under the light microscope are termed *pubescence*. Pubescence is often seen to intergrade gradually into pruinescence in certain areas. In the genus *Euprosopia* a specialized kind of vestiture occurs on the fifth abdominal tergite of the female in a number of species. This consists of exceedingly fine microtrichia which, at a magnification of X 50 under the light microscope appear as a translucent covering above the surface of the cuticle. I have termed this *velvety pubescence*. Under the SEM this appears very similar to pruinescence but the microtrichia are much finer and more erect (figs 95, 96).

Macrotrichia may occur as a sparser over-storey on cuticle clothed with microtrichia, or they may occur on smooth or sculptured sclerotized cuticle. More rarely they are seen on membranous cuticle. They may occur on certain wing veins or, in a very few instances, on the wing membrane.

The majority of macrotrichia of the body surface, including the legs, may be referred to as either *hairs* or *setulae* according to thickness and pigmentation, the setulae being thicker and often darker than the hairs. The division is arbitrary and not much importance is attached to it for taxonomic purposes, though sometimes the colour of the macrotrichia is a useful taxonomic character. Macrotrichia on some areas of the body may be broadened into flat *scales* of various shapes.

On the surface of the cuticle there is a much smaller number of greatly enlarged macrotrichia called *bristles* or *setae*. These are arranged according to a definite pattern so that each bristle or linear series of bristles can be designated by a name. The bristle arrangement or chaetotaxy of the Platystomatidae is dealt with below in the sections on the head, thorax and legs. Modified bristles may occur in certain parts or in a particular sex. *Spatulate bristles* may occur in the males of a few species, but not in the females. Bristles on the ventral surface of the femur are sometimes thickened into *spines*. Certain apical bristles of the tibiae are particularly strongly developed and mobile. These are called *spurs*.

In addition to the microtrichia and macrotrichia there are various kinds of immovable processes or excrescences of the cuticle which have no basal socket, but have a sclerotized covering continuous with that of the surrounding surface. These are dealt with under appropriate sections of this chapter or, in the case of more restricted types, under the individual species.

(C) The Head

The head capsule is characterized by the loss of most of the boundaries defining the principal head sclerites of more primitive insects. For this reason a modified nomenclature for the regions of the head is necessary, though a few of the general terms are retained with a modified meaning. At the summit of the head there is a transverse ridge, often much rounded

off, connecting the eyes. This is termed the *vertex*. It usually bears two pairs of strong bristles, the *inner* and *outer vertical bristles*. Immediately behind the centre of the vertex there is often a pair of much shorter closely placed divergent *postvertical bristles*. The area between the vertex and the bases of the antennae, bounded laterally by the eyes, is the *postfrons* (or simply *frons* of many authors). The anterior marginal region, divided off by the *ptilinal fissure*, is the *frontal lunule*. It often forms a more or less horizontal ledge above the bases of the antennae. There are three closely grouped *ocelli* on the posterior median part of the postfrons (absent in the African genus *Bromophila*). From between the ocelli there often arises a pair of *ocellar bristles*. The one or two pairs of *fronto-orbital bristles* when present are situated on the upper lateral parts of the postfrons, not far from the eyes. The anterior surface of the head below the postfrons is the *face* or *prefrons*. The lateral areas, between the downwardly produced lateral arms of the ptilinal fissure and the eye on each side, are called the *parafacials*. Lying immediately inside the parafacial is usually an *antennal groove* into which the antenna may be folded. Often, especially in the subfamily Platystomatinae, the median area of the face between the antennal grooves forms an elevated ridge or platform, the *facial carina*. When well-developed this may be flat topped with sharp lateral margins, and is narrowed towards the upper exiremity where it passes between the bases of the antennae. At its lower extremity the sclerotization of the face ceases abruptly on the transverse *epistomal margin*. The lower lateral angles of the face may be produced laterally beneath the cheeks from which they are separated by the laterofacial sutures which continue downwards and outwards from the outer margins of the antennal grooves. The shape of these lateral extensions of the face has proved a helpful taxonomic character for separating some species of *Euprosopia*. The *cheek* is the lateral area of the head capsule lying below the eye. The height of the cheek, a measurement used in the descriptions, is the vertical distance between a horizontal line passing through the lowest point of the eye margin and a similar line passing through the lowest point of the cheek. The cheek has usually a fairly strong downwardly directed *cheek bristle* differentiated from the surrounding hairs. The *occiput* is the term for the entire posterior surface of the head capsule. In the Platystomatidae, and particularly in many of the Platystomatinae, the lower part of the occiput is often swollen or convex whereas the upper part, immediately below the vertex, is flat or slightly concave.

The ventral surface of the head is the membranous *subcranial region* supporting the mouthparts. It is sometimes referred to as the subcranial cavity, but when the mouthparts are extended it ceases to be a cavity. Anteriorly the subcranial membrane supports a horseshoe-shaped or lip-like sclerite, the *prelabrum*. It has been erroneously called labrum, but may be homologous with the clypeus.

The mouthparts are very similar to those of such better known forms as *Musca* and *Calliphora*. The maxillae are reduced to the large, unsegmented *palpi* attached to the membranous basal part of the proboscis. The distal part of the proboscis has on its anterior surface an *oral groove* leading to the mouth opening near its base. The oral groove and mouth opening are concealed by the elongate *labrum* which is attached just in front of the mouth. The posterior surface of the distal part of the proboscis is covered by a sclerite, the *theca*, always broadly developed in the Platystomatidae. At the terminal end of the proboscis there is a pair of broad semicircular *labella*, armed with numerous *pseudotracheae* which radiate from the end of the oral groove.

(D) The Thorax (fig. 1)

The *prothorax* in most of the Platystomatidae is of the greatly reduced kind generally met with in the Schizophora. In a very few genera, notably *Angitula* and *Giraffomyia*, the prothorax is prolonged forming with the cervical region a prominent neck (Speight, 1969). The *prosternum*, or more correctly the *basisternum* of the prothorax varies considerably in shape. In

the Trapherinae it is very broad, with broadly rounded lateral lobes. In the Scholastinae and Platystomatinae it is generally more or less quadrate and the anterior angles may be connected to the propleura by means of variably sclerotized precoxal bridges. Speight (1969) records the shape of the prosternum in many platystomatid genera. The *humeral calli*, a pair of prominent convexities on the anterolateral angles of the dorsal surface of the thorax, are usually considered to belong to the pronotum. Frequently a *humeral bristle* is borne on each humeral callus.

The enlarged *mesothorax* of the higher Diptera is so highly modified that it is almost impossible to apply terms to most of the parts which indicate exact homologies with the sclerites of other insects. The greater part of the dorsal surface of the thorax forms the *mesoscutum*, often referred to as the mesonotum, but more correctly the latter term includes also the scutellum. Laterally, immediately behind the humeral callus and in front of the wing base, is the *notopleural area* which is not sharply defined in the Platystomatidae. It usually bears an *anterior* and a *posterior notopleural bristle*, the latter surmounting a tubercle, the *posterior notopleural callus*. The pair of notopleural areas is considered to represent the mesothoracic proscutum by Snodgrass (1935). From the posterior end of each notopleural area a transverse suture runs for a short distance in a mesal direction on the mesoscutum. The bristles of the mesoscutum (see fig. 1) include the following: *supra-alar*, *postalar*, *intra-alar*, *dorsocentral*, and *prescutellar acrostichal*. All these bristles are paired. At its posterior extremity the mesoscutum is separated from the scutellum by a deep secondary *scutellar suture*. The scutellum forms a posteriorly projecting platform, its dorsal surface almost level with that of mesoscutum. At the free edges it bears a number of *scutellar bristles*. The *scutellar bridges* are a pair of strongly raised ridges, one from each upper basal angle of the scutellum running anteriorly to the mesoscutum and bridging the scutellar suture. A longer ridge on each side of the thorax runs from the lower lateral angle of the scutellum to the wing base. This is termed the *suprasquamal ridge* by Malloch (1929). The presence of hairs on this ridge is sometimes a useful taxonomic character. Below the posterior edge of the scutellum there is usually a transverse convexity, the *postscutellum*. Below the postscutellum the *postnotum* drops away almost vertically to the base of the abdomen. The pleura of the mesothorax are made up of the following sclerites: *mesopleuron*, *pteropleuron*, *pleurotergite*, and *sternopleuron*. This application of the term mesopleuron to a sclerite which is only part of the true mesopleuron is unfortunate but well established and no very suitable is in use. The mesopleuron, pteropleuron, and sternopleuron may each have a distinct bristle, known as the *mesopleural*, *pteropleural*, and *sternopleural* bristles respectively. In many platystomatids some or all of these bristles are absent. Posteriorly the mesopleuron is limited by a broad *membranous cleft*, which is a modified suture. Normally this terminates where it meets the upper margin of the sternopleuron, but in *Giraffomyia* and *Angituloides* it penetrates deeply into the region of the sternopleuron. The *basalare* is a small sclerite bordering the posterior side of the upper extremity of the membranous cleft. In many species of *Euprosopia*, more particularly in the females, it bears a *basalar process* which projects upwards or forwards. The *metathorax*, apart from its appendages, is represented only by the pleura and sternum. The pleura tend to become continuous with the meron of the middle coxa to form the *hypopleuron*. In *Angitula*, *Angituloides*, and *Giraffomyia* the posterior surface of the metathorax between the bases of the hind coxae and the first abdominal sternite is extensively and heavily sclerotized to form a broad *postcoxal bridge* which is quite continuous with the hypopleuron on each side. A much less marked development of the postcoxal bridge occurs in some species of *Achiosoma*. It is present also in some other elongate acalyptrates e.g. in the families Tephritidae (*Phytalmia*, *Diplochorda*, *Dacus*, *Soita*, *Adrama*), Micropezidae (*Crosa*), Megamerinidae, Gobryidae, Diopsidae, etc.

The *legs* of Platystomatidae vary much in length and thickness, and in the armature of macrotrichia which may or may not include distinct series of bristles. Apart from these superficial differences the structure of the legs is uniform throughout the family and similar to that of other higher Diptera, except for certain specific modifications more or less confined to the male sex. Most of these are mentioned in the specific descriptions. One character worth

mentioning here is the presence of the *mid-coxal prong* in all Platystomatidae, because this prong is absent in many species of the related family Pyrgotidae. The terms *anterior*, *posterior*, dorsal, and *ventral*, as applied to the surfaces of the legs, indicate the position of those surfaces when the leg is completely extended horizontally at right angles to the longitudinal axis of the body. As a further guide, the knee-joint between femur and tibia is taken as moving in a transverse plane dividing anterior from posterior, and the tarsus is considered to be dorsoventrally compressed.

The wing-base includes several structures of taxonomic importance. The *tegula* is a normally scale-like process, armed with macrotrichia, which overlaps the anterior surface of the basal extremity of the wing. It is much modified in the females of certain species of *Euprosopia*. The *axillary lobe* is a membranous elastic lobe which forms an extension of the wing membrane between the posterior basal part of the wing and the body of the thorax. In most Diptera this extends back along the surface of the thorax to the lower lateral angle of the scutellum as a narrow fringe. In certain groups, notably the Tabanidae and the "calyptrate" families, this fringe is broadened into a conspicuous lobe, the *squama* or *calyptra* which may conceal the haltere from above. (*Calyptra* is the form of the word in both Latin and Greek and is preferable to the forms calypter and calyptron sometimes used.). In many of the subfamily Platystomatinae and perhaps all of the subfamily Scholastinae the squama is a well-developed and often conspicuous lobe. This is a most unusual character among the "acalyptrate" families.

The wing venation of the Platystomatidae is of the type characteristic of the Schizophora as a whole. The nomenclature of the veins is that employed by Harrison (1959: fig. 437) and Munro (1947: t. fig. 13) except for the following points: the anal vein of Harrison is here termed *vein* 6; the upper crossvein of Munro is here termed *anterior crossvein;* the posterior crossvein of Harrison, lower crossvein of Munro, is here termed the *discal crossvein;* the vein separating the second basal and discal cells is here termed the *basal crossvein;* the vein closing the distal end of the anal cell is here termed the *anal crossvein.* The nomenclature of the cells here used is also that of Harrison and Munro except that the cell between the subcosta and vein 1 is here termed the subcostal cell. The costal vein in Platystomatidae is weakened or incised about halfway between the humeral crossvein and its basal extremity and again more distinctly a short distance beyond the humeral crossvein. The costa is not incised or broken at the end of the subcosta, a point which distinguishes the Platystomatidae from the Tephritidae. In most families of Tephritoidea the anal cell has a characteristic shape, the anal crossvein being indented and the outer posterior angle of the cell being produced into an acute lobe. In comparatively few of the species of Tephritidae, Otitidae, and Pyrgotidae, but in all species of Platystomatidae, the anal crossvein is not indented and the anal cell has no acute lobe. In a few platystomatid genera (*Asyntona*, *Clitodoca*, *Giraffomyia*, and *Loxonevra*) the anal cell is acute, but not lobed. *Macrotrichia* or *setulae* occur on the upper surfaces of veins 1 and 3 in all platystomatids that have been studied. In some forms there are also setulae on vein 5, most frequently confined to the basal section of that vein bordering the anal cell. The setulae on vein 1 generally extend from just beyond the level of the humeral crossvein to the distal extremity of the vein. In the genera *Euprosopia* and *Pterogenia* there is a group of setulae on the basal part of vein 1 (radial vein) before the level of the humeral crossvein. Similar variation in the extent of the setulae on vein 1 occurs within the family Tephritidae. In the family Otitidae the setulae on vein 1, when present, are usually more restricted to the distal part of the vein. In order to facilitate description I have introduced a system of nomenclature for the bands of pigmentation on the wing, which is shown in fig. 50. This system was originally devised for *Euprosopia* species but its use has been extended to the genus *Lamprogaster*, and it could also be employed for description of *Rivellia* species.

The metathoracic *haltere* shows no unusual characters in the Platystomatidae, at least under moderate magnification. For descriptive purposes it is divided into three parts, a swollen basal *scabellum*, an elongate stalk-like *pedicel*, and an expanded apical *capitellum*.

(E) The Abdomen

The term *preabdomen* is applied to the relatively unmodified anterior segments of the abdomen. In the males of Tephritoidea the preabdomen consists of segments 1 to 5. Usually in females of Tephritoidea the preabdomen may be considered to consist of segments 1 to 6, but in the Platystomatidae segment 6 of the female is always reduced in size and in most genera its tergite is concealed or absent. Hence it is convenient to regard the first five segments as constituting the preabdomen as in the male. The first two tergites of the abdomen are invariably fused together, though a faint transverse line appears to indicate where fusion has taken place. In the males of some species of *Euprosopia*, *Lamprogaster*, *Platystoma*, and other genera of Platystomatinae tergite 5 is enlarged at the expense of the preceding tergites, apparently in connection with accommodating the genital pouch (see below). By contrast, in the subfamily Scholastinae tergite 5 of the female is always reduced in size or absent and tergite 4 may also be reduced or absent. Thus in the genera *Mesoctenia*, *Naupoda*, *Neohemigaster*, *Scholastes*, and *Trigonosoma* the female preabdomen is covered dorsally by two large sclerites only, viz. tergite 1 + 2 and tergite 3. The preabdominal *sternites* are much narrower than the tergites and are sometimes reduced in size and number. The *pleural membrane* between the tergites and sternites is well-developed and much of its surface faces ventrally because the narrowing of the sternites draws it on to the ventral surface. It may bear hairs or setulae, or, more exceptionally, scales. Normally there is a pair of spiracles for each of the five preabdominal segments, situated in the pleural membrane close to the lateral margins of its segmental tergite. In the females of many species of Scholastinae and Platystomatinae the spiracles of segment 5 and to a lesser extent those of segment 4 are displaced dorsally into the intersegmental membrane behind the tergite of their segment, and in extreme cases those of the fifth pair may be closely approximated on each side of the median dorsal line (figs 74, 82). More rarely the spiracles of segment 3 are similarly displaced. The abdominal spiracles vary also in the size and thickness of the sclerotized ring surrounding the opening and in the development of microtrichia on the ring. In many genera of Platystomatinae the microtrichia form a dense conical tuft (fig. 100). In *Giraffomyia* and *Angituloides*, unlike *Angitula*, there are no external microtrichia and the sclerotized ring is very thick in relation to its central aperture. In the Scholastinae the tuft of microtrichia is moderately developed. In *Loxoneuroides* there are no external microtrichia but on the inner surface of the ring there are numerous radially arranged microtrichia pointing towards the centre of the aperture.

The *male postabdomen* (figs 2, 3), consisting of all the segments behind segment 5, may again be divided into the more anterior part, the *protandrium* (segments 6 to 8) and the posterior part or *andrium* including the genital and anal segments. The *protandrium* is without tergites or spiracles. Its sclerotized parts thus consist entirely of sternites which have become highly asymmetrical and spirally displaced in a manner that has only been adequately explained by Crampton (1942). The displacement results from the rotation of the genital segment on its longitudinal axis through 360°, and consequent torsion of the immediately preceding segments. On the right side and on the dorsal surface of the protandrium there is a membranous area which is more or less infolded beneath tergite 5 to form a *genital pouch* containing the distal part of the aedeagus. In those Platystomatinae in which the aedeagus has very long terminal filaments (see below) the genital pouch may be very deep and extend into segment 4 on the right side (fig. 2).

The andrium is covered on most of its dorsal and lateral surface by tergite 9, often called the *epandrium* or, in Drosophilidae, the *genital arch*. Tergite 9 bears two pairs of rigid processes on its lateral margins, the *surstyli* (also called paralobes). The *inner* and *outer surstyli* of each side are closely united in their basal parts by membranous cuticle, their distal ends projecting freely. It is thus possible to distinguish a fused *basal section* and a free *distal section* in each surstylus. At its base the outer surstylus is sclerotically continuous with the surface

of tergite 9. The basal end of the inner surstylus either ends freely in the membranous part of segment 9 or is joined to a ventral sclerite of doubtful origin. The distal end of the inner surstylus generally bears two short, strong teeth, the *prensisetae* of Munro (1947). Ventrally sternite 9 (the *hypandrium*) extends anteriorly far beyond the anterior limit of tergite 9. It has no external appendages other than the aedeagus but there is usually a gibbosity on each side. Most of its surface is descloritized, but there is a sclerotized arm on each side, the two arms being joined posteriorly to form the *genital ring* or *Gabelplatte* of German authors. The intromittent organ or *aedeagus* emerges from near the posterior end of sternite 9. Its basal section, here termed the *stipe* (phallotheca of Munro, 1947), is a very long more or less looped tube which, in the Trapherinae (Steyskal, 1965a), constitutes virtually all of the aedeagus, as is also the case in the Otitidae. In the Platystomatidae, as in the Tephritidae and Pyrgotidae, and stipe is not spirally coiled as it is in the Otitidae, but from its origin passes forwards, downwards and upwards in a loop on the right side beneath tergite 5 to the dorsal surface of the protandrium when not in use (fig. 2). The distal end of the stipe may be differentiated into a usually short but highly variable segment, the *preglans*. In all Platystomatidae that have been examined, except the Trapherinae, the aedeagus has a variably sclerotized capsule, the glans, distal to the stipe. It is unfortunate that Munro (1947) restricts the term aedeagus to the glans. Because his usage is somewhat unusual, I have avoided many of Munro's terms in this work. It is always very heavily sclerotized in the Platystomatinae except for a membranous window in some forms. In the Plastotephritinae and Scholastinae its structure may be very complex. In repose the glans usually lies on the dorsal surface of the protandrium or in the genital pouch. A *membranous bulb* is often present at the distal end of the glans and in the genus *Duomyia* usually has a pair of membranous *caeca* arising from its base. In the subfamily Platystomatinae, the aedeagus has a pair of hollow *terminal filaments* (three filaments in the *violacea* group of *Lamprogaster*). The filaments may arise from the membranous bulb, or when the bulb is absent, they arise directly from the glans. The bases of the filaments may be enclosed in a sclerotized *tunic*. The gonopores are situated at the apices of the filaments. When the filaments are very long they may be coiled like a watch spring inside the genital pouch which is enlarged to receive them. The basal end of the aedeagus connects with the posterior end of the internal rod-like *aedeagal apodeme* or phallapodeme. The latter has a pair of lateral arms near the middle which fit into the inner surface of the lateral gibbosities of sternite 9, on which the apodeme pivots. The anterior end of the aedeagal apodeme is compressed in a sagittal plane and has muscles attached to it. An aedeagal apodeme of this kind is referred to as *fultelliform*, and is characteristic of the families Tephritidae, Pyrgotidae, and Platystomatidae, but not, according to Steyskal (1961), of the Otitidae and Richardiidae. The ejaculatory duct connects the base of the aedeagus to the *sperm pump* which occupies a median position in the posterior part of the abdominal cavity. The sperm pump has been best described by Drew (1969) for the tephritid *Dacus* (*Strumeta*) *tryoni* (Froggatt) in which it appears to be very similar to that of Platystomatidae. The ejaculatory duct connects to the *ejaculatory sac* of the sperm pump. The posterior wall of the sac is often sclerotized to form an ejaculatory plate which, in the Platystomatinae has generally a pair of sclerotized convexities or tubercles. The anterior part of the sperm pump is the large *ejaculatory apodeme* which is strongly compressed in a saggital plane and is often fan-like in shape. It is generously furnished with muscles. Drew has shown that in *Dacus tryoni* the ejaculatory apodeme varies greatly with the age of adult flies and recommends care in its use as a taxonomic character. The only sclerotized parts behind the epandrium are the large paired unsegmented *cerci* which are often partly fused or joined by a membrane. The *proctiger*, bearing the anus, is completely membranous and dorsal to the cerci.

As previously stated segment 6 may be regarded as the first segment of the female postabdomen. In a few forms (*Apiola*, *Giraffomyia*, *Angituloides*, and the subfamily Trapherinae) segment 6 could perhaps be better associated with the preabdomen as its tergite is largely exposed and closely associated with tergite 5, though it is much shorter than the latter. In all other forms examined tergite 6 is very small and more or less hidden in a depression behind tergite 5 or it is completely absent. The spiracles of segment 6 appear often to be present in

these forms. Segment 7 forms a broadly flattened sclerotized *ovipositor sheath.* The last pair of abdominal spiracles is situated on this segment. The terminal segments, forming the telescopic *ovipositor* are capable of being completely withdrawn into segment 7. Segment 8 has no tergite or sternite but has three pairs of longitudinal sclerotized strips. Its whole cuticular surface is highly flexible, as it is capable of being totally invaginated into segment 7. The *aculeus* is the terminal structure of the ovipositor complex, and appears to consist of the completely fused sclerites of segment 9, and perhaps segment 10, together with the cerci. In *Xiria, Lule,* and some other forms the ovipositor is very like that of many frugivorous Tephritidae, being apparently adapted for piercing or cutting. Segment 8 has decussate rows of minute file-like teeth and the aculeus is very broad and blade-like with acute apex. In the Scholastinae and Platystomatinae there are generally no file-like teeth on segment 8 and the aculeus is quite slender with obtuse apex.

V. RELATIONSHIPS AND CLASSIFICATION

(A) Status and Relationships

That the components of the family Platystomatidae are closely related to the otitid-tephritid group of families has long been accepted. Several important and consistent characters support this view particularly the following: preapical tibial bristles absent; subcosta always well separated from vein 1, never much reduced; vein 1 setulose dorsally; anal and second basal cells complete; in male the absence of tergite 6 and the elongate, looped aedeagus; in the female the fusion of the terminal abdominal parts into an ovipositor which can be withdrawn into the enlarged, sheath-like segment 7. Hennig (1958) and Steyskal (1961) have done much to clarify the limits of this group of families. Hennig calls the group the superfamily Otitoidea; Steyskal calls it the Tephritoidea giving it the same limits. The name Tephritoidea is here preferred as it is based on an older family-group name.

Hennig (1940a, 1945) is responsible for setting the currently accepted limits of the Platystomatidae. Steyskal (1961) has better defined the families of Tephritoidea than any previous worker though his views do not appear to differ widely from those of Hennig. The families of Tephritoidea accepted by Steyskal are Richardiidae, Otitidae, Platystomatidae, Pyrgotidae, Tachiniscidae, and Tephritidae (= Trypetidae). Two other groups which have often been given family rank are the Pterocallidae and Ulidiidae, but Steyskal has convincingly demonstrated that these should be included in the Otitidae. It is now proposed to compare the Platystomatidae with each of the other tephritoid families in order to ascertain their relationships within the superfamily.

The Richardiidae are a family of purely American flies which share with the Platystomatidae the absence of an acute lobe to the anal cell. This lobe is present in the greater number of forms belonging to the other tephritoid families. Despite this fact the Richardiidae and Platystomatidae seem to be further apart morphologically and perhaps phylogenetically than any of the other families in the superfamily. In Richardiidae the costa is broken near the end of the subcosta but not broken just beyond humeral crossvein, vein 1 is devoid of setulae, the aedeagal apodeme is reduced or absent, and the aedeagus is not of the usual platystomatid type. All these characters contrast strongly not only with the Platystomatidae but with other families that appear to have greater claim to relationship with the latter.

The Otitidae (formerly called Ortalidae) are the family with which the Platystomatidae have been most frequently associated. Very often, as in all the writings of Malloch and the earlier writings of Steyskal, the Platystomatidae have been considered to be a subfamily of the Otitidae. Steyskal (1961), however, has shown that the Otitidae differ from the Platystomatidae (and also from the Tephritidae and Pyrgotidae) in some significant characters which suggest that they belong to a phylogenetic branch separate from that which gave rise to these three latter families. In the Otitidae the aedeagal apodeme is simple or Y-shaped, while in the Tephritidae, Pyrgotidae, and Platystomatidae it is, so far as known, always fultelliform. Again the apex of the aedeagus in the Otitidae lacks the sclerotized apical capsule or glans of the Platystomatidae and most Tephritidae. On this point the Pyrogotidae are too poorly known for comparison. Subsequently Steyskal showed that in the platystomatid subfamily Trapherinae the glans is absent. Despite this fact there appears to be a fairly consistent difference between the aedeagus of the Otitidae and the other families mentioned. In the Otitidae the aedeagus in repose is coiled in a rather tight spiral like a watch spring so that it can be accommodated in the genital pouch. In the other three families the aedeagus (or the stipe of the aedeagus) forms a loose complex loop generally passing forwards and then downwards from its base, backwards and upwards on the right side of the epandrium, then forwards on the dorsal surface

of the epandrium into the genital pouch. If, as in some Platystomatinae, the aedeagus has very long terminal filaments these may be spirally coiled within the genital pouch. Steyskal (1961) discarded the use of the setulae on vein 1, as a family character because of its variability within the family Otitidae. My further studies suggest its use as follows. In those otitids which have setulae on vein 1 these are confined to the distal part of the vein from about the level of maximum forward curvature of the subcosta (only a few exceptions, perhaps confined to the Neotropical Region). In all Tephritidae, Pyrgotidae, and Platystomatidae which I have examined the setulae on vein 1 extend basally almost to level of humeral crossvein and in some genera of Tephritidae and Platystomatidae they extend considerably further basad. Examination of the genitalia figures of Otitidae provided by Steyskal suggests a further difference between the two groups. In Platystomatidae and Tephritidae there is a pair of inner surstyli which generally have two (sometimes one) prominent distal teeth (termed prensisetae by Munro, 1947). In most Otitidae only the outer pair of surstyli appears to be present, but if there is an inner lobe or process (as appears to be the case in *Diacrita*) it is without the specialized teeth. In view of these contrasting characters I am in agreement with Steyskal that the Platystomatidae are well removed from the Otitidae and more closely aligned with the Tephritidae and probably the lesser known Pyrgotidae.

A further tephritoid family that should be mentioned here is the Tachiniscidae. It is possible that this rare and little known Neotropical and Ethiopian family is also a member of the narrow group which includes the Tephritidae, Pyrgotidae and Platystomatidae. If this is the case the family should be readily distinguished from the Platystomatidae by the extraordinary development of the chaetotaxy and the well developed lobe of the anal cell. Mr B. Cogan of the British Museum (Natural History) is at present investigating the morphology and relationships of this family.

The family Pyrgotidae has been distinguished from other tephritoid families (most recently by Steyskal, 1961) by the absence of ocelli. However ocelli are fully developed in the somewhat aberrant subfamily Teretrurinae. If the view of Malloch (1933) is accepted that this group is not really pyrgotid, then there are still many undoubted pyrgotid species in which the ocelli are present in various stages of development. In the platystomatid genus *Bromophila* ocelli are absent, but they are present in all other platystomatids examined. In the Pyrgotidae the anal cell is generally produced into a short acute lobe at its outer posterior corner, though there are a few forms in which this lobe is indistinct. This lobe is always absent in Platystomatidae. A more reliable method of distinguishing the Pyrgotidae from the Platystomatidae is provided by the structure of the female abdomen. In females of Pyrgotidae segment 6 is always well developed with tergite similar to and only slightly shorter than the preceding tergites. In platystomatid females tergite 6 is always much reduced in length, concealed, or altogether absent, except in the aberrant *Apiola*, the position of which is doubtful. Further the ovipositor sheath of Pyrgotidae (except in the Teretrurinae) is very strongly developed and dorsally convex, more or less conical, cylindrical, or globose; segment 8 is extensively membranous, usually without longitudinal sclerotized bands, appearing amorphous in dried specimens but probably inflatable; and the aculeus is much modified, usually thorn-like or reduced, though sometimes with accessory sclerites. By contrast, in the Platystomatidae the ovipositor sheath is dorsoventrally compressed with keeled lateral margins and is less strongly sclerotized; segment 8 forms a tubular inversion membrane with longitudinal sclerotized bands; the aculeus, though somewhat variable, is always simple, straight, with sensory hairs on each side near apex. To summarize, the Pyrgotidae and Platystomatidae appear to be very closely related families; structurally there are some rather sharp distinctions so that their separate family status seems assured, but a much more thorough morphological study of the Pyrgotidae is to be desired.

The morphology of the Tephritidae is better known than that of most acalyptrate families and therefore provides a better basis for comparison with the Platystomatidae. Remarkably consistent differences exist between the two families as shown in the following table.

TEPHRITIDAE	PLATYSTOMATIDAE
Lower incurved fronto-orbital bristles present.	Lower fronto-orbital bristles absent.
Costa broken near distal end of subcosta.	Costa not broken near distal end of subcosta.
Anal cell produced into an acute lobe (absent in a few forms).	Anal cell not produced into an acute lobe.
Segment 6 of ♀ abdomen well developed, its tergite only slightly shorter than tergite 5.	Segment 6 of ♀ abdomen much shortened, concealed, or absent.

Apart from these differences there is very close agreement between the families so that the Tephritidae appear to be at least as closely related to the Platystomatidae as are the Pyrgotidae. There is very close similarity in the male genitalia between many forms of both families. The inner surstylus of most tephritids and platystomatids has a pair of large distal teeth and it is in the more primitive platystomatids such as *Lasioxiria* that this structure most resembles that of Tephritidae. The kind of aedeagus perhaps most common in the Tephritidae, with complex distal glans, is very similar to that of many platystomatids of the subfamilies Plastophritinae and Scholastinae. In the female postabdomen also the resemblance is remarkable. In many, perhaps primitive, genera (including *Xiria*, *Pterogenomyia*, *Lasioxiria*, and the Trapherinae) the aculeus is broad, flattened, often with acute apex, and apparently forms a piercing organ much as in Tephritidae. In some of these platystomatid genera segment 8 has rows of minute cuticular teeth as in many Tephritidae. Again in many tephritid genera (e.g., *Dacus*, *Tephritis*) the ovipositor sheath is dorsoventrally compressed in much the same way as in Platystomatidae.

Conclusions. The family Platystomatidae belongs in the superfamily Tephritoidea (or Otitoidea). Within the superfamily it is much less closely related to the Otitidae than has often been supposed, and is very closely related to the Pyrgotidae, Tephritidae, and perhaps Tachiniscidae. It is not closely related to the Richardiidae. There are adequate grounds for considering the Platystomatidae a distinct family from the other families mentioned above.

Definition of Platystomatidae. Tephritoid Diptera having the following combination of characters: ocelli usually present; no lower fronto-orbital bristles; vibrissa absent or rarely a rudimentary vibrissa present; costa broken just beyond humeral crossvein, but not broken near end of subcosta; vein 1 always with continuous dorsal series of setulae from immediately beyond humeral crossvein to its distal extremity, sometimes also some more basally situated setulae; anal cell not produced into an acute lobe at posterodistal corner, the anal crossvein either straight or convexly curved; ♂: inner surstylus well developed, generally with one or two distal teeth; stipe of aedeagus not forming a tight spiral coil in repose; ♀: abdominal segment 6 always more or less reduced, with tergite 6 much shorter than preceding tergites, often concealed or absent altogether; segment 7 forming a flattened ovipositor sheath; segment 8 forming a tube which can be retracted by invagination, supported by several longitudinal sclerotized bands; aculcus always developed, straight, with sensory hairs on each side near apex.

(B) Subfamily Classification

The first serious attempt at major groupings of genera within the Platystomatidae is that of Hendel (1914a). Enderlein (1922; 1924) added several more groupings. These groupings were called tribes as the authors considered the Platystomatidae as a subfamily of either the Muscidae or Ortalidae (Otitidae). Frey (1932) and Brues, Melander, and Carpenter (1954) recognized a number of these as subfamilies, assigning family rank to the Platystomatidae. Hennig (1945) transferred the subfamily Myrmecomyiinae (Cephaliinae) to the family Otitidae, and more recent authors (Steyskal, 1962, 1965a, 1965c; Frey, 1964) appear only to recognize three subfamilies, viz., Trapherinae, Plastotephritinae, and Platystomatinae. Hennig (1940a) provided evidence that the subfamily Angitulinae of the obsolete family Phytalmiidae should be transferred to the Platystomatidae.

A thorough examination of most of the world genera would be desirable to produce a satisfactory reclassification, but a study of Australian genera, supplemented by a less complete study of certain other genera, shows that many of these are currently placed in the wrong subfamilies. The characters of the male genitalia and of the female abdomen appear to provide the most reliable characters but these are not always in accord with the characters of general form and chaetotaxy used by Hendel and Enderlein. Unfortunately the male genitalia remain unstudied for many genera. I have examined the aedeagus of a number of non-platystomatine genera but in view of the available time and material I have examined the sperm pump in only a few of these.

At present it appears that the five following subfamilies should be recognized:

(1) *Subfamily Trapherinae Hendel*, 1914a

Synonym: Xiriina Hendel, 1914a.

I have not examined the male genitalia of the more typical members of this group. Steyskal (1965) has figured and briefly described the genitalia of *Poecilotraphera* and indicated that in the genera *Traphera* and *Lule* the structure of the aedeagus is similar. The stipe of the aedeagus is largely membranous and inflated with a single anterior sclerotized longitudinal strip which is expanded apically. There is no well defined glans. In *Lule* abdominal tergite 5 is as long as tergite 4, and in the female tergite 6 is well-developed and exposed though much shorter than tergite 5; the aculeus of the ovipositor is very broad and acute.

Traphera, *Poecilotraphera*, and *Phasiamya* (= *Pachymyza*) resemble *Lule* in these characters. *Xiria* is of rather different habitus to the above genera but agrees in the female abdomen, as well as in the absence of the glans of the aedeagus. I therefore include it in this subfamily. The group is represented in the Ethiopian and Oriental Regions.

(2) *Subfamily Plastotephritinae Enderlein*, 1922

Diagnostic characters: squama reduced to a linear fringe; tergite 5 not much shorter than tergite 3; ♂: aedeagus with at least partly sclerotized glans which is always without terminal filaments; ♀: abdomen with tergite 6 absent or vestigial and concealed below tergite 5; aculeus variable, often broad and acute.

Of the genera I have examined I would include the following in this subfamily: *Atopognathus* (= *Dasiortalis*), *Conopariella*, *Lasioxiria*, *Plastotephritis*, *Pterogenomyia*. It is possible that an undescribed genus from Lord Howe Island and New Guinea belongs here. *Chaetorivellia* appears to be more in agreement with this subfamily than any other. The aedeagus has a distinct glans without filaments, the aculeus of the ovipositor is broadened much as in *Lasioxiria*, and the squama is little developed. However tergite 5 is much reduced in the female only. It may be considered to be a transitional genus between the Plastotephritinae and Scholastinae. Frey (1932) also includes the following genera: *Acanthoneuropsis*, *Agrochira*, *Atopocnema*, *Federleyella*, *Rhegmatosaga*. I am unable to comment on the position of these genera, most of which are African. *Tylopterna*, included here by Frey, is a chloropid (Sabrosky, 1951).

(3) *Subfamily Scholastinae Enderlein*, 1924

This group of stout-bodied flies is somewhat intermediate between Plastotephritinae and Platystomatinae. Enderlein defined the group on the presence of the sternopleural bristle, a character much too unstable for use at the subfamily level. Other authors have not separated the group from the Platystomatinae.

Diagnostic characters: squama always forming a definite lobe; tergite 5 much shorter than tergite 3, especially in ♀ where it is often absent; ♂: aedeagus with glans as in Plastotephritinae, but sometimes more complex, without terminal filaments; ♀: tergite 6 absent; aculeus very slender with rounded apex.

I include the following genera in this subfamily: *Asyntona, Lenophila, Mesoctenia, Naupoda, Neohemigaster, Pterogenia, Scholastes, Trigonosoma* (= *Tropidogastrella*), *Zygaenula.*

(4) *Subfamily Platystomatinae Schiner*, 1864

Synonyms: Achiadae Bigot, 1852; Achiides Walker, 1857; Cleitamiina Hendel, 1914a; Lamprogastrina Hendel, 1914a; Loxoneurinae Enderlein, 1912; Rivelliina Hendel, 1914a; Stenopterinina (correctly Senopterinini) Hendel, 1914a.

Diagnostic characters: squama variable, often forming a well developed lobe; tergite 5 well developed, in ♀ sometimes shorter than tergite 3; ♂: aedeagus with simple oval or cylindrical sclerotized glans and normally 2 hollow terminal filaments, each with apical gonopore; vesicle of sperm pump with heavily sclerotized cap usually with a pair of swellings or tubercles; ♀: tergite 6 vestigial and concealed below tergite 5, or altogether absent; aculeus slender with rounded apex. In the African species *Bromophila caffra* (Macquart) the aedeagus has a single terminal filament, but this appears to be the product of fusion of the usual two. In a few species of *Lamprogaster* there are three instead of two filaments.

I have examined the following genera belonging to this subfamily: *Achias, Achiosoma, Brea, Bromophila, Cleitamia, Cleitamoides, Duomyia, Elassogaster, Euprosopia, Euthyplatystoma, Euxestomoea, Laglaizia, Lamprogaster, Loxoneuroides, Loxonevra, Microepicausta, Plagiostenopterina, Platystoma, Pogonortalis, Pseudepicausta, Pseudorichardia, Rhytidortalis, Rivellia, Scotinosoma, Senopterina, Xenaspis.*

(5) *Subfamily Angitulinae Enderlein*, 1936

Diagnostic characters: occiput strongly convexly produced; prothorax forming a long neck; scutellum with pair of elongate horn-like tubercles, each with an apical bristle; membranous cleft of mesopleuron variably prolonged into sternopleuron; metathoracic postcoxal bridge broadly sclerotized; squama little developed; ♂: aedeagus with well developed glans, with or without pair of terminal filaments; sclerotized cap of vesicle of sperm pump with two gibbosities.

Includes the following genera: *Angitula, Angituloides, Giraffomyia.*

Giraffomyia and *Angituloides* together exhibit a number of features which contrast with those of *Angitula*. Some of the more noteworthy characters separating the two groups of genera are as follows:

Angitula	Giraffomyia and Angituloides
Palpus well developed, reaching to anterior edge of prelabrum.	Palpus small and narrow.
Head without vertical bristles.	A pair of strong vertical bristles.
Submarginal cell much wider than marginal cell at and beyond level of anterior crossvein.	Submarginal cell not wider than marginal cell near level of anterior crossvein.
Anal cell at distal end no wider than distal end of second basal cell.	Anal cell expanded distally and much wider than distal end of second basal cell.
Abdominal spiracles 4 and 5 each with opening concealed by a tuft of pubescence.	Abdominal spiracles each with opening surrounded by an almost glabrous sclerotized ring.
♀ with tergite 6 of abdomen much reduced and concealed below tergite 5.	♀ with tergite 6 well developed and exposed, but much shorter than tergite 5.
♂: aedeagus with pair of terminal filaments.	♂: aedeagus without terminal filaments.

In some of these characters, notably in the aedeagus, degree of development of tergite 6 in the female abdomen, and development of pubescence on the abdominal spiracles, *Angitula* appears to be aligned with the subfamily Platystomatinae, while the other two genera contrast sharply with that group. On the other hand the combination of apomorphic characters common to all three genera is sufficiently distinctive to establish them as a single monophyletic group. I therefore regard them as constituting a highly specialized subfamily, which probably originated from near the base of the platystomatine stem.

(C) List of Australian Species

SUBFAMILY PLASTOTEPHRITINAE

Lasioxiria Hendel, 1914a
(1 undescribed sp.)

Genus A (unnamed)
(1 undescribed sp.)

SUBFAMILY SCHOLASTINAE

Lenophila Guérin, 1843
dentipes (Macquart, 1843)
coerulea (Macquart, 1846)
(also 4 undescribed spp.)

Asyntona Osten Sacken, 1881
tetyroides (Walker, 1859)

Pterogenia Bigot, 1859
similis Malloch, 1939a
nubecula Hendel, 1914b
latericia Hendel, 1914b

Naupoda Osten Sacken, 1881
regina Hendel, 1914b
insularis Paramonov, 1957

Mesoctenia Enderlein, 1924
australis n. sp.

SUBFAMILY PLATYSTOMATINAE

Rhytidortalis Hendel, 1914a
rugifrons (Thomson, 1869)
solocifemur (Enderlein, 1924) n. comb.
(also c. 3 undescribed spp.)

Scotinosoma Loew, 1873
bistrigatum Hendel, 1914a
completum (Malloch, 1931)
attenuatum (Malloch, 1931)
erasum Malloch, 1939a
(also c. 3 undescribed spp.)

Microepicausta Hendel, 1914a
gracilis Hendel, 1914a
terraereginae (Malloch, 1928a) n. comb.
(also 1 undescribed sp.)

Elassogaster Bigot, 1859
sepsoides (Walker, 1861)
(also 1 undescribed sp.)

Plagiostenopterina Hendel, 1914a

(subgenus *Plagiostenopterina*)
aenea (Wiedemann, 1819)
enderleini Hendel, 1914b

(subgenus *Stenopterosoma* Malloch, 1939a)
claudiana n. sp.
crinita n. sp.
macies n. sp.

Pogonortalis Hendel, in de Meijere, 1911
doclea (Walker, 1849)
commoni Paramonov, 1957
howei Paramonov, 1957

Rivellia Robineau-Desvoidy, 1830
connata (Thomson, 1869)
viridis Hendel, 1914a
mentissa (Walker, 1849)
virgo Hendel, 1914a
isolata Malloch, 1930b
bipars (Walker, 1858)
nigripes (Macquart, 1851) n. comb.
(also c. 23 undescribed spp.)

Genus C (unnamed)
(1 undescribed sp.)

Loxoneuroides Hendel, 1914a
varipennis Hendel, 1914a

Brea Walker, 1859
(1 undescribed sp.)

Genus B (unnamed)
(1 undescribed sp.)

Lamprogaster Macquart, 1843

(*violacea* group)
violacea (Macquart, 1843)
tricauda n. sp.

(*imperialis* group)
indistincta Malloch, 1928a
flavihirta n. sp.
nigrihirta n. sp.
rugifacies n. sp.
imperialis n. sp.

(*stenoparia* group)
viola Malloch, 1929
stenoparia Hendel, 1914a
corax n. sp.

(*flavipennis* group)
bicolor Macquart, 1847
flavipennis Macquart, 1843
vella (Walker, 1849)
sp. 1
excelsa n. sp.
nigripes (Macquart, 1851)
corusca n. sp.
laeta (Macquart, 1835)
relucens n. sp.
hilaris (Walker, 1849)
sp. 2
poecila Hendel, 1914b
maculipennis Macquart, 1847

(*macrocephala* group)
macrocephala Hendel, 1914a

Achias Fabricius, 1805
kurandanus Hennig, 1940b
australis Malloch, 1939a

Achiosoma Hendel, 1914a
apictipenne (Hennig, 1940b) n. comb
(also 1 undescribed sp.)

Duomyia Walker, 1849
scutellaris (Macquart, 1851)
personata n. sp.
commoni n. sp.
convallis n. sp.
pallipes n. sp.
tomentosa Hendel, 1914b
monteithi n. sp.
foliata n. sp.
triquetra n. sp.
sericea Hendel, 1914b
botulus n. sp.
argentata n. sp.
eremia n. sp.
smaragdina n. sp.
lacunosa n. sp.
marginalis n. sp.
chaetostigma n. sp.
apicalis (Walker, 1849)
lutea n. sp.
spinifemorata Malloch, 1929
irregularis, Malloch, 1929
serra, n. sp.
umbrosa n. sp.
curta n. sp.
octoseta n. sp.
scipio n. sp.
sp. 1
aurantiaca n. sp.
testacea (Macquart, 1855)
dete n. sp.
longicauda n. sp.
capnodes n. sp.
ustulata n. sp.
brevicornis, n. sp.
angustata n. sp.
lonchaeina n. sp.
capitalis n. sp.
picta n. sp.
rasa n. sp.
latipilus n. sp.
parallela n. sp.
adelaidae n. sp.
iris n. sp.
acrogenea n. sp.
uptoni n. sp.
viridaurea n. sp.
azurea Hendel, 1914b
ameniina n. sp.
montium n. n.
scintilla n. sp.
decora (Macquart, 1846)
obscura Walker, 1849
hypene n. sp.
gigas (Macquart, 1851)
thalassina Walker, 1849
howensis n. sp.
maculipennis Hendel, 1914b
mithrax Hendel, 1914b
glebosa n. sp.
loxocerina n. sp.
cancellata n. sp.
nigricosta Malloch, 1929
hebes n. sp.
brevifurca n. sp.
rudis n. sp.

Euprosopia Macquart, 1847

(*miliaria* group)
rete n. sp.
acula n. sp.

(*ventralis* group)
ventralis (Walker, 1859)
xanthops n. sp.
punctifacies Malloch, 1928a

lenticula n. sp.
sericata n. sp.
sp. 1
crassa n. sp.
sp. 2
sp. 3
piperata n. sp.
conferta n. sp.
integra n. sp.
kurandae n. sp.
sp. 4
mica n. sp.

(*remota* group)
remota n. sp.

(*megastigma* group)
hollowayi n. sp.
megastigma n. sp.
crispa n. sp.

(*maculipennis* group)
albipila n. sp.
maculipennis (Guérin, 1831)
sp. 5
fimbripes n. sp.
vitrea n. sp.
alpina n. sp.
celsa n. sp.

(*scatophaga* group)
hypostigma n. sp.
subacuta n. sp.
filicornis n. sp.
scatophaga Malloch, 1930a
ramosa n. sp.

(*macrotegularia* group)
macrotegularia Malloch, 1928a
subula n. sp.

(*tenuicornis* group)
anostigma n. n.
armipes n. sp.
monodon n. sp.
tenuicornis Macquart, 1847

(*separata* group)
comes n. sp.
separata Hendel, 1914a
inermis n. sp.
conjuncta Hendel, 1914b
biarmata Malloch, 1929

Notes on Genera and Species

Lasioxiria. Hendel (1914a; 1914b) based this genus on a single species from New Guinea. An undescribed species occurs in the rain forests of the Atherton Tableland and adjacent areas in North Queensland. I have collected a third species, also undescribed, in New Guinea.

Genus A. This is a possibly new genus based on an undescribed species from Lord Howe Island, 350 miles east of the coast of New South Wales. The distinguishing characters are given in the key to genera, but as only a single damaged specimen is available it seems best to defer formal description for the present. A second species of the genus has been recently seen from New Guinea. It is possibly related to *Guamomyia* from Micronesia.

Lenophila. Munro (1959) has pointed out that this is the correct name for the genus previously known as *Celetor* Loew.

Rhytidortalis solocifemur (Enderlein) is a new combination for *Pseudepicausta solocifemur* Enderlein, 1924. This species is related to *R. rugifrons* (Thomson) but differs in the smooth postfrons, horizontal grooving on the parafacial and narrower anal cell. I have seen the following material from coastal New South Wales: Sydney, no date (lectotype ♂, here designated, paralectotype ♀, ZMB), Dämel; Nelson's Bay, Port Stephens, viii (or v) 1920 (1 ♀, AM), A.M.

Microepicausta and *Elassogaster. Microepicausta terraereginae* (Malloch) is a new combination for *Elassogaster terraereginae* Malloch (1928a). The species is very closely related to *M. gracilis* Hendel, the type-species of *Microepicausta.* I have examined the type material of both species. *Elassogaster evitta* Malloch (1939a) from New Britain also appears to belong in the genus *Microepicausta.*

Pogonortalis. Hendel (1914a) gives *P. barbifera* Hendel (= *P. doclea* (Walker)) as the type species. I consider that *P. uncinata* de Meijere is the type species by monotypy, as given by Steyskal (1956b). A further study of *P. uncinata* (from Java) is now needed to decide whether it is congeneric with *P. doclea* and the other Australian species. As pointed out elsewhere *Pogonortalis similis* Hendel belongs in the genus *Plagiostenopterina*.

Rivellia nigripes (Macquart) is a new combination for *Urophora nigripes* Macquart (1851). I have examined the type (PM).

Genus C. This unnamed genus is related to *Loxoneuroides* and *Rivellia*. To date only a few females of the single species have been collected in rain forest areas of New South Wales.

Loxoneuroides varipennis Hendel. This form has three distinctive geographic variants in northern New South Wales and Queensland. The status of these variants is not clear at present.

Brea. This genus contains several species in New Guinea and adjacent islands. I have collected an undescribed species on the Cape York Peninsula, Queensland.

Genus B. This apparently unnamed genus is represented by a single female specimen which I collected on the Atherton Tableland, Queensland. It may be distinguished by the characters given in the key to genera. Though its appearance is reminiscent of a small dark sepsid, it shares a remarkable number of structural characters with the Oriental genus *Loxonevra*. It is considered wise to defer description till more material is available.

Achias and *Achiosoma*. *Mystia* Walker (1861) is a new synonym of *Achias* Fabricius (1805). *Achias attrahens* (Walker) is a new combination for *Mystia attrahens* Walker (1861). *Achias kurandanus* Hennig is the species erroneously determined by Malloch (1939a) as *A. brachyophthalmus* Walker. *Achias apictipennis* Hennig belongs in the genus *Achiosoma* and is quite closely related to *Achiosoma dacoides* (Walker).

Scholastes. No species of this genus is known to be established in Australia. *S. cinctus* (Guérin, 1831–1838) was originally erroneously reported to be from Port Jackson, New South Wales. It is probable that this species occurs within Australian limits on the more northerly of the Torres Strait Islands, as it is common on the adjacent coast of Papua-New Guinea. *S. bimaculatus* Hendel has been reared in Sydney from imported cocoa-nuts.

Apiola is a new name for *Xenognathus* Malloch (1930c, preoccupied by *Xenognathus* Gilbert, 1915 (Pisces), Case, 1928 (Pisces), Jordan, 1928 (Coleoptera)). This genus, which is only known from Samoa, appears to be a platystomatid, but its subfamily position is doubtful.

Pachymyza Frey, 1964, is a new synonym of *Phasiamya* Walker, 1849. The type species of the two nominal genera, *P. metallica* Walker and *P. coleoptrata* Frey, appear to be synonyms. I have seen Walker's type and an addition series of this Indonesian form in BM.

(D) Key to Australian Genera of Platystomatidae

1 Eyes densely hairy; vein 5 setulose above ..... *Lasioxiria* Hendel

——— Eyes bare or almost so; vein 5 usually bare 2

2 (1) Base of vein 1 setulose above 3

——— Vein 1 without setulae before level of humeral crossvein 4

3 (2) Arista bare, or haired near base only; face with a broad, flat-topped carina between antennae ..... *Euprosopia* Macquart

——— Arista plumose throughout; facial carina obsolete ..... *Pterogenia* Bigot

4 (2) Middle femur swollen, much thicker than other femora, with 2 rows of stout ventra spines 5

——— Middle femur not noticeably thicker than other femora, either without ventral spines, or with weakly spinescent bristles no more developed than on fore femur 6

5 (4) Antennae separated by a distance at least equal to width of first segment; head appressed to thorax in repose; ♂: tergites 4 and 5 together much shorter than tergite 3; ♀: tergites 4 and 5 absent, i.e., preabdomen with only 2 separate dorsal sclerites ..... *Mesoctenia* Enderlein

——— Antennae exceedingly close together at their bases; head held away from main body of thorax by the neck-like prothorax; ♂ and ♀: tergite 5 well-developed, not shorter than tergite 3 ..... *Brea* Walker

6 (4) Second basal cell longer than discal cell; very stout or subglobose flies 7

——— Second basal cell shorter than discal cell; form variable but never subglobose 8

7 (6) Antennae widely separated at bases; anal cell acutely pointed at posterior distal angle; vein 4 ending in wing apex ..... *Asyntona* Osten Sacken

——— Antennae separated basally by not more than width of first segment; posterior distal angle of anal cell not acute; vein 4 ending behind wing apex. *Naupoda* Osten Sacken

8 (6) Sternopleural bristle present but often rather fine 9

——— Sternopleural bristle absent 10

9 (8) Wing with a broad regular blackish band from end of vein 5, across discal and anterior crossveins to submarginal cell, thence bent back, completely traversing wing again through base of discal cell, also a large separate apical costal mark; scutellum very convex, shining black ..... *Lenophila* Guérin

——— Wing without such a bent band, irregularly spotted or with broken bands; scutellum somewhat flattened, brown with whitish margin ..... *Scholastes* Loew

10 (8) Eyes protruding or stalked; arista long-plumose for most of its length; mesopleural bristle absent 11

——— Eyes not protruding or stalked; arista bare or minutely haired, at least on distal third; mesopleural bristle variable 12

11 (10) Humeral, intra-alar, and prescutellar acrostichal bristles distinct; squama dilated posteriorly, its outer margin not describing a continuous curve; suprasquamal ridge with some fine erect hairs near middle, which are longer than the pile-like pubescence on posterior part ..... *Achias* Fabricius

——— Humeral, intra-alar, and prescutellar acrostichal bristles absent; squama not dilated posteriorly, its outer margin describing a continuous curve; suprasquamal ridge with extremely short pubescence only ..... *Achiosoma* Hendel

12 (10) Mesopleural bristle absent; suprasquamal ridge with a group of rather long, loose hairs or stiff setulae ..... *Duomyia* Walker

——— Mesopleural bristle present; suprasquamal ridge with short pubescence only 13

13 (12) Face with a broad, flat, usually sharply margined carina between antennae; lower squama very large, always greatly exceeding the upper squama .... *Lamprogaster* Macquart

——— Facial carina little developed or completely rounded off at lateral margins; lower squama not much larger than upper squama 14

14 (13) Lower part of parafacial with numerous short black setulae; lower margin of cheek with a series of longer setulae, the foremost corresponding in position to a vibrissa; subcosta angularly bent forward near distal end; wing blackish with variable clear markings ..... genus A

——— Lower part of parafacial with at most a few inconspicuous hairs; lower margin of cheek without complete series of long setulae; subcosta not abruptly bent distally, usually curved forward; wing predominantly clear, usually with few blackish stripes or spots 15

15 (14) Prelabrum much prolonged downwards and backwards; metathoracic spiracle with a few fine setulae on upper margin; middle tibia without strong apical spur ..... genus B

——— Prelabrum normal, transverse; metathoracic spiracle with soft hairs only; middle tibia with one or two strong spurs 16

16 (15) Veins 3 and 4 converging towards apex 17

——— Veins 3 and 4 subparallel or slightly diverging towards apex 20

17 (16) Face with fine hairs near middle; wing with a longitudinal blackish stripe covering first basal cell ..... *Plagiostenopterina* Hendel

——— Face without hairs near middle; wing markings variable 18

18 (17) Fronto-orbital bristles distinct; mesoscutum approximately as wide as long; wing with a longitudinal blackish stripe covering first basal cell .. *Pogonortalis* Hendel

——— Fronto-orbital bristles vestigial; mesoscutum longer than wide; wing without stripe covering first basal cell 19

19 (18) Scutellum not haired or with few hairs at lateral margins in some non-Australian species; vein 4 ending before wing apex ..... *Elassogaster* Bigot

——— Scutellum with hairs on most of dorsal surface; vein 4 ending slightly behind wing apex ..... *Microepicausta* Hendel

20 (16) Scutellum haired or setulose on central region of dorsal surface; vein 4 nearly always deeply curved down into discal cell before anterior crossvein 21

——— Scutellum not haired in central region, but sometimes with very short pubescence or with basal hairs; vein 4 usually slightly curved or almost straight before anterior crossvein 22

21 (20) Scutellum with three pairs of marginal bristles; prescutellar acrostichals surrounded by long hairs; second basal cell about three quarters as long as discal cell ..... *Loxoneuroides* Hendel

——— Scutellum with two pairs of marginal bristles; usually no hairs between prescutellar acrostichals and scutellar suture; second basal cell not more than about half as long as discal cell ..... *Rivellia* Robineau-Desvoidy

22 (20) Third antennal segment short, rounded-ovate; discal crossvein longer than penultimate section of vein 4 ..... genus C

——— Third antennal segment elongate; discal crossvein shorter than penultimate section of vein 4 23

23 (22) Mesoscutum with one or more longitudinal greyish pruinescent stripes; arista with numerous short or minute hairs basally, which extend beyond the slightly swollen basal part ..... *Scotinosoma* Loew

——— Mesoscutum without longitudinal pruinescent stripes; arista quite bare, or in one species with minute hairs confined to the strongly swollen basal part ..... *Rhytidortalis* Hendel

VI. GENUS **MESOCTENIA** ENDERLEIN

Mesoctenia Enderlein, 1924: 130; Malloch, 1939a: 123.

Head broad, about as wide as thorax in ♀, often wider in ♂, compressed from front to rear; postfrons broad, steeply sloping; facial carina only slightly elevated, flat-topped, at least as wide as antennal segment 1, often wider in ♂, between bases of antennae; epistomal margin of face sometimes produced medially into a prominent, downwardly directed lobe in ♂, which is only very slightly developed in ♀; cheeks wide, somewhat gibbous laterally in ♀, forming a vertical, anteriorly flattened ledge in this region in ♂; outer vertical bristle strong, inner vertical a little weaker; fronto-orbital vestigial or absent; ocellar absent; cheek bristle rather weak or absent. Antenna decumbent, with short oval segment 3, arista long, with pubescence on its entire length. Prelabrum moderately developed, narrowed medially; palpus of moderate width, usually tapered basally and apically.

Thorax very short and broad, shining, devoid of pruinescence; mesoscutum about 1.3 times as wide as long; scutellum broad, rounded in outline, somewhat flattened but with rounded margin finely setulose on dorsal, lateral and apical surfaces; mesopleuron strongly convex; prosternum without sclerotized precoxal bridges; thorax with the following bristles: a rather weak humeral; 1 + 1 notopleurals; supra-alar; postalar; posterior intra-alar situated rather high up; no dorsocentral; prescutellar acrostichal; two or three pairs of scutellars; mesopleural; no sternopleural. Legs, especially the fore one, rather short; fore femur with rather weak pale posteroventral bristles, the dorsal bristles scarely differentiated from the long dorsal hairs; middle femur strongly swollen and much stouter than other femora, with anteroventral and posteroventral series of strongly thickened black spines.

Wing. Subcosta curved forward at distal extremity; vein 3 ending in wing apex, not converging with vein 4 apically; second basal cell much dilated distally, fully as long as discal cell (both cells measured along posterior margins); anal crossvein almost straight forming on its proximal side an obtuse angle with vein 6.

Abdomen. ♂: tergites 4 and 5 distinct but much shorter than tergite 3; ♀: tergite 3 very large; tergites 4, 5, and 6 not distinguishable; spiracles of segments 3, 4, and 5 situated dorsally in membranous area between tergites 3 and 7; aculeus of ovipositor slender. ♂ postabdomen: segment 9 (genital segment) not concealed below tergite 5; aedeagus lying in a shallow dorsal, rather than lateral pouch; distal capsule (glans) divided by a transverse constriction, without terminal filaments.

Type species: *M. ralumensis* Enderlein (= *Zygaenula coalescens* Hendel).

This genus is very close to *Zygaenula* Doleschall in which genus Hendel included the species. It differs from *Zygaenula* in the numerous ventral spines on the middle femur, in the absence of a transverse convexity on the face immediately above epistomal margin, in having the distal section of vein 4 almost straight, instead of curved forward apically, and in the form of the anal cell which is more expanded distally, with longer more oblique anal crossvein.

I have seen type material of all described species except *M. ralumensis* Enderlein which seems clearly a synonym of *M. coalescens* (Hendel). The downwardly directed epistomal lobe of the male has not been previously described, though it may prove to be present in all species except *M. coalescens*. In the undescribed species from North-east New Guinea (species 1 in the key), there is sexual dimorphism in leg coloration. It may be that all species in which the femora are darkened or partly darkened in the female have them entirely pale in the male. Because of the small numbers of specimens available it is difficult to define some of the previously described species. Males are only known for *M. coalescens* Hendel and two previously undescribed species. I have seen females of all known species.

The known distribution of *Mesoctenia* is New Guinea, New Britain, Manus Island, and Queensland as far south as the Cairns district. The two latter localities are new records, the Manus Island record being based on an undescribed species in BM.

Key to species of **Mesoctenia**

1 Mesopleuron entirely dark brown 2

——— Mesopleuron with conspicuous yellow area just below upper margin 3

2 (1) Wing with indistinct brown basal suffusion; ♂: head transversely oblong, not wider across cheeks than across eyes, with no trace of epistomal lobe; New Britain .... *coalescens* Hendel

——— Wing with well-defined dark brown basal zone; ♂: head more nearly pentagonal, wider across cheeks than across eyes, with epistomal margin produced downwards into a prominent subacate lobe; north-east New Guinea ..... sp. 1

3 (1) Preapical wing band not forming spots on veins 3 and 4, but fading behind vein 2; no spot at apex on vein 3; wing with definite brown basal zone filling anal cell and basal half of second costal cell; femora of ♀ entirely fulvous; Queensland .. .. *australis* n. sp.

——— The broken preapical band forming brown spots where it crosses veins 3 and 4; an apical brown spot on vein 3; brown basal zone of wing generally less-developed; femora of ♀ variable in colour 4

4 (3) Femora of ♀ entirely fulvous; Aru Islands ..... *celyphoides* (Walker)

——— Middle and hind femora of ♀ blackened on at least their basal halves; Papua..... ..... *hilaris* (Hendel)

Mesoctenia australis n. sp.

(Figs 4, 5)

♂ ♀. *Coloration.* Head and its appendages fulvous; antennal arista brown beyond base. Thorax black to dark brown; mesopleuron with a broad pale yellow horizontal stripe a short distance below its upper margin. Legs fulvous; middle and hind coxae brown to blackish; fore and middle tibiae narrowly ringed with black near middle; fore tarsus with three distal segments dark brown; middle and hind tarsi with two distal segments lighter brown. Wing with large dark brown basal area extending to middle of second costal cell, middle of first basal cell, filling second basal and anal cells, and also extending beyond and behind anal cell; subcostal cell yellowish distally, a yellowish brown transverse band extending backwards from end of subcosta, where it is intensified, almost to vein 4, a similar one extending backwards from end of vein 1, and a shorter one from costa shortly before end of vein 2, all three bands becoming diffuse or broken posteriorly; anterior and posterior crossveins clouded with brown. Preabdominal tergites blackish brown; hypopygium of ♂ fulvous; segment 7 and ovipositor of ♀ yellowish brown.

Head in ♂ with width across cheeks equal to or slightly less than width across eyes, always less than width across eyes in ♀; in ♂ epistomal margin of face strongly produced downwards into an obtuse lobe of variable length which is barely indicated in ♀.

Thorax. Mesoscutum very finely and weakly rugose.

Abdomen. ♂ genitalia as in fig. 4.

Dimensions: Total length, ♂ 4.2–4.6 mm, ♀ 4.3–5.5 mm; length of thorax, ♂ 2.6–2.9 mm, ♀ 2.4–3.0 mm; length of wing, ♂ 4.7–5.5 mm, ♀ 4.5–5.6 mm.

Distribution: coastal northeast Queensland.

Material examined: southern side of Thornton Range to Daintree River ferry, i 1967 holotype ♂, paratypes 2 ♂, 5 ♀, AM, 2 ♀, BM, 2 ♀, CSIRO, 2 ♀, USNM, also shrivelled examples, newly emerged when taken, 6 ♂, 9 ♀, AM), G.A.H. and D.K.M.; Mission Beach, E of Tully, xii 1965 (paratype ♂, UQ), G.M.

Habitat: specimens from near Thornton Range taken on lower surface of palm leaves in stunted forest. Many of these were newly emerged.

Comparative notes. The only other described species with a yellow mark on the mesopleuron are *M. hilaris* (Hendel) and *M. celyphoides* (Walker). *M. australis* differs from both these species in wing markings as indicated in the key.

VII. GENUS **PLAGIOSTENOPTERINA** HENDEL

Plagiostenopterina Hendel, 1912: 14; 1914a: 46–50; 1914b: 7, 52–54; Malloch, 1931: 12–14; 1939a: 113–114.

Rather elongate insects of dark coloration, not conspicuously shining.

Wing pattern: transverse banding, when present, restricted to stripe on discal crossvein; a black stripe along costal margin of wing commencing in subcostal cell; a longitudinal black stripe filling first basal cell and extending into base of first posterior cell.

Head, rounded but much higher than long; face with very fine erect hairs near median line; facial carina not distinctly defined; epistomal margin usually prominent; antennal grooves present but rather shallow; parafacial very narrow; cheek moderately so; occiput convex, except sometimes in upper median part; the following bristles present: well-developed inner and outer verticals, ocellar and fronto-orbitals rather weak or absent, a strong cheek bristle, an outstanding bristle on occiput near centre of posterior margin of eye. Antenna with third segment elongate; arista filiform with short hairs basally. Prelabrum well-developed but not prominent; palpus rather broad.

Thorax. Prothorax produced into a short neck; propleural callus compact, strongly convex; prosternum broadly quadrate with precoxal bridges weakly developed or absent; mesoscutum much longer than broad; posterior notopleural callus not especially prominent; scutellum short; postscutellum not prominent; suprasquamal ridge with very short pubescence only; the following bristles present: humeral (absent in some species), two notopleurals, supra-alar, postalar, intra-alar, dorsocentral, no acrostichal, two pairs of scutellars, usually a strong mesopleural. Legs moderately long, without outstanding modifications. Wing moderately elongate, macrotrichia confined to veins 1, 3 and basal section of vein 5, those on vein 1 all beyond level of humeral crossvein, those on vein 5 sometimes absent; anterior crossvein well-removed from discal crossvein, veins 3 and 4 converging apically and terminating on either side of apical extremity of wing; anal crossvein curved; second basal cell short; inner squama much reduced, shorter than outer squama.

Abdomen tending towards a cylindrical shape; segment 1 somewhat narrowed; tergites 3–5 well-developed and separate.

Type species (here designated): *Dacus longivitta* Walker (= *Plagiostenopterina aenea* (Wiedemann)).

The designation of the nominal species *P. aenea* (Wiedemann) as type species by Hendel (1914a) is invalid as this is not an originally included species in terms of Article 69 (a) (i) of the International Code. The fact that the included species *Dacus imitans* Walker is compared with *P. aenea* ("ähnlich *aenea* Wied.") is not a statement that *aenea* is congeneric. As *D. imitans* is not referable to *Plagiostenopterina* s.l. as defined by Malloch (1931), I designate the only other originally included species, *D. longivitta* Walker, as type in order to ensure continuity of the generic name. My decision on this matter has been aided by information on the types of *D. imitans* and *D. longivitta* (BM) kindly supplied by Mr B. H. Cogan.

It appears to the author that, of the subgenera recognized by Malloch (1931; 1939a) as belonging here, all except *Stenopterosoma* are better regarded as separate genera. Otherwise the genus becomes so diverse as to be difficult to define. Thus restricted the genus *Plagiostenopterina* includes only species with finely haired face, a character absent in the other segregates. In addition, the species all have a well developed occipital bristle, and, except where the wing is extensively darkened, there is a prominent dark stripe covering first basal cell. *Stenopterosoma* agrees with *Plagiostenopterina* s. str. in these general characters, while deviating in several others, and is here retained as a subgenus of *Plagiostenopterina.*

Key to Australian species of **Plagiostenopterina**

1 Scutellum finely setulose; fronto-orbital bristles absent; some fine setulae on each side of postscutellum (subgenus *Plagiostenopterina*) 2

——— Scutellum not setulose; two pairs of short fronto-orbital bristles present; postscutellum bare (subgenus *Stenopterosoma*) 3

2 (1) Ocellar triangle with minute tomentum (as distinct from pruinescence) near margins anteriorly; ♂: arista apically spatulate; abdominal tergite 4 longer than tergite 5 ..... *aenea* (Wiedemann)

——— Ocellar triangle not tomentose; ♂: arista filiform; abdominal tergites 4 and 5 of approximately equal length ..... *enderleini* Hendel

3 (1) Face, humeral callus, and most of pleura (except hypopleuron) tawny; glans of aedeagus about 0.43–0.48 mm long ..... *claudiana* n. sp.

——— Lower central part of face dark brown; humeral callus and pleura mostly black or dark brown; glans of aedeagus of different size 4

4 (3) Grey pruinescence of mesoscutum inconspicuous, becoming obsolete in front of suture; ♂; glans of aedeagus short-oval, about 0.3 mm long; filaments more than twice as long as glans; ♀: hairs on posterior part of humeral callus strongly crisped apically ..... *crinita* n. sp.

——— Grey pruinescence well-developed on median part of mesoscutum and extending almost to anterior extremity; ♂: glans of aedeagus elongate-cylindrical, about 0.6 mm long; filaments not as long as glans; ♀: hairs on posterior part of humeral callus not noticeably crisped ..... *macies* n. sp.

Subgenus **Plagiostenopterina** Hendel

Fronto-orbitals absent. Humeral bristle well-developed in both sexes; no sexual dimorphism in hairing of humeral callus; scutellum setulose dorsally; postscutellum setulose laterally.

This is much the larger of the two subgenera here recognized and is found throughout the known range of the genus. The African species are quite closely related to the Indo-australian ones.

Plagiostenopterina (**Plagiostenopterina**) **enderleini** Hendel

Plagiostenopterina Enderleini Hendel, 1914a: 49; 1914b: 56; Malloch, 1931: 14; Malloch, 1939a: 114.

Senopterina aenea (Wied.): Enderlein, 1912: 356. Misidentification.

♂ ♀. *Coloration.* Postfrons blackish brown, paler anteriorly; face brown becoming fulvous ventrally; orbital margins of postfrons and parafacial, and antennal groove with greyish white pruinescence; cheek tawny; occiput black with greyish white pruinescence which is thickest towards posterior orbits. Antenna tawny, becoming brown distally; arista fulvous at base, otherwise black. Prelabrum black; palpus blackish, usually paler apically. Thorax black, not strongly shining but with slight metallic green lustre; mesoscutum with a wide greyish pruinescent median band which becomes wide and diffuse posteriorly; a greyish pruinescent area above and behind each humeral callus; dorsal surface of scutellum also with some greyish pruinescence; pleura greyish pruinescent except for two broad blackish bands,

one from humeral callus along anterior margin of mesopleuron to sternopleuron and one, almost vertical, on posterior part of pteropleuron, posterior part of sternopleuron and anterior part of hypopleuron. Legs predominantly black to deep brown; fore femur and distal part of mid femur yellowish brown. Wing markings typical of the genus; discal crossvein without trace of a dark mark. Haltere brown. Abdomen black, with conspicuous areas of white hairs on tergite 2, and basal parts of tergites 3 and 4.

Head. Ocellar triangle without minute tomentum to the front and side of anterior ocellus; inner and outer vertical bristles well developed; ocellars minute, usually pale; postverticals and fronto-orbitals absent; cheek bristle and lateral occipital bristle well developed. Antenna of equal size in both sexes, extending somewhat beyond median epistomal margin of face, third segment subacute apically; arista not spatulate distally in either sex.

Thorax. Scutellum with numerous fine hairs dorsally; postnotum with group of fine hairs and setulae on each side; humeral bristle long and strong. Legs without any distinct bristles apart from the apical spurs on middle tibia. Wing without black setulae among the microtrichia on basal section of vein 5.

Abdomen. ♂: tergites 4 and 5 of approximately equal length; ♀: tergite 5 slightly less than half as long as tergite 4.

Dimensions: total length, ♂ 5.1–8.9 mm, ♀ 6.4–8.7 mm; length of thorax, ♂ 2.4–3.2 mm, ♀ 2.6–3.5 mm; length of wing, ♂ 4.3–5.6 mm, ♀ 4.7–6.2 mm.

Distribution: Northern Territory—Arnhem Land; Queensland—east coast as far south as Brisbane; Sumatra; Philippines; New Guines; Papua; Solomon Islands. Not previously recorded from Australia.

Type material examined: Soekaranda, Sumatra, no date (lectotype ♀, here designated, ZMB), H. Dohrn.

Other material examined (only Australian specimens listed). Northern Territory: Darwin, vi 1964 (2 ♂, CSIRO), K.R.N.; East Point, Darwin, vi 1964 (4 ♂, CSIRO, 2 ♂, AM), K.R.N.; Burnside, near Brock's Creek; iii 1929 (1 ♀, 1 ex. no abdomen, CSIRO), T.G.C. Queensland: Cooktown, iii vii 1957–1966 (2 ♀, CSIRO), T.G.C., D.E.H.; Bailey's Creek, near Mossman, 1962 (1 ♀, CSIRO), T. Plath; junction of Goldmine and Davies Creeks, Kuranda–Mareeba Road, v 1967 (1 ♀, CSIRO), D.H.C.; Lake Placid, near Cairns, v 1958 (3 ♂, 2 ♀, AM), D.K.M.; Freshwater, near Cairns, viii 1959 (1 ♀, CSIRO), T.G.C.; Gillies Highway, 2 miles W. of Little Mulgrave, Gordonvale district, iv 1957 (1 ♀, CSIRO), D.H.C.; Innisfail, v 1958 (1 ♀, CSIRO), T.G.C.; Flying Fish Point, near Innisfail, iv 1958 (1 ♀, CSIRO), T.G.C.; Palm Island, near Ingham, no date (3 ♀, CSIRO), T.L.B.; Cannonvale, near Proserpine, vi 1958 (2 ♀, CSIRO), T.G.C.; Cannon Valley, near Proserpine, vi 1959 (3 ♂, 1 ♀, CSIRO), T.G.C.; 30 miles WSW of Collinsville, ix 1950 (1 ♀, CSIRO), E.F.R.; Byfield, Yeppoon district, ii 1964 (1 ♂, CSIRO), I.F.C. and M.S.U.; Yeppoon, i xii 1964–1965 (4 ♂, CSIRO), I.F.C.; Heron Island, Capricorn Group, i iv xi xii 1948–1964 (4 ♂, 2 ♀, CSIRO, 1 ♂, 3 ♀, UQ), E. Bernays, A.L.D., I.M.M., E.N. Marks, E. Shipp; Masthead Island, Capricorn Group, i 1948 (1 ♀, CSIRO), E. Shipp; Brisbane, iii ix 1949–1962 (1 ♂, 1 ♀, UQ), G.M., F.A.P. Western Australia: Wyndham to Kimberley Research Station (Ord R), x 1953 (1 ♀, CSIRO), R. Lukins.

Habitat: probably very varied; specimens taken at Lake Placid on shrubs near margin of rain forest remnant.

Plagiostenopterina (Plagiostenopterina) aenea (Wiedemann)

Dacus aeneus Wiedemann, 1819: 29, 44.

Dacus basalis Walker, 1849: 1072, new synonym.

Dacus longivitta Walker, 1859: 115, new synonym.

Plagiostenopterina basalis, Hendel, 1914b: 53, 64.

(For further synonymy see Hendel (1914a or 1914b)).

Exceedingly similar to *P. enderleini* described above, but differentiated mainly by the following characters.

Head. Ocellar triangle with minute pale tomentum in front of and to sides of median ocellus; ocellar bristles black. ♂: arista spatulate apically.

Thorax. Vein 5 of wing with a few black setulae on dorsal surface of basal section (bordering anal cell).

Abdomen. ♂: tergite 4 slightly longer than tergite 5 on mid dorsal line.

Dimensions: total length, ♂ 7.3–10.5 mm, ♀ 7.4–9.7 mm, length of thorax, ♂ 2.7–4.0 mm, ♀ 2.9–3.7 mm; length of wing, ♂ 4.8–7.2 mm, ♀ 5.1–6.8 mm.

Distribution: South East Asia from Formosa to Ceylon; Philippines; Indonesia; New Guinea; New Britain; Queensland—as far south as Proserpine district; Northern Territory—Arnhem Land.

Type material examined: Port Essington, Cobourg Peninsula, Northern Territory, no date (holotype ♀ of *Dacus basalis* Walker, BM), anon. Other type material not seen.

Other material examined (only Australian specimens listed). Queensland: Bamaga, c. 15 miles SW of Cape York, iii 1964 (2 ♀, CSIRO) I.F.C. and M.S.U.; Blue Mountains, Cape York Peninsula, xi 1947 (1 ♂, UQ), J. L. Wassell; Claudie R., Iron Range district v vi 1966 (3 ♂, 4 ♀, AM), D.K.M.; Iron Range, iv 1964 (1 ♂, CSIRO), I.F.C. and M.S.U.; Hutchinson Creek, near Daintree, i 1967 (1 ♀, AM), G.A.H. and D.K.M.; Thornton Range to Daintree R., i 1967 (1 ♂, AM), G.A.H. and D.K.M.; Daintree, xii 1958 (4 ♂, AM), D.K.M.; Ellis Beach, near Cairns, v 1967 (1 ♀, CSIRO), D.H.C.; Lake Placid, near Cairns, v 1958 (6 ♂, 11 ♀, AM), D.K.M.; Freshwater, near Cairns, vi 1960 (1 ♀, CSIRO), T.G.C.; Meringa, near Gordonvale, xi 1926 (2 ♂, CSIRO), G. M. Goldfinch; Mulgrave R., 4 miles W of Gordonvale, i 1959–1967 (6 ♂, 1 ♀, AM), D.K.M.; Eubenangee, near Innisfail, vi 1950 (1 ♀, NMV), "G.B."; Innisfail, v 1958 (2 ♀, CSIRO), T.G.C.; 9 miles E of El Arish, iii 1964 (1 ♂, CSIRO), I.F.C. and M.S.U.; Clump Point, near El Arish, iii 1964 (5 ♂, 4 ♀, CSIRO), I.F.C. and M.S.U.; Tully, viii 1955 (1 ♂, UQ), A. J. Cowan; Ingham, iii 1961 (1 ♂, CSIRO), R.S.; Palm Island, i xii 1930–1931 (4 ♀, CSIRO), I.M.M.; Shute Harbour, near Proserpine, iii 1964 (1 ♂, CSIRO), I.F.C. and M.S.U.

Subgenus **Stenopterosoma** Malloch

Stenopterosoma Malloch, 1939a: 114, as subgenus of *Plagiostenopterina.*

Two short but distinct fronto-orbital bristles. Humeral bristle well-developed in ♂; in ♀ humeral callus differentiated from that of ♂, either by modified hairing, or reduction of the humeral bristle, or both; scutellum and postscutellum not setulose.

Type species: *P.* (*Stenopterosoma*) *orbitalis* Malloch = *Dacus lativentris* Walker.

Malloch placed the species *P. parva* Malloch in the subgenus *Plagiostenopterina*, but its characters are clearly those of subgenus *Stenopterosoma.* Unfortunately Malloch (1931: 15) described the species from a single female without exact locality (only "Kaiserwilhelmsland" = North-east New Guinea being given), and, as the species are often difficult to distinguish without reference to male genitalia, it may not prove possible to identify it even when the New Guinea species are better known.

Plagiostenopterina (*Stenopterosoma*) *similis* (Hendel) is a new combination for *Pogonortalis similis* Hendel (1914b: 145–146). It was based on a single female from New Guinea (Friedrich Wilhelmshafen = Madang, holotype, MNM). It is similar to *P. macies* in most characters, but may be distinguished by having longer hairs on humeral callus and by having only a few black setulae on upper anterior part of mesopleuron.

The only other previously described species of the subgenus is *P. lativentris* (Walker) which appears to be widely distributed in New Guinea. It is readily distinguished from the three Australian species described below by the heavy dark stripe surrounding discal crossvein of wing and by the specialized basal area of tergite 5 of female. The author has also seen material of three apparently undescribed species of *Stenopterosoma* from New Guinea.

Plagiostenopterina (**Stenopterosoma**) **claudiana** n. sp.

(Figs 6, 7)

♂ ♀. *Coloration.* Postfrons blackish posteriorly, elsewhere reddish brown; face tawny, covered with whitish pruinescence on upper half, a little brown colouring in antennal grooves which is almost hidden by pruinescence; orbital margins of postfrons and parafacial whitish-pruinescent; cheek tawny with whitish pruinescence; occiput blackish, with greyish white pruinescence except in area between neck and vertex. Antenna tawny, third segment slightly darkened beyond base; arista tawny at base, black distally. Prelabrum tawny anteriorly, dark brown at sides; palpus blackish, tawny apically. Mesoscutum black with narrow yellow-brown postsutural dorsocentral stripe, also usually a broader more lateral postsutural stripe which may unite with the dorsocentral stripe near scutellar suture; sometimes also a median pale stripe which fuses with the other stripes posteriorly to form a tawny area immediately in front of scutellum; humeral callus and posterior notopleural callus tawny; most of mesoscutum thinly covered with grey pruinescence except at anterior extremity where pruinescence is restricted to a median zone; scutellum black to reddish brown; postnotum black, sometimes becoming brown laterally; pleura preponderantly tawny; anterior part of mesopleuron sometimes dark brown; hypopleuron dark brown. Legs largely blackish, fore coxa and femur and a variable amount of other femora tawny. Wing markings much as in *P. enderleini* and *P. aenea;* costal band extending from distal end of vein 1 to end of vein 4, not much narrowed in marginal cell; a very faint greyish stripe on discal crossvein which is not connected to the heavy blackish stripe filling and extending a little beyond first basal cell. Haltere yellowish brown. Abdomen black; tergite 2 with a yellowish patch on each side, more extensive in ♂ which may have variable yellowish areas on tergites 3 and 4; erect hairs on tergite 2 white; silky hairs along median line of tergites 4 and 5 white, more conspicuous in ♀.

Head. Ocellar triangle without distinct tomentum; inner and outer vertical bristles strongly developed; two pairs of fronto-orbitals and ocellar present but short and weak, postverticals very weak; cheek bristle and lateral occipital bristle well-developed. Antenna a little shorter than distance from its basal insertion to epistomal margin; third segment rather narrowly rounded apically; arista slender, filiform, with short hairs basally.

Thorax. ♂: humeral callus and mesopleuron without any black setulae, with fine pale hairs only in addition to the long, strong humeral bristle and mesopleural bristle; ♀: humeral bristle rather weak, a little longer and stronger than the group of black setulae on posterior part of humeral callus, which are rather long, fine, but not crisped apically, and not very dense; mesopleuron with a group of erect black setulae, of which the posterior ones are generally longer, near upper anterior extremity; also the usual posterior mesopleural bristle as in ♂. Fore femur with well-developed series of posterodorsal and longer posteroventral bristles; hind femur with well-developed dorsal bristles distally. Wing without setulae on vein 5.

Abdomen. ♂: tergites 4 and 5 subequal in length; ♀: tergite 5 about half as long as tergite 4. ♂ postabdomen: outer surstylus rather stout, straight, its free distal section not very much narrowed, with rounded apex and tooth-like preapical lobe on inner side; inner surstylus more slender, its apex reaching to same level as that of outer surstylus; aedeagus with stipe rather short; preglans well sclerotized, elongate; glans elongate cylindrical; filaments rather robust, about 1.4–1.7 times as long as glans; cercus almost as long as surstyli.

Dimensions: total length, ♂ 3.6–6.5 mm, ♀ 4.7–6.0 mm; length of thorax, ♂ 1.7–2.5 mm, ♀ 1.7–2.7 mm; length of wing, ♂ 3.8–5.2 mm, ♀ 4.1–5.6 mm; length of glans of aedeagus 0.43–0.48 mm.

Distribution: Queensland—Iron Range district, Cape York Peninsula.

Material examined: Claudie R., near Mount Lamond, vi 1966 (holotype ♂, AM), v vi 1966 (paratypes, 10 ♂, 8 ♀, AM, 1 ♂, 1 ♀, USNM, 1 ♂, 1 ♀, BM), D.K.M.; Iron Range, iv 1964 (paratype ♀, CSIRO), I.F.C. and M.S.U.

Habitat: rain forest.

Plagiostenopterina (**Stenopterosoma**) **macies** n. sp.

♂ ♀. Extremely similar to *P. crinita*, and apparently differing only in the following characters.

Coloration. Face more broadly fulvous in lateroventral regions than in *P. crinita.* Central part of mesoscutum more thickly grey-pruinescent, the pruinescence extending almost to anterior extremity; pleura in ♂ (holotype) almost entirely black, in ♀ dark reddish brown to blackish. Fore femur tawny, becoming darker distally; middle femur tawny at distal extremity; legs otherwise blackish brown.

Thorax. ♀: humeral bristle well-developed, black posterior setulae of humeral callus fairly long and numerous, very slightly crisped apically.

Abdomen. ♂: outer surstylus apparently similar in form to that of *P. claudiana* (viewed on whole specimen); aedeagus with preglans strongly sclerotized, somewhat elongate; glans elongate-cylindrical, larger and slightly stouter than in *P. claudiana;* length of filaments about 0.8 of length of glans.

Dimensions: total length, ♂ 5.0 mm, ♀ 4.6 mm; length of thorax, ♂ 1.9 mm, ♀ 1.8 mm; length of wing, ♂ 4.2 mm, ♀ 4.1 mm; length of glans of aedeagus, 0.63 mm.

Distribution: Queensland—Cape York Peninsula.

Material examined: Bamaga, c. 15 miles SW of Cape York iii 1964 (holotype ♂, paratype ♀, CSIRO), I.F.C. and M.S.U.

Plagiostenopterina (**Stenopterosoma**) **crinita** n. sp.

(Fig. 8)

♂ ♀. Very similar to *P. claudiana* in most characters; agreeing with the description given for that species except as indicated below.

Coloration. Postfrons dark brown, black posteriorly; lower part of face dark brown, paler towards lateroventral angles. Prelabrum entirely dark brown. Thorax entirely or almost entirely black; posterior notopleural callus and part of pteropleuron sometimes reddish brown; mesoscutum with thin greyish pruinencence less developed anteriorly than in *P. claudiana.* Legs blackish; fore femur yellowish brown to deep reddish brown, becoming darker distally. Abdomen with fulvous markings confined to a patch on each side of tergite 2.

Head. Fronto-orbital bristles short, but stronger than those of *P. claudiana.* Third antennal segment slightly shorter than in *P. claudiana.*

Thorax. ♂ as described for *P. claudiana;* ♀: differing from *P. claudiana* in having humeral bristle weaker, sometimes only slightly differentiated from the long black setulae below it, which are more numerous than in *P. claudiana* and with distinctly crisped apices.

Abdomen. ♂: outer surstylus more narrowed distally than in *P. claudiana;* aedeagus with preglans strongly sclerotized, not much longer than wide; glans comparatively short, avoid; filaments more than twice as long as glans.

Dimensions: total length, ♂ 4.3–5.0 mm, ♀ 4.8–5.8 mm; length of thorax, ♂ 1.7–2.3 mm, ♀ 2.2–2.5 mm; length of wing, ♂ 3.8–4.6 mm, ♀ 4.5–5.1 mm, length of glans of aedeagus, 0.29–0.31 mm.

Distribution: north-eastern Queensland—Innisfail district.

Material examined: Mount Bartle Frere, east base, 80 ft, iv 1955 (holotype ♂, CSIRO, paratypes, 1 ♂, 2 ♀, CSIRO, 1 ♂, AM), K.R.N. and I.F.C.; 9 miles E of El Arish, iii 1964 (paratype ♀, CSIRO), I.F.C. and M.S.U.

VIII. GENUS **LAMPROGASTER** MACQUART

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

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

Chromatomyia Walker, 1849: 801. Type species here designated *C. formosa* Walker (= *Lamprogaster laeta* (Macquart)).

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

Liolamprogaster Enderlein, 1924: 128. Type species *L. angusta* Enderlein.

Head not notably widened, the eyes not prominently bulging; height of cheek not nearly as great as height of eye; antennal grooves distinct, separated by a variable flat-topped carina; inner and outer vertical bristles and cheek bristle well developed; postvertical, ocellar and fronto-orbital bristles weak or not differentiated. Antenna with segment 2 conical, rather short, segment 3 somewhat elongate but not nearly reaching to epistomal margin; arista bare or with very short hairs towards base. Prelabrum well-developed; palpus elongate.

Thorax. Mesoscutum about as long as broad or somewhat longer; scutellum usually short and convex, bare or haired; suprasquamal ridge with very short pubescence only; postscutellum variably reduced, sometimes convex; prosternum haired, with distinct precoxal bridges; the following thoracic bristles present: humeral (sometimes absent), two notopleurals, anterior supra-alar, postalar, posterior intra-alar, posterior dorsocentral, prescutellar acrostichal, variable number of scutellars, mesopleural.

Legs of moderate proportions, without special modifications; femora without strong ventral bristles or spines.

Wing of normal proportions or slightly elongate; subcosta gently curved forwards at distal extremity, meeting costa at an acute angle; radial vein setulose only beyond humeral crossvein; second basal cell not enlarged; anal crossvein recurved anteriorly becoming straight posteriorly and forming an angle of 90° or more with vein 6 on its proximal side.

Abdomen broadly ovoid, constricted at junction with metathorax but expanding immediately therefrom; preabdomen with complete complement of tergites, i.e., five tergites visible dorsally of which the first two are fused.

Type species: *Lamprogaster flavipennis* Macquart.

The more typical species of *Lamprogaster* occur mainly in Australia and New Guinea with extensions into the Moluccas, New Britain, and New Caledonia. *L. lepida* Walker occurs in the Celebes and *L. celebensis* Enderlein may prove to be a synonym. Four species have been described from the Philippines (see Frey, 1930, Malloch, 1931). Malloch indicates that the two Philippine species he had seen have no mesopleural bristle in contradistinction to species from other areas. I have examined only one Philippine species, *L. placida* (Walker) (holotype, BM), which is without the mesopleural bristle and has a dense uniform covering of fine pubescence on the scutellum. If any consistency can be demonstrated in the distribution of these characters, it is possible that they may be used for generic separation of the Philippine species.

There are about fifty known species of *Lamprogaster*, of which twenty-four occur in Australia. An attempt is here made to divide the Australian species into natural groups of closely related species.

1. *violacea* group. Elongate insects, with abdomen narrowed basally; humeral bristle absent; scutellum extensively haired; aedeagus with three terminal filaments (a character unusual in other Platystomatinae). Includes: *violacea* (Macquart), *tricauda* new sp. and the extra-limital species *basalis* Walker, *zelotypa* Hendel. The genus-group name *Cruphiocera* Macquart is available for this group.

2. *imperialis* group. Less elongate than the above; humeral bristle present; hairs on scutellum either confined to its sides or absent (except in *L. indistincta*); preglans of aedeagus with terminal process; the two filaments rather short, less than three times as long as glans. Includes: *indistincta* Malloch, *flavihirta* new sp., *nigrihirta* new sp., *rugifacies* new sp., *imperialis* new sp., also the extralimital species *lepida* Walker, and probably *rufipes* Hendel.

3. *stenoparia* group. Humeral bristle present; scutellum extensively haired above; preglans without process; the two filaments long, many times the length of glans. Includes: *viola* Malloch, *stenoparia* Hendel, *corax* new sp.

4. *flavipennis* group. Agreeing with *stenoparia* group, except that scutellum is devoid of hairs. Includes: *bicolor* Macquart, *flavipennis* Macquart, *vella* (Walker), sp. 1, *corusca* new sp., *nigripes* (Macquart), *excelsa* new sp., *laeta* (Macquart), *relucens* new sp., *hilaris* (Walker), sp. 2, *poecila* Hendel, *maculipennis* Macquart.

5. *macrocephala* group. Humeral bristle present; scutellum devoid of hairs; aedeagus as for *imperialis* group; prelabrum much reduced by comparison with the above groups. Includes: *macrocephala* Hendel.

Key to Australian Species of **Lamprogaster**

1 Scutellum haired or setulose 2

..... Scutellum bare, except for the marginal bristles 9

2 (1) Wing with most of costal margin dark brown; entire first and second basal cells dark brown 3

——— Costal margin of wing clear, with at most three widely separated dark marks; first and second basal cells clear or yellowish, at least in part 4

3 (2) Wing with dark field mainly confined to anterior half, a separate dark mark on discal crossvein; discal and anal cells partly clear; legs almost entirely fulvous ..... *stenoparia* Hendel

——— Wing with dark field extending in places to posterior margin and enclosing discal crossvein; discal and anal cells entirely dark brown; legs entirely blackish brown ..... *corax* n. sp.

4 (2) Scutellum broadly glabrous centrally, haired only at sides 5

——— Scutellum haired over its entire width 6

5 (4) Hairs of mesoscutum and scutellum black ..... *nigrihirta* n. sp

——— Hairs of mesoscutum and scutellum yellow, rarely with an admixture of black ones. ..... *flavihirta* n. sp.

6 (4) Wing with heavy dark markings including stigmatal band, discal spot on vein 2, apical mark, a mark on discal crossvein, and one on basal and anal crossveins; humeral bristle present; supra-alar bristle absent ..... *viola* Malloch

——— Wing with markings absent or diffuse and indistinct, if humeral bristle present, then supra-alar bristle also present 7

7 (6) Humeral and prescutellar acrostichal bristles present; upper part of mesopleuron with dense, pile-like pubescence between the hairs; aedeagus with the usual two filaments ..... *indistincta* Malloch

——— Humeral and prescutellar acrostichal bristles absent; upper part of mesopleuron smooth and shining between hairs; aedeagus with three filaments 8

8 (7) All bristles and hairs of head and thorax yellowish; prelabrum rather prominent anteriorly; supra-alar bristle present, sometimes vestigial..... *tricauda* n. sp.

——— All bristles of head and thorax and hairs of mesoscutum and scutellum black; prelabrum receding; supra-alar bristle absent ..... *violacea* (Macquart)

9 (1) Wing without apical dark mark, but with a dark mark over basal cells and one on anterior crossvein 10

——— Wing always with apical dark spot; other markings variable 11

10 (9) Abdomen light brown with slight metallic lustre; parafacial, in profile, much broader than third antennal segment; arista short-haired on basal half; more than three pairs of scutellar bristles ..... *macrocephala* Hendel

——— Abdomen black with strong metallic lustre; parafacial, in profile, narrower than third antennal segment; arista bare; usually three pairs of scutellar bristles .... *maculipennis* Macquart

11 (9) Arista with some basal hairs which are at least as long as its basal diameter; mesoscutum not pruinescent centrally 12

——— Arista with basal hairs absent or much shorter than its basal diameter; mesoscutum with three or more greyish pruinescent stripes on central part which may be fused 13

12 (11) Mesoscutum and abdominal tergites reddish brown with slight metallic lustre; fore tarsus tawny with last two segments brown; hind femur with long black dorsal bristles ..... *rugifacies* n. sp.

——— Mesoscutum and abdominal tergites black with conspicuously metallic lustre; fore tarsus dark brown, sometimes with basal segment tawny; hind femur with short weak yellow dorsal bristles only ..... *imperialis* n. sp.

13 (11) Thorax fulvous without dark markings; wing broadly yellow anteriorly and with only the apical blackish mark distinct ..... *bicolor* Macquart

——— Mesoscutum black on median section, at least towards anterior extremity; wing markings various 14

14 (13) Wing with only the apical spot well-marked; stigmatal mark obsolete on costa, only a faint brown cloud in subcostal cell and another on anterior crossvein; black central area of mesoscutum largely obscured by a broad area of yellow-grey pruinescence ..... *flavipennis* Macquart

——— Wing with distinct black stigmatal mark; central area of mesoscutum with more or less separate longitudinal pruinescent stripes 15

15 (14) Wing without distinct dark mark in first basal cell or along humeral crossvein....16

——— Wing with large blackish mark in first basal cell which extends along anal crossvein and along humeral crossvein to costa 20

16 (15) Fore tarsus cream to yellow; ♂: cercus with anterior basal extension partly visible in lateral aspect in front of lateral lobe of tergite 9; triangular apical expansion of outer surstylus longer than wide ..... *vella* (Walker)

——— Fore tarsus reddish-brown to black; ♂: cercus with anterior basal extension concealed in lateral aspect by lateral lobe of tergite 9; triangular apical expansion of outer surstylus wider than long 17

17 (16) Fore femur fulvous distally, darkened only on basal half or less ..... sp. 1
——— Fore femur almost entirely dark brown to black 18

18 (17) Hairs on posterior part of mesopleuron black, except for a few yellow ones near upper margin; ♂: apices of filaments of aedeagus slightly thickened and bell-shaped ..... *corusca* n. sp.
——— Hairs of mesopleuron yellow, except for a few black ones (sometimes absent) near posterior margin; ♂: apices of filaments slender, simple 19

19 (18) Stigmatal mark nearly oval, quite broad where it crosses vein 2; size large, wing over 9 mm long; ♂: glans of aedeagus over 0.9 mm long ..... *excelsa* n. sp.
——— Stigmatal mark forming a relatively narrow bar; size smaller, the wing under 9 mm long; ♂: glans of aedeagus not over 0.7 mm long ..... *nigripes* (Macquart)

20 (15) The three distal blackish marks on wing connected or almost touching along costa; legs black with basal segment of each tarsus brown ..... *poecila* (Hendel)
——— The three more distal blackish marks on wing very widely separated; legs largely fulvous 21

21 (20) Wing with brown spot in costal cell beyond the heavier mark on or immediately beyond humeral crossvein; mesoscutum with broad postsutural lateral pruinescent stripe outside the dorsocentral stripe ..... sp. 2
——— Costal cell without such spot; postsutural lateral pruinescent stripe of mesoscutum absent or weakly developed 22

22 (21) Base of submarginal cell with numerous microtrichia; wing membrane, except towards posterior margin, strongly tinged with yellow; black stigmatal mark rather broad, almost triangular ..... *laeta* (Macquart)
——— Base of submarginal cell without microtrichia, except where darkly pigmented; wing membrane mostly colourless, yellowish only at extreme base; black stigmatal mark narrower, not triangular 23

23 (22) Dorsocentral and median pruinescent stripes of mesoscutum broadly fused posteriorly; median black area of mesoscutum extending very broadly beyond dorsocentral pruinescent stripes; ventral part of sternopleuron blackish ..... *hilaris* (Walker)
——— Dorsocentral and median pruinescent stripes separate or joined posteriorly by a narrow transverse stripe; median black area extending narrowly outside dorsocentral pruinescent stripes; sternopleuron entirely fulvous ..... *relucens* n. sp.

Lamprogaster violacea (Macquart)

Cruphiocera violacea Macquart, 1843: 212, pl. 29, fig. 4.

Lamprogaster violacea Hendel, 1914a: 109; 1914b: 244.

Lamprogaster elongata van der Wulp, 1885: 228, new synonym; Hendel, 1914a: pl. 10, figs 185, 189; 1914b: 223–224; Malloch 1930a: 432, fig. 1; 1939a: 144; not *L. elongata:* Malloch, 1929 (see under *L. indistincta*).

♂ ♀. *Coloration.* Head fulvous to tawny; postfrons largely brown on posterior half and brown in centre posteriorly; face often mottled with brown on lower lateral regions. Antenna and palpus fulvous. Thorax varying from tawny brown to blackish brown, with green or blue reflections, often darker dorsally, without pruinescent markings on mesoscutum; hairs on mesoscutum and scutellum black. Legs fulvous; hind coxa variably brownish. Wing stained with yellow, especially so towards base and anterior margin, sometimes also lightly stained with brown at base, especially in first costal cell and base of second costal cell; often a light yellow-brown mark on anterior crossvein; squama greyish. Haltere dull fulvous. Preabdominal tergites reddish brown to almost black, usually with blue or green reflections.

Head with squarish outline in profile; postfrons usually slightly depressed posteriorly between the dorsally prominent eyes; facial carina broad, flat, prominent; parafacial rather narrow for most of length but much expanded above; height of cheek 0.17–0.21 of height of eye. Antenna extending almost two-thirds the distance from its basal insertion to epistomal margin; arista rather slender, slightly compressed, with short hairs extending for its basal half, the longest of these about as long as basal diameter of arista. Prelabrum rather broad but not prominent, finely but roughly sulcate; palpus rather narrow.

Thorax rather slender; propleuron with a rounded vertical ridge in front of humeral callus reminiscent of the propleural ridge found in Chloropidae but situated higher up; scutellum with numerous rather long black hairs distributed over the entire surface except ventrally; mesopleuron almost devoid of pubescence; with the following bristles: no humeral, two notopleurals, no supra-alar, postalar, posterior intra-alar, a weak dorsocentral, no prescutellar acrostichal, a pair of strong apical scutellars, and one to three pairs of more laterally placed marginal scutellars; a rather long slender mesopleural. Fore and hind femora with a few weak dorsal bristles distally, but no differentiated ventral bristles. Wing with vein 4 strongly bent forwards at junction with discal crossvein, thereafter curved backward and becoming almost parallel with vein 3 distally, slightly curved forward at extreme apex; posterior distal angle of discal cell acute.

Abdomen narrowed basally; tergites 3 and 5 subequal in length; tergite 4 slightly shorter.

Dimensions: total length, ♂ 7.6–11.3 mm, ♀ 7.0–9.7 mm; length of thorax, ♂ 3.3–4.9 mm, ♀ 3.4–4.7 mm; length of wing, ♂ 7.8–11.0 mm, ♀ 8.0–10.9 mm.

Distribution: Molucca Islands; Key Islands; New Guinea; Queensland—Cape York Peninsula only (new record for Australia).

Type material examined: "Offak, Terre de Papous" = (?) Arfak Mountains, West New Guinea (holotype ♀ of *C. violacea* Macquart, PM), J.S.C. Dumont d'Urville.

Other material examined: Northeast New Guinea: Lae, xii 1963 (2 ♀, AM), D.K.M.; Huon Gulf, v–vi 1937 (1 ♂, BM), J. L. Froggatt. Papua: Ongaho, near Popondetta, x 1963 (1 ♂, AM), D.K.M.; vicinity of Mount Lamington, near Popondetta, ii vii x 1927–1929 (3 ♂, 3 ♀, AM), C. T. McNamara; Embala R. to Ajeka, near Kumusi R., xi 1963 (1 ♀, AM), D.K.M.; Brown R., near Port Moresby, x 1963 (1 ♂, AM), D.K.M.; Aroana Estate, Aroa R., xi xii 1963 (7 ♂, 3 ♀, AM), D.K.M. Queensland: Claudie R., Iron Range district, vi 1966 (1 ♂, AM), D.K.M.

Habitat: rain forest, frequently observed resting on lower surface of leaves of trees.

A specimen determined by Walker as *Dryomyza semicyanea* Walker (1 ♂, Gilolo, A.R.W., OXN) belongs to this species. This suggests that *D. semicyanea* (originally described from Aru Island, Walker, 1859: 109–110) may be a synonym of the present species. The matter can only be decided by examination of type material, if this still exists.

Lamprogaster tricauda n. sp.

(Fig. 11)

Lamprogaster zelotypa Hendel, in part, 1914b; 226–227; Malloch, 1928a: 350. Misidentifications.

Lamprogaster zelotypa var. ?: Malloch, 1939a: 139, 141–142.

♂. Generally similar to *L. violacea* and also resembling the New Guinea species *L. zelotypa;* differing from *L. violacea* principally as indicated below.

Coloration paler than in *L. violacea;* all bristles and hairs yellowish. Head and its appendages fulvous; face often with blackish dots. Arista brown distally. Thorax shining fulvous to tawny, often slightly darker dorsally where the reflections may be faintly bluish or

greenish, much of surface with fine brown dots, except centre of mesoscutum, pteropleuron, any hypopleuron. Legs fulvous. Wing membrane tinged with yellow anteriorly and basally; veins fulvous; wing markings absent altogether. Haltere pale fulvous. Abdomen shining fulvous to tawny brown, the reflections often faintly bluish, often with scattered dark brown dots on tergites.

Head. Postfrons less depressed posteriorly than in *L. violacea;* parafacial a little wider than third antennal segment; height of cheek 0.21–0.29 of height of eye. Prelabrum rather prominently projecting forward.

Thorax structurally as described for *L. violacea* except that supra-alar bristle is present but variable in size. Wing with discal cell relatively broader than in *L. violacea;* length of preapical section of vein 4/length of discal crossvein = 0.74–0.94; venation otherwise approximately similar to that of *L. violacea.*

Abdomen somewhat less narrowed basally than in *L. violacea.* ♂ postabdomen: tergite 9 produced into a short obtuse lobe on each side; outer surstylus of moderate length, its free distal part somewhat dilated, with strongly sinuate distal margin; inner surstylus a little shorter than outer surstylus with two stoutly claw-like black teeth, of which the preterminal has a gibbosity on proximal surface just before point; aedeagus with rather long stipe; preglans little differentiated, but with long slender curved sclerotized process which is longer than glans; glans rather short, ovoid; filaments three in number, of equal length, about 1.7 times as long as glans.

Dimensions: total length, ♂ 4.0–8.1 mm, ♀ 3.4–9.8 mm; length of thorax, ♂ 1.9–3.8 mm, ♀ 1.8–4.2 mm; length of wing, ♂ 4.6–8.6 mm, ♀ 4.5–9.0 mm; length of glans of aedeagus, 0.34–0.44 mm.

Distribution: Queensland—east coast from Cape York Peninsula almost to the southern border.

Holotype ♂: Mary's Creek, near Gympie, 6 ii 1961 (AM), D.K.M.

Other material examined: Mary's Creek, near Gympie, ii 1961 (paratypes, 7 ♂, 1 ♀, AM, 1 ♂, BM), D.K.M.; Iron Range, iv 1964 (1 ♀, CSIRO), I.F.C. and M.S.U.; 10 miles S of Daintree, iv 1955 (1 ♂, CSIRO), K.R.N. and I.F.C.; Barron Falls, near Kuranda, ii 1965 (1 ♀, CSIRO), J.G. Brooks; 1 mile E of Kuranda, iii iv 1964 (3 ♂, 8 ♀, CSIRO, 1 ♀, AM), I.F.C. and M.S.U.; Cairns, i 1964 (1 ♂, 3 ♀, UQ), I.C.Y.; Cannonvale, near Proserpine, vi 1958 (1 ♀, CSIRO), T.G.C.; Glenella, near Mackay, iv 1960 (2 ♀, CSIRO), T.G.C.; Gladford Creek, Monto–Many Peaks Road, xi 1957 (paratype ♂, UQ), T.E. Woodward; Brisbane, iv 1943 (paratype ♀, UQ), F.A.P.; Flinders Peak, S. of Ipswich, iii 1963 (paratype ♂, UQ), G.M.

Habitat: rain forest and gallery forest. Specimens taken at Mary's Creek were resting on lower surfaces of leaves of trees.

Hendel first used the name *Lamprogaster zelotypa* (1914a: 110) without description or figure. Of his two references the first is to the description in his then unpublished paper (Hendel, 1914b) and the second is to the synonym *L. ventralis* Walker, 1861 (preoccupied by *L. ventralis* Walker, 1859, see under *Euprosopia*). Only the second reference is a valid indication so that *L. zelotypa* Hendel has the same type specimen as *L. ventralis* Walker, 1861 (holotype ♂, New Guinea, BM). I have seen only the holotype of *L. zelotypa* which is clearly distinct from *L. tricauda* in having the bristles and some thoracic hairs black; height of cheek/height of eye = 0.14, as compared with 0.21–0.29 in *L. tricauda;* length of discal crossvein/length of penultimate section of vein 4 = 0.64, compared with 0.74–0.94 in *L. tricauda;* distal expansion of outer surstylus elongate, quadrate.

Specimens recorded by Hendel and Malloch as *L. zelotypa* are all either *L. tricauda* or a closely related undescribed species confined to New Guinea.

Lamprogaster indistincta Malloch

Lamprogaster indistincta Malloch, 1928a: 349.

Lamprogaster elongata: Malloch, 1929: 515 (misidentification).

Lamprogaster pseudelongata Malloch, 1930a: 432–433, fig. 2, new synonym.

♂ ♀. *Coloration.* Head and its appendages fulvous; postfrons and cheek tawny; orbital margins of postfrons and parafacial, and most of occiput with pale yellowish pruinescence; posterior part of postfrons and sides of face with variably developed brown spotting. Arista dark brown. Thorax fulvous; mesoscutum becoming deep tawny or brown on most of dorsal surface; scutellum, sides and posterior part of mesoscutum, mesopleuron, upper part of sternopleuron and usually pteropleuron mottled with brown. Legs fulvous; fore tarsus tawny or light brown. Wing tinged with yellow anteriorly, the yellowish area becoming a narrow marginal band distally which terminates at vein 4 and, in specimens from Banks Island, is slightly intensified in region of vein 3; posterior part of wing faintly tinged with grey; a very indistinct brownish sub-basal band from near base of vein 3 to anal crossvein; another indistinct brownish mark surrounding anterior crossvein. Haltere fulvous. Abdomen shining tawny-brown.

Head. Postfrons steeply sloping; facial carina moderately broad, flattopped; parafacial much narrower than third antennal segment; height of cheek 0.24–0.31 of height of eye. Antenna extending slightly more than half the distance from its basal insertion to epistomal margin; arista with numerous basal hairs which are a little longer than its basal diameter. Prelabrum broad, prominently projecting forwards; palpus rather narrow.

Thorax robust; scutellum very rounded except sometimes for a narrow apical depression; mesopleuron densely pubescent on upper part; the following bristles present; 2–4 short scapulars, humeral, 2 notopleurals, supra-alar, postalar, intra-alar, dorsocentral, prescutellar acrostichal, 3–5 pairs of scutellars, well developed mesopleural. Fore and hind femora with some rather weak yellowish dorsal bristles distally. Wing with distal section of vein 4 usually only very slightly curved and making an angle of slightly less than 90° with discal crossvein; posterodistal angle of discal cell acute.

Abdomen broad; tergites 3, 4 and 5 subequal in length in ♂, tergite 5 slightly shorter in ♀. ♂ postabdomen: outer surstylus with elongate, almost straight basal section, the very short distal section narrowed with apex flexed posteriorly; distal section of inner surstylus nearly as long as that of outer surstylus, slender, with the two teeth well developed; aedeagus with slender stipe; preglans with small unpigmented process; glans rather small; the two filaments of equal length, less than twice as long as glans, slightly thickened apically.

Dimensions: total length, ♂ 6.4–8.3 mm, ♀ 5.5–7.9 mm; length of thorax, ♂ 3.2–4.1 mm, ♀ 2.9–4.0 mm; length of wing ♂ 7.3–8.8 mm, ♀ 6.8–9.4 mm; length of glans of aedeagus, 0.27–0.30 mm.

Distribution: Queensland—northeast coast as far south as Gordonvale, and islands of Torres Strait.

Type material examined: Cairns, Queensland, no date (paratype ♀ of *L. pseudelongata*, AM), ex coll. Lichtwardt. Holotype of *L. indistincta* in USNM; holotype of *L. pseudelongata* in DEI (these latter not seen by author).

Other material examined: Banks Island, 1910 (1 ♂, 1 ex., CSIRO), W.W.F.; Iron Range, iv 1964 (1 ♂, CSIRO), I.F.C. and M.S.U.; Cooktown, iii 1966 (2 ♂, CSIRO), D.E.H.; Hutchinson Creek, near Daintree R., i 1967 (3 ♂, 2 ♀, AM), G.A.H. and D.K.M.; Mulgrave R., 4 miles W of Gordonvale, i 1967 (3 ♂, 10 ♀, AM) G.A.H. and D.K.M.

Habitat: rain forest and gallery forest, resting on trunks and foliage of trees.

Notes on status. Malloch described the two species *L. indistincta* and *L. pseudelongata* without making a comparison between them, having initially mistaken the latter concept for *L. elongata* van der Wulp. In his key to the species (Malloch, 1929, revised in part Malloch, 1930a) he segregates *L. pseudelongata* with those species having "wings entirely without dark markings, at most with the inner cross-vein very slightly darkened" from *L. indistincta* and other species having "wings with quite evident dark markings on costa." In specimens from Banks Island (*L. indistincta* s. str.) I am able to distinguish a light brown spot in the vicinity of the termination of vein 3, which is not defined in specimens from the mainland (*L. pseudelongata*). In the latter specimens, however, the yellowish tinged area of the anterior part of the wing often becomes narrowed and brownish along the costal part of the wing apex, especially between veins 3 and 4. Thus the difference between the two forms in wing pattern is exceedingly slight. No other clear cut differences have been found. It therefore appears wise to regard these forms as a single species exhibiting slight geographical variation in wing pattern.

Lamprogaster nigrihirta n. sp.

(Figs 18, 21)

♂ ♀. *Coloration.* Head tawny brown; postfrons mostly dark brown; face tawny, with brown suffusion or spots on lower part; orbital margins of postfrons and parafacial with dull yellowish pruinescence. Antenna fulvous; arista mostly dark brown to black. Prelabrum and palpus tawny. Mesoscutum and scutellum deep reddish brown with all hairs and bristles black, with three narrow longitudinal stripes, sometimes indistinct; scutellum and sides of mesoscutum with variable brown to blackish mottling; pleura tawny with variable brown mottling. Legs tawny; tibiae each with a dark brown dorsal stripe and dark brown suffusions at both ends; tarsi reddish brown, becoming dark brown on two distal segments. Wing stained with yellow anteriorly, elsewhere greyish hyaline; a brown sub-basal mark from second basal cell to anal crossvein; stigmatal band broad and blackish in subcostal cell, narrower and often paler between veins 1 and 3, more intense around anterior crossvein and terminating posteriorly on vein 4; a small dark brown discal spot on vein 2 and a pale brown band along discal crossvein; apical dark brown mark extending from end of vein 2 to end of vein 4; squama tawny. Haltere pale tawny. Abdomen reddish brown with irregular darker suffusions.

Head. Postfrons sloping; carina flat, abruptly but not very sharply margined, not greatly narrowed above, faintly rugose near middle; height of cheek, 0.32–0.42 of height of eye. Antenna extending a little more than half the distance from its basal insertion to epistomal margin; arista compressed, with numerous hairs on basal half, the longer ones somewhat longer than basal diameter of arista. Prelabrum finely and often weakly sulcate; palpus rather narrow.

Thorax stout; outline of scutellum rounded except between apical pair of bristles where it is straight; most of upper half of mesopleuron densely pubescent; the following bristles present; humeral, two notopleurals, supra-alar, postalar, intra-alar, dorsocentral, prescutellar acrostichal, three or sometimes four pairs of scutellars, a moderately developed mesopleural. Fore femur with well-developed black dorsal setulae, but no differentiated dorsal bristles; hind femur with a series of weak black dorsal bristles. Wing with distal section of vein 4 slightly curved, making an angle of about 90° or slightly more with discal crossvein.

Abdomen. Tergites 3 and 4 subequal in length; tergite 5 slightly longer than tergite 4 in ♂, slightly shorter in ♀. ♂ postabdomen: outer surstylus rather short and stout, not nearly attaining to apex of cercus, its free distal section apically thick and rounded, only slightly longer than distal section of inner surstylus; outer terminal tooth of inner surstylus with a posteriorly directed point; aedeagus with rather slender stipe; preglans slightly swollen, with terminal sclerotized tapering process about as long as glans; glans short and stout; filaments fused basally, about twice as long as glans, but length somewhat variable.

Dimensions: total length, ♂ 6.6–8.9 mm, ♀ 6.7–8.5 mm; length of thorax, ♂ 3.5–4.9 mm, ♀ 3.6–4.6 mm; length of wing, ♂ 7.4–10.2 mm, ♀ 8.2–10.3 mm.

Distribution: north-eastern Queensland.

Holotype ♂: Mulgrave River, 4 miles W of Gordonvale, 13 i 1967 (AM), G.A.H. and D.K.M.

Other material examined: Mulgrave River, 4 miles W of Gordonvale, i 1967 (paratype ♂, AM) G.A.H. and D.K.M.; Thornton Range to Daintree River, i 1967 (paratype ♂, AM), G.A.H. and D.K.M., Kuranda, no date (paratypes, 2 ♀, BM), F.P.D.; 9 miles N. of Kuranda, iii 1964 (paratypes, 3 ♀, CSIRO), I.F.C. and M.S.U.; 1 mile E of Kuranda, iii 1964 (paratypes, 2 ♂, 7 ♀, CSIRO), I.F.C. and M.S.U.; Lake Barrine, Atherton Tableland, xii 1959 (paratype ♂, AM), E.J.H.; Herberton, ii 1910 (paratype ♀, BM), probably F.P.D.

Habitat: rain forest.

Comparative notes: a species of the *imperialis* group, most resembling *L. flavihirta* and differing from other species in having numerous hairs on the sides of the scutellum only; differing from *L. flavihirta* in the black hairs of the mesoscutum and in the form of the surstyli.

Lamprogaster flavihirta n. sp.

(Fig. 19)

Lamprogaster laeta Guérin: Malloch, 1929: 516, misidentification.

♂ ♀. Very similar in most characters to *L. nigrihirta*, and agreeing with the description given for that species except as indicated below.

Coloration of head and body slightly paler than in *L. nigrihirta*. Mesoscutum without dark longitudinal stripes; all hairs on mesoscutum and scutellum and most hairs on pleura yellow. Tibiae with markings indistinct. Wing marked as in *L. nigrihirta* but the brown band on discal crossvein often less distinct.

♂ *postabdomen* resembling that of *L. nigrihirta;* outer surstylus longer, almost attaining to level of apex of cercus, its distal section about twice as long as distal section of inner surstylus, rather broad bear base and tapering to the subacute apex.

Dimensions: total length, ♂ 6.9–9.7 mm, ♀ 7.7–9.6 mm; length of thorax, ♂ 3.6–5.3 mm, ♀ 3.8–5.1 mm; length of wing, ♂ 8.6–11.7 mm, ♀ 9.5–11.5 mm.

Distribution: North Queensland—higher part of Atherton Tableland.

Holotype ♂: Herberton, i 1911 (BM), F.P.D.

Other material examined: Herberton (apparently = vicinity of Herberton), 3,000–4,000 feet (altitude not indicated on some specimens), i ii xii 1910–1911 (paratypes, 15 ♂, 8 ♀, BM, 2 ♂, AM, the 2 last det. Malloch as *L. laeta* Guérin), F.P.D.

Lamprogaster rugifacies n. sp.

(Figs 9, 13)

♂ ♀. Somewhat similar to *L. imperialis*, and chiefly differing from the description given for that species in the following characters.

Coloration. Head reddish-brown; a narrow whitish pruinescent orbital line on postfrons and parafacial; occiput whitish pruinescent. Antenna, prelabrum and palpus reddish tawny. Thorax rich reddish-brown; scutellum brown-black with slightly bluish lustre. Legs tawny, the last two segments of each tarsus dark brown. Wing markings much as in *L. imperialis;* sub-basal mark indistinct. Abdomen reddish-brown with faintly bluish reflections.

Head. Facial carina sharply margined but narrower than in *L. imperialis*, not wider than antennal groove near its lower extremity, with transverse sulci extending for its full width, except at upper extremity; height of cheek 0.17–0.25 of height of eye; parafacial less than one-third as wide as third antennal segment. Antenna extending about two-thirds the distance from its basal insertion to epistomal margin. Prelabrum not distinctly sulcate, strongly projecting.

Thorax as described for *L. imperialis*, except that supra-alar bristle is strongly developed. Fore and hind femora with black dorsal bristles on distal halves, those on the former short. Wing with distal section of vein 4 meeting discal crossvein at an angle of about 90° or less; posterior distal angle of discal cell very acute.

Abdomen. ♂ postabdomen: outer surstylus slender basally, broadened towards termination of basal section, contracted at base of distal section which is finely setulose, the apex curved backwards and very obtuse; apical section of inner surstylus shorter than that of outer surstylus; preglans of aedeagus with long slender tapering terminal process, slightly shorter than glans; glans rather elongate; filaments very unequal in length and thickness, the larger one almost as long as glans, the smaller one about two thirds as long as glans.

Dimensions: total length, ♂ 6.9–7.2 mm, ♀ 7.0–8.9 mm; length of thorax, ♂ 3.5–3.9 mm, ♀ 3.6–4.1 mm; length of wing, ♂ 7.4–8.0 mm, ♀ 7.5–8.2 mm; length of glans of aedeagus, 0.60–0.62 mm.

Distribution: Queensland—Cape York Peninsula.

Holotype ♂: Iron Range, 8 iv 1964 (CSIRO), I.F.C. and M.S.U.

Other material examined: Iron Range, iv 1964 (paratypes, 2 ♂, 3 ♀, CSIRO, 1 ♂, AM 1 ♀, BM, 1 ♀, USNM), I.F.C. and M.S.U.

Comparative notes: a species of the *imperialis* group, resembling *L. imperialis* in the absence of hairs on the scutellum but differing from that species in the more reddish brown thorax and in the male genitalia.

Lamprogaster imperialis n. sp.

(Figs 10, 12, 22)

Lamprogaster lepida Walker: Hendel, 1914b; 235–236; Malloch, 1928a: 349; 1929: 516. Misidentifications.

♂ ♀. *Coloration.* Head tawny brown; postfrons often darker, sometimes becoming blackish towards vertex; face fulvous; orbital margins of postfrons, upper part of parafacial, and entire occiput, except near vertex, heavily greyish pruinescent. Antenna fulvous; arista gradually becoming dark brown distally. Prelabrum and palpus fulvous. Mesoscutum, scutellum and postnotum black with metallic green reflections in ♂, purple reflections in ♀, humeral and postalar calli sometimes yellowish brown; propleuron tawny; mesopleuron and sternopleuron shining brown to blackish, with some fine pubescence on upper part of the former; sternopleuron, pleurotergite, and hypopleuron dull brown, with dense, fine pubescence. Legs fulvous, fore tibia brownish, or with brown markings near distal end only; fore tarsus dark brown; other tarsi pale fulvous with two distal segments brown. Wing clear, stained with dull yellow along costal margin, especially towards base; the following brown or blackish markings present: transverse line from base of vein 3 along basal and anal crossveins; stigmatal band filling distal section of subcostal cell and extending back over anterior crossvein; a small discal spot on vein 2; a narrow stripe along discal crossvein; apical mark between ends of veins 2 and 4; sometimes all these markings except the apical one tending toward slight yellow-brown and somewhat indistinct; squama pale dull yellowish. Haltere cream to tawny. Abdominal tergites black with purple, blue, or green reflections.

Head. Frons sloping; facial carina flat, sharply margined, only slightly narrowed between bases of antennae, transversely grooved across central part; height of cheek 0.40–0.53 of height of eye. Antenna extending about half the distance from its basal insertion to epistomal margin; arista with numerous basal hairs as long as or a little longer than its basal diameter. Prelabrum strongly sulcate; palpus rather narrow.

Thorax rather stout; outline of scutellum rounded but tending to be transverse apically; upper margin of mesopleuron densely pubescent; the following bristles present: humeral, two notopleurals, supra-alar rather weak or absent, postalar, intra-alar, dorsocentral, prescutellar acrostichal, three, four or more pairs or scutellars, a moderately developed mesopleural. Fore femur, without distinct dorsal bristles; hind femur with a few short weak yellow dorsal bristles beyond middle. Wing with terminal section of vein 4 slightly curved forward at apex, curved backward through most of its length to its junction with discal crossvein, which it meets at an angle of somewhat more than 90°.

Abdomen. Tergites 3 and 4 subequal in length; tergite 5 about 1.5 times as long as tergite 4 in ♂, subequal to tergite 4 in ♀. ♂ postabdomen: outer surstylus rather stout, not nearly attaining to level of apex of cercus, its distal section short, broad, obtuse to obliquely truncate, with a variably developed tubercle on inner surface; inner surstylus with free distal section extremely short, but with the usual two black teeth, of which the distal one is slightly pointed both anteriorly and posteriorly; aedeagus with rather long stipe; preglans slightly swollen, sclerotized in part, with a slender, tapering curved or apically hooked terminal process almost as long as glans; glans moderately short; filaments of equal size, swollen basally, about 1.6–1.7 times as long as glans.

Dimensions: total length, ♂ 5.0–7.8 mm, ♀ 5.5–10.7 mm; length of thorax, ♂ 2.6–4.1 mm, ♀ 3.0–4.4 mm; length of wing, ♂ 6.3–8.9 mm, ♀ 7.1–9.9 mm; length of glans of aedeagus, 0.40–0.42 mm.

Distribution: Queensland—throughout eastern districts; New South Wales—coast district as far south as Sydney; Northern Territory.

Holotype ♂: Millstream Falls, near Ravenshoe, Queensland, at mercury vapour light, 5 i 1967 (AM), G.A.H. and D.K.M.

Other material examined. Queensland: Millstream Falls, near Ravenshoe, i 1967 (paratypes, 28 ♂, 20 ♀, AM, 1 ♂, 1 ♀, MNM, 3 ♂, 2 ♀, USNM), G.A.H. and D.K.M.; Claudie R., Iron Range district, ii 1914 (5 ♂, 17 ♀, NMV, 2 ♂, 2 ♀, AM), W.D.K. Macgillivray; Iron Range, iv 1964 (1 ♂, CSIRO), I.F.C. and M.S.U.; Coen R., no date (1 ♂, SAM), W. D. Dodd; Mossman, iii 1930 (paratype ♂, UQ), D. O. Atherton; Mount Molloy, i 1962 (paratype ♀, CSIRO), P.B.C. and E.B.B.; Kuranda and environs, no date (paratypes, 7 ♂, 3 ♀, BM, 3 ♂, SAM), F.P.D.; xii 1934 (paratype ♀, UQ), F.A.P.; i ii 1950–1952 (paratypes, 1 ♂, 1 ♀, AM, 1 ♂, 5 ♀, NMV), J. G. Brooks; xii 1959 (paratype ♂, AM), E.J.H.; iii 1964 (paratype ♀, CSIRO), I.F.C. and M.S.U.; Barron Falls, near Kuranda, iii 1961 (paratypes, 3 ♀, CSIRO), R.S.; Cairns, 1920 (paratypes, 1 ♀, AM, 1 ♀, UQ), J. F. Illingworth; iv 1960 (paratypes, 1 ♂, 4 ♀, CSIRO), K. L. Harley; i 1962 (paratypes, 2 ♂, CSIRO), P.B.C. and E.B.B.; Meringa, near Gordonvale, xi 1925 (paratype ♂, CSIRO), anon.; Mareeba, xi 1959 (paratype ♀, UQ), G. Ettershank; Herberton, no date (paratypes, 4 ♂, 5 ♀, BM), F.P.D.; Stannary Hills, near Herberton, c.3,000 ft, no date (paratypes, 4 ♂, 1 ♀, BM), T.L.B.; Almaden, near Chillagoe, iii 1928 (paratype ♀, AM), W. D. Campbell; 13 miles W of Ravenshoe, Mount Garnet Road, v 1967 (paratype ♀, CSIRO), D.H.C.; Palmerston National Park, iii 1961 (paratype ♂, CSIRO), R.S.; Ingham, iii 1961 (paratype ♂, CSIRO), R.S.; Mingela, Burdekin R. district, iv 1955 (paratypes, 4 ♂, 3 ♀, CSIRO), K.R.N.; Bowen, no date (paratype ♂, SAM), A. Simson; 12 miles SE of Bowen, v 1955 (paratypes, 1 ♂, 3 ♀, CSIRO), K.R.N. and I.F.C.; Proserpine, no date (paratype ♂, SAM), H. M. Hale and N.B.T.; Cannonvale, near Proserpine, iv vi 1958–1957 (paratypes 3 ♂, 4 ♀, CSIRO), T.G.C., M.S.U.; Shute Harbour, near Proserpine, iv 1964 (paratype ♀, CSIRO), I.F.C. and M.S.U.; Mackay, no date (1 ♂, BM, det. Hendel

as *L. lepida* Walker), G. Turner; Pistol Gap, near Byfield, i 1970 (5 ♂, 2 ♀, AM), G.A.H.; Yeppoon, i xii 1961–1965 (2 ♂, 3 ♀, CSIRO), I.F.C.; South Keppel Island, no date (1 ♀, SAM), C. Vallis; Rockhampton, no date (1 ♂, BM, 1 ♂, SAM), Pilcher, anon.; Mount Morgan, i 1949 (1 ♀, CSIRO), I.F.C.; Biloela, i ii 1927–1954 (1 ♀, BM, 2 ♀, UQ), G. A. Currie, A. R. Bird, O. R. Byrne; Collosseum Creek, 10 miles S of Miriam Vale, xii 1966 (1 ♀, UQ), B. Cantrell; Carnarvon Range, Injune district, i ii 1944–1962 (1 ♂, 1 ♀, AM, 1 ♀ UQ), N.G., E. Exley; Burnett River, Eidsvold, i 1970 (4 ♂, AM) G.A.H.; Fraser Island, ii 1949 (1 ♂, CSIRO), anon.; Maryborough, no date (1 ♂, SAM), E. W. Fischer; Mungar Junction, near Maryborough, no date (1 ♀, SAM), A.M.L.; Nambour, ii 1962 (1 ♀, UQ), H. H. Kong; Bunya Mountains, i xii 1938–1961 (1 ♀, AM, 1 ♂, UQ), N.G., D. Fullerton; Burpengary, no date (8 ♂, 3 ♀, BM, det. Hendel as *L. lepida* Walker), T.L.B.; Brisbane, i iii iv 1956–1962 (1 ♂, 2 ♀, UQ), J. H. Bryan, Kirkpatrick; Stradbroke Island, iv 1958 (1 ♂, UQ), E. A. Bernays; Belmont, near Brisbane, vi 1952 (1 ♀, UQ), "A.W."; Moggil, near Brisbane, ii xi 1958–1962 (1 ♂, 1 ♀, UQ), H. G. Greening, E. A. Bernays; Canungra, iii xi 1943–1955 (1 ♂, AM, 1 ♀, CSIRO), A. Blombery, anon.; Lamington National Park, xii 1923 (1 ♀, UQ), H.H. New South Wales: Casino, i 1920 (1 ♀, AM), C. Duquet; Deep Creek, Narrabeen near Sydney, ii 1957 (1 ♀, CSIRO), W.W.W.; Gundamaian, Royal National Park, near Sydney, i ii 1926 (2 ♀, CSIRO), I.M.M. Northern Territory: Grove Hill, i 1922 (1 ♂, SAM), anon.

Comparative notes: previously confused with *L. lepida* Walker from which it differs in having the stigmatal band broader and less oblique, the stripe on discal crossvein much less marked, and the scutellum more convex and smooth. *L. lepida* is only reliably reported from the Celebes.

Lamprogaster viola Malloch

(Fig. 20)

Lamprogaster viola Malloch, 1929: 515–516.

♂ ♀. *Coloration.* Postfrons, parafacial, and cheek blackish brown to rather dark reddish brown; face reddish brown to tawny; orbital margins of postfrons and parafacial, and antennal grooves with silver-grey pruinescence; posterior orbits and occiput silver-grey pruinescent except for the dark brown to reddish upper part of latter. Antenna tawny with brown suffusions on segment 3; arista black beyond base. Prelabrum tawny; palpus blackish brown, often with paler margins. Thorax tawny brown; mesoscutum with extensive black or deep reddish-brown suffusions, with bluish purple lustre and no pruinescence except at lateral margins; scutellum reddish-brown with bluish purple lustre above, fulvous below. Legs tawny; coxae, tibiae, and femora with black markings; tarsi blackish brown. Wing dark yellowish basally and anteriorly, light greyish elsewhere; a small brownish-grey mark at base of stem vein (stem of veins 2 and 3) and another on basal and anal crossveins; stigmatal band broad, black, extending almost to centre of discal cell, often interrupted along a narrow line in marginal cell; discal band represented by an intense black spot on vein 2 and a short grey stripe enclosing discal crossvein; apical mark distinct, blackish, usually extending from vein 2 to vein 4 but slightly variable; squama yellow-grey. Haltere tawny with greyish brown capitellum. Preabdominal tergites black with purple lustre.

Head. Frons sloping and rather flattened; facial carina well defined, broad below, variably narrowed above; height of cheek 0.23–0.27 of height of eye; the single fronto-orbital bristle rather strong. Antenna rather slender, about 0.6 as long as distance from its basal insertion to epistomal margin; arista slender, not compressed, with rather numerous fine basal hairs, of which the longer are about equal in length to maximum basal diameter of arista. Prelabrum moderately developed, not especially prominent; palpus rather narrow.

Thorax usually rather stout; scutellum slightly convex dorsally, impressed between the widely separated apical bristles, with rather numerous black hairs on all of dorsal surface except a narrow median line; mesopleuron almost devoid of pubescence; the following thoracic bristles present: humeral, two notopleurals, no supra-alar, postalar, posterior intra-alar, dorsocentral, prescutellar acrostichal, usually three pairs of scutellars, a well-developed mesopleural. Fore femur with weak dorsal and posteroventral bristles distally; hind femur with rather weak dorsal bristles distally, the anteroventral bristles little-developed. Wing with distal section of vein 4 slightly arched, except at apex where it is very slightly curved forwards; posterodistal angle of discal cell acute.

Abdomen. ♂: tergites 3 and 4 very short, the latter slightly longer; tergite 5 about four times as long as tergites 3 and 4 together. ♀: tergites 3, 4, and 5 subequal in length. ♂ postabdomen: outer surstylus rather long, broadened and curved near middle, its free distal section short, broadly spatulate, apically rounded; aedeagus with preglans not distinctly sclerotized, without process; glans short; filaments equal, very long and extremely slender beyond bases, at least twenty-five times as long as glans, i.e., as long as the entire insect.

Dimensions: total length, ♂ 8.3–12.3 mm, ♀ 10.2–11.3 mm; length of thorax, ♂ 3.3–5.5 mm, ♀ 4.8–5.6 mm; length of wing, ♂ 8.3–12.9 mm, ♀ 11.2–12.4 mm; length of glans of aedeagus 0.50 mm (one specimen measured).

Distribution: northeastern Queensland—Atherton Tableland and vicinity to Paluma Range.

Type material examined: Herberton (i.e., probably vicinity of Herberton), 3,700 ft, i 1911 (holotype ♂, DEI, paratype ♂, AM), F.P.D.

Other material examined: 4 miles W of Babinda, iii 1964 (1 ♂, CSIRO), I.F.C. and M.S.U.; East Base, Mount Bartle Frere, 80 ft, iv 1955 (1 ♂, CSIRO), K.R.N. and I.F.C.; Lake Barrine, xii 1959 (1 ♂, AM), E.J.H.; The Crater (or Mount Hypipamee), near Herberton, 3,100 ft, xii 1961 (1 ♂, AM), R.L. and D.K.M.; 2 miles N of Tully R. Bridge, E of Cardstone on Cardstone–Ravenshoe Road, i 1967 (4 ♂, 5 ♀, AM, 1 ♀, BM), G.A.H. and D.K.M.; Mount Spec, near Paluma, 2,600 ft, iii 1964 (1 ♂, CSIRO), I.F.C. and M.S.U.

Habitat: rain forest near streams, resting on tree trunks and low foliage.

Lamprogaster stenoparia Hendel

Lamprogaster stenoparia Hendel, 1914a: 109, pl. 10, fig. 187; 1914b: 227–228; Malloch, 1928a: 350.

♂ ♀. *Coloration.* Postfrons tawny with variable brown markings; remainder of head and its appendages largely fulvous; arista black beyond base. Mesoscutum and scutellum blackish-brown to reddish-brown, in the latter case often with three indistinct darker longitudinal stripes on mesoscutum, which usually has a bluish lustre; humeral callus and propleuron pale fulvous; pleura otherwise predominantly reddish brown to dark brown, paler at sutures. Legs pale fulvous; tarsi a little darker, each with three distal segments brownish. Wing with a broad blackish longitudinal band extending for its whole length and in contact with costal margin, except in both costal cells which are predominantly fulvous; discal crossvein surrounded by a broad black stripe, which is not connected to the anterior band; squama yellowish. Haltere pale yellowish. Abdomen with tergite 1 tawny; remainder of preabdomen black to dark brown with strong purple lustre.

Head somewhat similar structurally to that of *L. viola;* facial carina somewhat narrower above than the average for that species; height of cheek 0.16–0.20 of height of eye; two short fronto-orbital bristles. Antenna and mouth-parts as described for *L. viola.*

Thorax as described for *L. viola*, except that supra-alar bristle is well-developed and prescutellar acrostichal usually absent. Fore femur with bristles almost obsolete.

Abdomen. ♂: tergites 3 and 4 together approximately as long as tergite 5; ♀: tergites 3 and 4 subequal in length, tergite 5 slightly shorter than either. ♂ postabdomen: outer surstylus broadly truncate apically; inner surstylus almost as long, its distal section not spinulose; preglans of aedeagus without process; glans very short, oval; filaments very long, equal, each with a membranous flange extending for most of its length.

Dimensions: total length, ♂ 4.8–8.4 mm, ♀ 5.9–8.8 mm; length of thorax, ♂ 2.3–3.9 mm, ♀ 2.6–4.3 mm; length of wing, ♂ 5.6–9.0 mm, ♀ 6.8–9.7 mm.

Distribution: Queensland—northeast coast from Bloomfield R. to Townsville; it is possible that specimens collected by C. M. Kelsall were taken on Cape York Peninsula.

Type material examined: Townsville, no date (holotype ♀, i.e., specimen figured by Hendel, BM), F.P.D.

Other material examined: "N.E. Queensland," no date (erroneously labelled as cotypes, 2 ♀, BM), C.M.K.; Gap Creek, 6 miles N of Bloomfield R., xi 1965 (2 ♂, UQ), G.M.; Upper Daintree R., xii 1964 (1 ♂, UQ), G.M.; Thornton Range to Daintree R., i 1967 (1 ♂, 1 ♀, AM), G.A.H. and D.K.M.; 10 miles S of Daintree, iv 1955 (1 ♂, CSIRO), K.R.N. and I.F.C.; Mossman, xii 1963 (1 ♀, UQ), G.M.; Mossman Gorge, xii 1964 (1 ♀, UQ), G.M.; Kuranda, iii xii 1958–1964 (2 ♂, AM, 3 ♂, CSIRO), I.F.C. and M.S.U., D.K.M.; Kamerunga, Barron R., v 1960 (1 ♀, CSIRO), T.G.C.; The Intake (or Crystal Cascades), near Cairns, xi xii 1965–1966 (1 ♂, UQ, 1 ♂, 2 ♀, AM), G.M., G.A.H. and D.K.M.; Lake Placid, near Cairns, i 1959 (1 ♂, AM), D.K.M.; Earl Hill, N of Cairns, v 1967 (1 ♀, CSIRO), D.H.C.; Mission Beach, E of Tully, xi 1965 (1 ♂, 1 ♀, UQ), G.M.; Gordonvale, i 1949 (1 ♀, UQ), B. Hitchcock; Mulgrave R., 4 miles W of Gordonvale, i xii 1958–1967 (20 ♂, 23 ♀, AM, 2 ♂, 2 ♀, NMV, 2 ♂, 2 ♀, SAM), G.A.H. and D.K.M.; Upper Mulgrave R., xii 1965 (1 ♀, UQ), G.M.; Cowley, near Innisfail, xi 1951 (1 ♀, UQ), anon; 2 miles N of Tully R. bridge, E of Cardstone, Cardstone–Ravenshoe road, i 1967 (1 ♂, 1 ♀, AM), G.A.H. and D.K.M.; 2 miles E of Cardstone, i 1967 (1 ♂, AM), G.A.H. and D.K.M.; Little Crystal Creek, Mount Spec, near Paluma, xii 1954 (1♀, UQ), anon.

Habitat: rain forest near streams, most frequently seen resting on lower surface of foliage of trees.

Lamprogaster corax n. sp.

(Figs 14, 15, 23)

♂ ♀. *Coloration.* Head predominently dark brown to deep yellowish brown; face fulvous; orbital margins of postfrons and parafacial and all of occiput, except near vertex, with silvery white pruinescence. Antenna fulvous; arista brown distally. Prelabrum and palpus fulvous. Thorax black to dark brown, with conspicuous blue reflections. Legs blackish brown. Wing dark brown; a creamy-hyaline area covering alula, basal and posterior part of anal cell, and base of anal lobe; a creamy-hyaline spot in base of submarginal cell and a creamy-hyaline mark in marginal cell immediately beyond end of vein 1, extending from costa, across vein 2 into submarginal cell where it extends a short distance towards base along vein 3, sometimes the part in submarginal cell separated off from that in marginal cell (as in left wing of holotype); a large hyaline area filling all of second posterior cell, except that part adjacent to discal crossvein, and extending over vein 4 into adjacent part of first posterior cell; third posterior cell with a large hyaline area on margin which does not touch veins 5 and 6; squama creamy. Haltere with yellowish pedicel and brown capitellum. Abdomen black with strong blue lustre.

Head similar structurally to that of *L. stenoparia* except that facial carina is narrower and more rounded laterally.

Thorax generally as described for *L. viola* and *L. stenoparia;* hairs on mesopleuron extremely short and fine, decumbent; chaetotaxy as in *L. stenoparia* except that mesopleural bristle is extremely short and fine, sometimes distinguishable on one side only.

Abdomen. ♂: tergite 5 approximately five times as long as tergites 3 and 4 combined; ♀: tergite 5 womewhat shorter than tergites 3 and 4 combined. ♂ postabdomen: outer surstylus rather stout in basal section, abruptly contracting into distal section, which has the apex curved posteriorly; distal section of inner syrstylus with numerous small blunt spines; aedeagus with long stipe; preglans not distinguishable; glans short, oval, complex and lobed at distal end; filaments very long, approximately thirty times as long as glans, each with membranous flange which becomes obsolete distally.

Dimensions: total length, ♂ 7.8mm, ♀ 6.6–8.4 mm; length of thorax, ♂ 3.2 mm, ♀ 3.0–3.2 mm; length of wing, ♂ 8.2 mm, ♀ 7.6–8.5 mm; length of glans of aedeagus, excluding lobes, 0.34 mm.

Distribution: Queensland—Cape York Peninsula.

Holotype ♀: Coen River, no date (SAM), W. D. Dodd.

Other material examined: Coen R., no date (paratypes, 2 ♂, 1 ♀, SAM, 1 ♀, AM), W. D. Dodd; "N.E. Queensland", no date (1 ♀, BM), C.M.K.

Comparative notes: the very distinctive wing pattern readily separates this from all other species of *Lamprogaster.*

Lamprogaster bicolor Macquart

Lamprogaster bicolor Macquart, 1847: 89; not *L. bicolor:* Hendel, 1914a, 1914b (see under *L. relucens*); not *L. bicolor:* Malloch, 1928a (see under *L. laeta*).

Chromatomyia jucunda Walker, 1849: 802, *new synonym.*

Lamprogaster jucunda, Hendel, 1914b: 238.

♂ ♀. *Coloration.* Head orange-tawny to fulvous; postfrons and parafacial with whitish pruinescent orbital margins; occiput whitish to greyish pruinescent. Antenna orange-tawny; arista blackish beyond base. Prelabrum and palpus orange-fulvous. Thorax orange-tawny without dark markings; mesoscutum with three separate light greyish pruinescent longitudinal stripes which do not reach to scutellar suture; scutellum fulvous-yellow. Legs fulvous; fore coxa and trochanter suffused with brown; tarsi brown distally. Wing tinged with yellow, strongly so anteriorly and towards base; humeral, sub-basal, and discal bands absent altogether; stigmatal band very faintly indicated as a brownish-yellow mark in subcostal and marginal cells and a separate mark surrounding anterior crossvein; apical mark well developed, blackish brown, extending broadly from vein 2 to vein 4 and more narrowly extended basally within marginal cell; squama pale orange-fulvous. Haltere fulvous with a brown mark distally. Abdomen shining black, the reflections without definite colour or sometimes lilac.

Head. Postfrons sloping; facial carina rather broad and sharply margined below, somewhat narrowed between antennae, sometimes weakly rugose; height of cheek 0.34–0.39 of height of eye. Antenna extending distinctly more than half the distance from its basal insertion to epistomal margin; arista slender with a number of minute basal hairs. Prelabrum broad; palpus moderately broad.

Thorax rather robust; scutellum convex dorsally, straight or slightly impressed in outline between apical bristles; mesopleuron almost devoid of pubescence; the following bristles present; humeral, two notopleurals, no supra-alar, postalar, intra-alar, dorsocentral, prescutellar acrostichal, three or rarely two pairs of scutellars, a strong mesopleural. Fore and hind femora with short black dorsal bristles distally; posteroventral bristles of fore femur and anteroventral bristles of hind femur obsolete. Wing with microtrichia on almost entire surface except for variable areas in second basal and anal cells; distal section of vein 4 slightly arched, slightly curved forward apically.

Abdomen. ♂: tergite 4 slightly longer than tergite 3, tergites 3 and 4 together approximately equal to or slightly shorter than tergite 5; ♀: tergites 3, 4, and 5 subequal in length.

Dimensions: total length, ♂ 6.5–9.5 mm, ♀ 8.3–9.6 mm; length of thorax, ♂ 3.4–4.9 mm, ♀ 4.5–5.3 mm; length of wing ♂ 7.8–10.8 mm, ♀ 10.4–11.5 mm.

Distribution: south-eastern Queensland; eastern New South Wales; Victoria; ? Tasmania.

Type material examined: no locality (but Macquart gives "la Tasmanie"), no date (lectotype ♂, here designated, of *L. bicolor*, paralectotype ♂, OXN), anon.; Mosquito or Hunter River, New South Wales, no date (lectotype ♂, here designated, of *C. jucunda*, lower specimen, paralectotype ♂, upper specimen, both on one pin, BM) anon.

Other material examined. Queensland: Gayndah, i 1935 (1 ♀, BM), anon.; Brisbane, xi 1913 (1 ♀, UQ), H.H.; Crow's Nest, near Brisbane, ii 1948 (1 ♂, UQ), C. S. Andrew. New South Wales: Megalong Valley, Blue Mountains, i 1961 (1 ♀, NSWDA), C.E.C.; Sydney, xii 1923 (1 ♂, AM), anon.; 1864 (1 ♀, det. Hendel as *L. jucunda*, WM), Thorey; no date (1 ♂, AM), L. Gallard. Victoria: Brighton, near Melbourne, no date (1 ♂, NMV), anon.

Despite the fact that this was among the earlier platystomatid species to be described, it is very sparingly represented in modern collections. This is surprising in view of the much more intensive collecting of Diptera carried out in Australia in recent years in areas where the species was collected long ago. It is suggested that habitat changes in recent decades may have greatly reduced the numbers of this species, even where considerable areas of forest remain. It seems highly probable that the locality Tasmania, given by Macquart, is erroneous (see remarks under *Euprosopia tenuicornis*, p. 180).

It is difficult to understand the basis of the application of the name *L. bicolor* Macquart to other species of *Lamprogaster* by Hendel and Malloch. This is the only Australian species of the genus which can be reconciled with Macquart's description. There are only two specimens, both of the present species, above the label "Lamprogaster bicolor ♀ n.sp. Macq" in the Bigot collection, and though these are both males and not individually labelled I have assumed these to be syntypes.

Lamprogaster flavipennis Macquart

Lamprogaster flavipennis Macquart, 1843: 211, pl. 28, Fig. 7; not *L. flavipennis:* Hendel, 1914b (see under *L. vella*); not *L. flavipennis:* Malloch, 1928a (see under *L. excelsa*).

Lamprogaster unimacula Hendel, 1914b: 239, new synonym.

♂ ♀. Similar in most characters, particularly in wing pattern, to *L. bicolor;* differing from that species principally as indicated below.

Coloration generally a little darker than in *L. bicolor*. Mesoscutum with broad black median area for its whole length, its lateral limits at the scutellar bridges posteriorly, almost as wide anteriorly; this black area in large part concealed by an area of yellowish-grey pruinescence formed from three fused pruinescent stripes which are separated at anterior extremity, not reaching scutellum; scutellum black with bluish reflections. Legs, in the apparently commoner northern form, coloured much as in *L. bicolor*, in specimens from south of the Hunter R. (Toronto, Blue Lagoon, and Monga) basal third to half of all femora dark brown to blackish. Wing with a small brown discal spot of variable intensity on vein 2; apical mark more restricted than in *L. bicolor* and usually not distinctly extended into marginal cell. Abdomen black with blue reflections.

Head. Height of cheek 0.30–0.39 of height of eye.

Thorax. Mesopleuron very finely pubescent on most of surface.

Abdomen. ♂: tergites 3 and 4 together a little more than half as long as tergite 5.

Dimensions: total length, ♂ 6.4–10.3 mm, ♀ 8.0–10.6 mm; length of thorax, ♂ 3.4–4.9 mm, ♀ 4.4–5.2 mm; length of wing, ♂ 8.1–10.7 mm, ♀ 9.6–11.6 mm.

Distribution: Queensland—southeast; New South Wales—mainly coastal, and of restricted occurrence in the south. Enderlein's record from Fiji is certainly an error and it is improbable that even the Australian specimens he recorded as *D. flavipennis* were correctly identified.

Type material examined: "Nouvelle Hollande" (in register, not on label), no date (1 ♀, deduced to be holotype of *L. flavipennis*, PM), anon.; "S. Queensland", no date (holotype ♂ of *L. unimacula*, BM), T.L.B.

Other material examined. Queensland: Cedar Creek, near Brisbane, iii iv 1966 (2 ♀, UQ), F. Lo, R. Howler; Highvale, 14 miles NW of Brisbane, i ii xii 1959–1960 (8 ♂, 5 ♀, CSIRO, 1 ♂, AM), R.S.; Mount Nebo, near Brisbane, i 1962 (1 ♀, CSIRO), E. Warwick; Brisbane, ii 1962 (1 ♂, UQ), N. Heather; North Tamborine, i 1961 (1 ♀, CSIRO), M.S.U.; Tamborine Mountain, ii iii 1954–1962 (2 ♀, UQ), "R.P.K.", B. Willson; Springbrook, McPherson Range, xi 1949 (2 ♂, 1 ♀, CSIRO), anon. New South Wales: Mount Warning, near Murwillumbah, i 1957 (1 ♂, NSWDA), B. M. Braithwaite; Huonbrook, near Mullumbimby, xii 1961 (1 ♂, 1 ♀, AM), R.L. and D.K.M.; 7 miles W of Rosebank, Lismore district, 1,700 ft, xi 1961 (1 ♂, CSIRO), I.F.C. and M.S.U.; Richmond R., iii 1866 (1 ♂, 1 ♀, NMV), Wilcox; Clarence R., no date (2 ♂, NMV), Wilcox; Toronto, Lake Macquarie, no date (1 ♀, AM), Filmer; Blue Lagoon Reserve, near The Entrance, iii 1969 (1 ♂, AM), G.A.H.; Monga, near Braidwood, ii 1966 (1 ♀, CSIRO), E.F.R.

Some difficulty has been encountered in determining the identity of *L. flavipennis* Macquart, and in deciding which is the type specimen. Macquart gives the type data as "Des îles de la mer du Sud. Museum." In the Paris Museum, above the label "*L. flavipennis* M. Mer du Sud" there are four specimens, all referable to Australian species. One of these bears a red TYPE label and appears to belong either to *L. corusca* n.sp. of to *L. nigripes* (Macquart). It is evidently not the type because its coloration cannot be reconciled with Macquart's description, and because the number it bears, 2/47 indicates that it was added to the museum collection in 1847 after Macquart (1843) recorded it as being there. Two further specimens (♂, ♀) appear to belong to the northern form of the present species though also in poor condition. They both carry the number 2/47 indicating that they cannot be type material. The remaining specimen (♀) I regard as almost certainly the holotype. It bears the number 229/35, which indicates that it is one of the "Insectes de Nouvelle Hollande achétes à M. Gory" in 1835. The label "No. 104. Loxoneura flavipennis" probably indicates Macquart's prepublication idea of its generic affinity, before he decided to set up the new genus *Lamprogaster* for it. It agrees reasonably well with Macquart's description of *L. flavipennis* and belongs to the southern form of the present species, having the basal halves or somewhat less of all femora darkened.

Lamprogaster vella (Walker)

Chromatomyia Vella Walker, 1849: 803.

Lamprogaster amaena Walker, 1849: 1162, as correction for *C. Vella.*

Lamprogaster flavipennis Macquart: Hendel, 1914b: 234–235, misidentification.

♂ ♀. Similar to *L. excelsa* in most characters and differing principally as stated below.

Coloration generally as described for *L. excelsa.* Femora generally with a small amount of tawny suffusion near apices; tibiae tawny with variable brown markings; tarsi pale yellowish, slightly browned on apical segment. Wing with stigmatal band black and well-marked but somewhat narrower than in *L. excelsa*, almost triangular; discal spot on vein 2 well-marked, black, at least equal in width to width of submarginal cell at same level.

♂ *postabdomen:* resembling that of *L. excelsa* but differing as follows; apical triangular expansion of outer surstylus longer than wide; posterior margin of inner surstylus rather convex, with stout setulae on inner surface (these setulae slightly less developed in *L. excelsa*); cercus tumid on anterior side of distal surface, with anterior basal extension partly visible in lateral aspect in front of lateral lobe of tergite 9.

Dimensions: total length, ♂ 8.7–10.6 mm, ♀ 7.5–10.1 mm; length of thorax, ♂ 4.3–4.6 mm, ♀ 3.4–4.7 mm; length of wing, ♂ 9.6–10.5 mm, ♀ 7.9–11.4 mm; length of glans of aedeagus, 0.92–1.01 mm.

Distribution: Queensland—southeast; New South Wales—Coast and Tablelands districts; Victoria—near Melbourne.

Holotype ♀: Mosquito or Hunter River, New South Wales, no date (holotype lower specimen on pin, mounted with a specimen of *L. bicolor*, BM), anon.

Other material examined. New South Wales: Upper Williams R., near Barrington Tops, x 1926 (1 ♀, SAM), A.M.L. and F.E.W.; Tubrabucca, near Barrington Tops, i 1948–1956 (1 ♂, 1 ♀, NMV), R.T.M.P. and A.N.B., (1 ♀, CSIRO), I.F.C.; Avalon, near Sydney, xii 1966 (1 ♀, AM), M.G. and V.G. Queensland: Bunya Mountains, no date (2 ♂, AM), N.G. Victoria: Melbourne, no date (1 ♂, BM), anon.; Kew near Melbourne, no date (1 ♀, NMV), anon.

Lamprogaster sp. 1

This category must be considered of doubtful status as the available material is not sufficient to decide how many species are involved or whether all specimens running to this form in the key are distinct from *L. excelsa*, *L. nigripes*, and *L. corusca.* The genitalia of the only available male specimen, from Kew, Victoria, have been examined. This specimen has slender apices to the filaments as in *L. excelsa*, and the size of the glans (0.70 mm) is not very different from that species but the wing pattern agrees better with *L. vella.* There is much variation in the width of the stigmatal band, even in specimens from the same locality.

All specimens considered under this heading are distinguished from *L. nigripes* and *L. corusca* by the lighter coloured femora: fore femur largely tawny on distal half, blackish basally; middle and hind femora tawny or fulvous, often slightly darkened apically.

Distribution: Queensland—southeast; New South Wales; Victoria.

Material examined: Queensland: Mount Coo-tha near Brisbane, v 1953 (1 ♀, UQ), Y.P. Beri. New South Wales: Kendall, near Wauchope, no date (1 ♀, CSIRO), anon.; Goulburn R., no date (1 ♀, BM, det. Hendel as *L. flavipennis*), Capt. Parry. Victoria: Kew, near Melbourne, no date (1 ♂, 1 ♀, NMV), anon.

Lamprogaster excelsa n.sp.

Lamprogaster flavipennis Macquart: Malloch, 1928a: 349, misidentification.

♂ ♀. *Coloration.* Head orange-tawny, postfrons sometimes a little darker; orbital margins of postfrons and parafacial with band of silvery pruinescence which is widest near level of antenna. Antenna tawny, with segment 3 partly brownish; arista brown basally becoming black distally. Prelabrum and palpus tawny. Thorax orange-tawny; mesoscutum with a broad almost parallel-sided black central area, extending its full-length; three longitudinal grey pruinescent stripes on black median area, the median one broadest, all joined posteriorly and not reaching to scutellum; scutellum glossy black, with bluish green reflections; postnotum dull blackish with pale pubescence; legs black; two basal segments of each tarsus dark brown to reddish-brown. Wing membrane distinctly yellowish anteriorly and towards base, faintly greyish posteriorly; no dark mark in vicinity of humeral and basal crossveins; stigmatal band broad and heavy but scarcely extending behind vein 4, filling end of subcostal cell and broadly developed on vein 2; discal spot on vein 2 very small or indistinct; no mark on discal crossvein; apical mark broadest on vein 3, extending to vein 4; squama pale tawny to buff. Haltere pale yellowish, brown distally. Abdomen black with strong green, greenish blue, or bronzy reflections.

Head. Postfrons sloping; facial carina moderately broad, flat, sharply margined, smooth; height of cheek 0.38–0.44 of height of eye. Antenna extending slightly more than half the distance from its basal insertion to epistomal margin; arista filiform, with minute basal hairs not half as long as basal diameter of arista. Prelabrum broad and rather prominent; palpus of moderate width.

Thorax moderately broad; outline of scutellum rounded except at apex where it is transverse; much of upper part of mesopleuron pubescent; the following bristles present: humeral, two notopleurals, supra-alar absent, postalar, intra-alar, dorso-central, prescutellar acrostichal, three or four pairs of scutellars (often three on one side and four on the other), a strong mesopleural. Fore and hind femora with moderately developed black dorsal bristles on their distal halves; fore femur also with short black posteroventral bristles distally, hind femur with similar series of anteroventral bristles. Wing with microtrichia distributed over entire surface except for two narrow streaks in anal cell; distal section of vein 4 arched through most of its length, slightly curved forward at extreme apex; posterior distal angle of discal cell greater than 90°.

Abdomen. ♂: tergites 3 and 4 subequal and together slightly shorter than tergite 5; ♀: tergite 3, 4, and 5 subequal in length. ♂ postabdomen: outer surstylus with elongate, almost parallel-sided basal section, which reaches to level of apex of cercus where it is abruptly contracted into the much shorter distal section; distal section rather narrow basally where it has a gibbosity on inner surface, distally with a somewhat triangular expansion which is wider than long; free distal section of inner surstylus about half as long as that of outer surstylus, with two teeth of which the distal one is flattened terminally and has a small posteriorly directed point; stipe of aedeagus rather long, containing a pair of pigmented strips which extend its full length, preglans well differentiated from stipe, short, sclerotized, without process; glans subcylindrical, somewhat elongate, with membranous terminal lobe; filaments approximately equal, very long, 9–10 times as long as glans, each with a longitudinal pigmented skeletal element which is double near base, apices simple, slender; cercus with anterior basal extension concealed in lateral aspect by lateral lobe of tergite 9.

Dimensions: total length, ♂ 7.7–12.0 mm, ♀ 9.4–11.0 mm; length of thorax, ♂ 4.0–5.8 mm, ♀ 4.5–5.5 mm; length of wing, ♂ 9.6–12.4 mm, ♀ 11.0–12.7 mm; length of glans of aedeagus 0.93–1.05 mm; diameter of filament of aedeagus near apex 0.008–0.013 mm.

Distribution: New South Wales—highlands above 3,000 ft; probably also Victoria (Gisborne, Malloch's record of *L. flavipennis*, specimen not seen).

Holotype ♂: Mount Kosciusko, New South Wales, ii 1952 (AM), K.E.

Other material examined: Mount Kosciusko, ii 1952 paratype ♀, (AM), K.E.; i 1957 (paratype ♀, NMV), A.N.: The Creel, near Mount Kosciusko, 3,000 ft, i 1931 (paratype ♂, CSIRO), anon.; Buckenderra, near Adaminaby, i 1970 (paratype ♀, AM), M. Tichon; 1 mile W of Wombeyan Caves, N of Goulburn, xi 1955 (paratype ♂, CSIRO), T.G.C.; 9 miles NW of Kingstown, W of Armidale, xii 1948 (2 ♂, 1 ♀, CSIRO), K.H.K.: Uralla, xi 1914 (7 ♂, 2 ♀, CSIRO, 1 ♂, NMV, 1 ♂, BM, 1 ♂, USNM), W.W.F.; 3 miles E of Kentucky, near Uralla, xii 1958 (1 ♂, CSIRO), K.L.T.

Comparative notes: one of the group of closely similar species including *L. vella* (Walker) and *L. nigripes* (Macquart); distinguished from *L. vella* by the darker fore tarsus and form of the surstylus; distinguished from *L. nigripes* by the larger size and form of the stigmatal band.

Lamprogaster nigripes (Macquart) n.comb.

(Fig. 17)

Senopterina nigripes Macquart, 1851: 283, pl. 26, fig. 6.

Duomyia nigripes: Hendel, 1914a: 58; 1914b: 102.

♂. Very similar to *L. excelsa* and agreeing with the description given for that species except as indicated below. ♀ unknown.

Coloration. Wing with stigmatal band filling end of subcostal cell, but narrow and of almost uniform width behind vein 1; discal spot on vein 2 barely discernible.

Postabdomen. Surstyli as described for *L. excelsa* except that inner surstylus does not extend to level of apex of cercus, outer surstylus extending a little beyond apex of cercus; glans rather shortly cylindrical; filaments each about thirteen times as long as glans, with slender, tapering apices.

Dimensions: total length 7.5–8.2 mm; length of thorax 3.4–3.7 mm; length of wing 8.0–8.1 mm; length of glans of aedeagus 0.62–0.67 mm.

Distribution: Tasmania (confirmation desirable); Victoria.

Material examined: Tasmania: no further data (lectotype ♂, here designated, paralectotypes, 3 ♂, PM), J.P.V. Victoria: Preston, near Melbourne, no date (1 ♂, NMV), anon.

This species is very inadequately known but appears distinct from any other here recognized. No recently collected material is available. Musgrave (1932) records that J. P. Verreaux collected in Tasmania in 1843. The specimen from Preston is doubtfully referable to this species, as the scutellum is minutely but sharply sculptured and appears to have a patch of grey pruinescence on centre of dorsal surface. In the type material the scutellum is smooth and glossy as in *L. excelsa* and *L. corusca.*

Lamprogaster corusca n. sp.

(Fig. 25)

Lamprogaster flavipennis var. *nigripes* Hendel 1914b: 235 (subjective synonym of above), not *L. nigripes* (Macquart, 1851).

♂ ♀. Very similar to *L. excelsa,* and agreeing with the description given for that species except as indicated below.

Coloration. Hairs of mesopleuron black, at least those on posterior marginal section. Legs black; middle and hind femora sometimes with tawny preapical dorsal patch; two basal segments of each tarsus sometimes brown. Wing with stigmatal band well-marked but narrower than in either *L. excelsa* or *L. vella.* Abdomen with blue and purple reflections.

Head. Height of cheek 0.39–0.48 of height of eye.

Thorax with three pairs of scutellar bristles. Wing more narrowly elongate than in *L. excelsa.*

♂ *postabdomen:* generally similar to that of *L. excelsa;* aedeagus with glans shorter than in that species; apex of each filament terminating in a bell-shaped expansion.

Dimensions: total length, ♂ 9.1–10.0 mm, ♀ 7.5 mm; length of thorax, ♂ 4.6–4.9 mm, ♀ 3.2 mm; length of wing, ♂ 10.3–10.4 mm, ♀ 9.4 mm; length of glans of aedeagus 0.66–0.72 mm; diameter of filament near apex 0.05–0.06 mm.

Distribution: Queensland—southeast; New South Wales—as far south as Sydney.

Holotype ♂: Highvale, 14 miles NW of Brisbane, Queensland, 2 i 1960 (CSIRO), R.S.

Other material examined. Queensland: Logan Road, Brisbane, xii 1889 (paratype ♂, CSIRO), H. Tryon; Nerang R., near Springbrook Forest, 13 miles S of Nerang, xii 1966 (paratype ♀, CSIRO), T.G.C. New South Wales: no further data (lectotype ♂, here designated, paralectotype ♀, of *L. flavipennis* var. *nigripes* Hendel, MNM), anon.; Bayview, near Sydney, i 1970 (1 ♂, AM), L. C. Haines.

I have avoided introducing a replacement name for var. *nigripes* Hendel because the locality data of the type series are inadequate. As the present importance of type specimens in biology is their use as reference points for identifying type populations, this is considered an important matter.

Lamprogaster laeta (Macquart)

Platystoma laeta Macquart, 1835: 445; Guérin-Méneville, 1838: 300; 1844: 555, pl. 104, fig. 1.

Lamprogaster laeta, Froggatt, 1907: 308, pl. 28 fig. 7; Tillyard, 1926: 371, pl. 20, fig. 27; not *L. laeta*: Malloch, 1929 (see under *L. flavihirta*).

Chromatomyia formosa Walker, 1849: 801, new synonym.

Lamprogaster bicolor Macquart: Malloch, 1928a: 349, misidentification.

♂ ♀. Generally similar to *L. relucens* but average size much larger; differing from that species principally as indicated below.

Coloration. Mesoscutum with dorsocentral pruinescent stripe obsolete behind suture; median pruinescent stripe forked posteriorly, the branches curving outwards; scutellum either entirely shining black or broadly black apically and laterally with reddish-brown basal central area. Wing membrane largely yellowish, especially so anteriorly and basally; wing markings much as in *L. relucens,* but stigmatal band broader and more triangular. Abdomen black with green or blue reflections.

Head. Postfrons only slightly inclined from the horizontal, somewhat depressed medially; height of cheek 0.45–0.56 of height of eye.

Thorax. Mesopleuron with area of pubescence towards upper margin; scutellum with three or four pairs of bristles. Wing membrane entirely clothed with microtrichia except for a stripe near centre of anal cell; distal section of vein 4 rather strongly arched.

♂ *postabdomen* somewhat similar to that of *L. relucens;* outer surstylus with a slight sigmoid curve, the apical expansion obliquely truncate.

Dimensions: total length, ♂ 11.2–13.3 mm, ♀ 8.4–12.5 mm; length of thorax, ♂ 5.2–6.4 mm, ♀ 4.3–6.6 mm; length of wing, ♂ 11.8–14.1 mm, ♀ 10.2–14.4 mm; length of glans of aedeagus 1.2–1.4 mm.

Distribution: New South Wales—principally Tablelands Districts from Barrington Tops southwards; Victoria; Tasmania.

Type material examined: Port Jackson (i.e., Sydney Harbour, New South Wales), no date (holotype of Macquart and Guérin, much damaged, PM), anon.; "Australia", no further data (lectotype ♂, here designated, of *Chromatomyia formosa* Walker, BM, "one of Walker's series no named"), anon.

Other material examined. New South Wales and Australian Capital Territory: Upper Manning R., near Barrington Tops, 4,200 ft, i 1948 (1 ♀, AM), A.M.; Tubrabucca, near Barrington Tops, 4,300 ft, i 1948 (1 ♀, AM), A.M.: Allyn R., near Barrington Tops, i 1927 (1 ♀, AM), T.G.C.; Avalon Beach, near Sydney, i 1956 (1 ♀, NSWDA), P. Pockley; Sydney, no date (1 ♂, NSWDA), anon.; Bendora, A.C.T., iii 1949 (1 ♂, 1 ♀, CSIRO), S.J.P.; Mount Franklin, A.C.T., ii 1959 (1 ♀, CSIRO), Z.R.L.; Lee's Springs, A.C.T., ii 1952 (2 ♂, CSIRO), S.J.P.; 3 miles SE of Pilot Hill, Bago Forest, near Batlow, iii 1957 (24 ♂, 3 ♀, CSIRO, 1 ♂, AM, 1 ♂, NMV), T.G.C.; Alpine Creek, near Kiandra, ii 1963 (1 ♀, CSIRO), S.J.P.; 9 miles W of Adaminaby, iii 1962 (1 ♂, 5 ♀, CSIRO), Z.R.L.; Yaouk, near Adaminaby, ii 1959 (1 ♀, CSIRO), M.F.D.; Sawpit Creek, near Mount Kosciusko, i ii 1929–1963 (4 ♂, 5 ♀, AM, 1 ♂, 1 ♀, SAM), A.M., H. O. Fletcher, D.K.M.; Wilson's Valley, near Mount Kosciusko, ii 1963 (1 ♂, AM), D.K.M.; "Kosciusko", ii 1952 (1 ♂, AM), K. E.; Jindabyne, 3,000 ft, iii 1889 (1 ♀, AM), R.H.; Moonbar, S of Jindabyne, 3,000–3,500 ft, iii 1889 (1 ♂, 1 ♀, AM), R.H.; Nimmitabel, i iv 1937–1961 (2 ♀, CSIRO), M.F., D.H.C. Victoria: Strathbogie Range, ii 1962 (1 ♂, 1 ♀, CSIRO), K.L.T.; Tallarook, ii 1951 (1 ♂, CSIRO), K. G. Campbell; Warburton, ii 1929 (1 ♀, UQ), V. Miller; Dandenong Range, near Melbourne, ii 1899 (1 ♀, SAM), anon.; Monbulk, near Melbourne, ix 1899 (10 ♂, 5 ♀, BM), anon. Tasmania: Devonport, no date (1 ♀, SAM), A.M.L.; Lefroy, near George Town, no date (1 ♂, SAM), anon.; Launceston, no date (1 ♀, SAM), anon.; Mangalore, ii 1913 (1 ♀, BM), A. White; Eaglehawk Neck, ii–iii 1913 (1 ♂, BM), R.E.T.; junction of Huon R. and Picton R., ii 1967 (1 ♂, CSIRO), E.F.R.; Cracroft R. crossing, South West District, ii 1966 (1 ♂, 1 ♀, NMV), A.N.; West Arthur Plains, South West District, ii 1966 (1 ♀, NMV), A.N.

Lamprogaster relucens n. sp.

(Figs 16, 24)

Lamprogaster bicolor Macquart: Hendel, 1914a: pl. 10, fig. 88; 1914b: 237–238; misidentifications.

♂ ♀. *Coloration.* Head orange-tawny; postfrons a little darker; orbital margins of postfrons and parafacial with band of silvery pruinescence, which is widest near level of insertion of antenna. Antenna of the same colour as rest of head, except that the distal part of arista is blackish; prelabrum and palpus tawny to fulvous. Thorax orange-tawny; mesoscutum with broad black central area, the lateral limits of which lie approximately along the dorsocentral lines, and including three grey-pruinescent longitudinal stripes of which the median one is broadest and sometimes divided by a narrow black median line, the dorsocentral stripes interrupted at suture and entirely separate or joined posteriorly by a narrow transverse stripe and, like the median stripe, discontinued well in front of scutellum; scutellum entirely fulvous or tawny; pleura without any dark markings. Legs tawny; fore coxa, trochanter, and basal half of femur suffused with blackish brown; tibiae suffused with blackish near apices; tarsi brown or tawny basally, becoming black or deeper brown distally. Wing hyaline

with a very faint yellow tinge, extreme base and often also costal cell more distinctly yellowish; blackish humeral band extending from costa to vein 4, filling base of first basal cell where it runs distally to join subbasal band which extends from marginal cell to vein 6; stigmatal band black, almost parallel-sided behind vein 1, extending from costa to just behind vein 4; a distinct black discal spot on vein 2; discal crossvein unmarked; apical mark on end of vein 3 not reaching vein 2, extending narrowly to vein 4; squama tawny-buff. Haltere dull fulvous, brownish distally. Abdomen black with conspicuous green reflections.

Head. Postfrons sloping; facial carina moderately broad, especially below, flat-topped, sharply margined, smooth; height of cheek 0.37–0.43 of height of eye. Antenna extending distinctly more than half distance from its insertion to epistomal margin; arista slender except at base where it usually has a few very minute hairs. Prelabrum broad and rather prominent anteriorly; palpus moderately broad.

Thorax robust; scutellum rounded in outline, strongly convex; mesopleuron with small areas of pubescence on posterior margin only; the following bristles present: humeral, two notopleurals, no supra-alar, postalar, intra-alar, dorsocentral, prescutellar acrostichal, 3 pairs of scutellars, a strong mesopleural. Fore and hind femora each with a series of short black dorsal bristles, those of latter extending almost to base; posteroventral bristles of fore femur and anteroventral bristles of hind femur almost obsolete. Wing with microtrichia almost completely absent from these areas of marginal, submarginal, and basal cells lying between sub-basal and stigmatal bands; second basal and anal cells also largely devoid of microtrichia in unpigmented areas; distal section of vein 4 slightly arched through most of its length, not curved forward apically.

Abdomen. ♂: tergite 5 somewhat longer than tergites 3 and 4 together; ♀: tergites 3, 4, and 5 subequal in length. ♂ postabdomen: outer surstylus curved at base, its basal section elongate, reaching to level of apex of cercus; distal section short, with a broadly triangular apical expansion; distal section of inner surstylus a little shorter than that of outer surstylus, with a swollen preapical black region and a flattened terminal tooth with anterior and posterior points; stipe of aedeagus with a pair of variably pigmented skeletal strips; preglans sclerotized on one side only; glans moderately large and elongate, with short membranous terminal lobe; filaments approximately fifteen times as long as glans, slender and simple at apices, each with a longitudinal pigmented strip which is duplicated basally; cercus short, rounded.

Dimensions: total length, ♂ 6.5–10.7 mm, ♀ 7.2–9.0 mm; length of thorax, ♂ 3.4–4.8 mm, ♀ 4.0–4.6 mm; length of wing, ♂ 7.7–10.3 mm, ♀ 8.5–9.8 mm; length of glans of aedeagus 0.90–0.97 mm.

Distribution: New South Wales—widely distributed from Dubbo and Hunter R. southwards and at least as far west as Hay; Victoria; South Australia—near Adelaide.

Holotype ♂: Northmead, near Parramatta, 7 iii 1965 (AM), M.G. and V.G.

Other material examined. New South Wales: Goulburn R., Hunter R. district, no date (paratype ♀, BM), Captain Parry; Dubbo, vi 1911 (paratypes, 2 ♂, 1 ♀, NSWDA), anon.; Royalla, near Queanbeyan, iii 1961 (paratypes, 3 ♂, 3 ♀, CSIRO, 1 ♂, AM), S.J.P.; Yanco, iv 1963 (paratypes, 1 ♂, 1 ♀, CSIRO), C. J. R. Johnson; Hay, xi 1915–1916 (paratypes, 4 ♀, NSWDA, 1 ♀, AM, 3 ♂, CSIRO), W.W.F. Victoria: Shepparton, xii 1918 (1 ♂, NMV), P. C. French; Kew, near Melbourne, no date (1 ♂, NMV), anon.; Croydon, near Melbourne, iv 1954 (1 ♀, NMV), anon.; Mooroopna, near Shepparton, iv 1925 (1 ♀, NMV), F.E.W. South Australia: Adelaide, no date (1 ♂, BM), "Wilson"; Belair, near Adelaide, iii 1920 (4 ♂, SAM), O. B. Lower; 1 mile E of Belair, iii 1970 (1 ♀, SAM), N. McFarland; National Park, near Adelaide, iii 1940 (3 ♂, SAM), W. B. Hitchcock.

Comparative notes: most resembling *L. laeta* and *L. hilaris;* differing from *L. laeta* in the smaller size, distribution of microtrichia on the wing membrane, and narrower stigmatal band; most easily distinguished from *L. hilaris* by the coloration of the thorax as given in the key.

Lamprogaster hilaris (Walker)

Chromatomyia hilaris Walker, 1849: 804.

Lamprogaster hilaris Walker, 1849: 1162.

♂ ♀. Similar to *L. relucens* in most characters and differing principally as indicated below.

Coloration generally somewhat darker than in *L. relucens*. Mesoscutum with black central area broader than in *L. relucens*, especially so anteriorly where it extends laterally behind humeral calli, extending well outside dorsocentral lines posteriorly; median greyish pruinescent stripe broadened and divided posteriorly, reaching practically to scutellum; dorsocentral pruinescent stripe interrupted at suture, broadly fused with the ramus of median stripe posteriorly; scutellum brownish laterally; lower part of sternopleuron and hypopleuron blackish. Tibiae not noticeably darkened distally. Wing markings much as in *L. relucens*, but dark area in base of first basal cell enclosing a larger hyaline spot or streak.

Head. Facial carina finely transversely rugose, narrower than in *L. relucens*, at upper end between antennae not as wide as first antennal segment, near middle about as wide as third antennal segment; height of cheek 0.40–0.50 of height of eye. Antenna with arista quite bare beyond the two short basal segments.

Thorax. Mesoscutum finely but roughly punctured, especially towards centre; upper part of mesopleuron densely pubescent.

♂ *postabdomen* rather similar to that of *L. relucens;* outer surstylus almost straight.

Dimensions: total length, ♂ 6.6–10.4 mm, ♀ 6.6–8.6 mm; length of thorax, ♂ 3.3–4.3 mm, ♀ 3.4–4.5 mm; length of wing, ♂ 6.9–8.5 mm, ♀ 7.3–9.0 mm; length of glans of aedeagus, 0.84–0.89 mm.

Distribution: New South Wales—principally tablelands districts; Victoria—northwest.

Type material examined: "New Holland", no date (lectotype ♀, here designated, BM, "Chromatomyia hilaris Walker. One of Walker's series so named. E.A.W."), anon.

Other material examined. New South Wales and Australian Capital Territory: 2 miles S of Mendooran, iv v 1970 (12 ♂, 8 ♀, AM, 1 ♂, BM, 1 ♂, PM, 1 ♂, 1 ♀, USNM), G. Daniels, G.A.H., and D.K.M.; Goonoo State Forest, 5 miles S of Mendooran, v 1970 (2 ♂, AM), G. Daniels, G.A.H., and D.K.M.; 20 miles N of Murrurundi, iv 1952 (1 ♂, CSIRO), I.F.C.; Barrington Tops, iv 1949 (2 ♂, CSIRO), S.J.P.; Jerrawa Creek, near Yass, ii 1966 (1 ♀, CSIRO), Z.R.L.; Hall, A.C.T., iii 1952 (18 ♂, 2 ♀, CSIRO, 2 ♂, AM), K.R.N.; Royalla, S of Queanbeyan, iii 1961 (6 ♂, 4 ♀, CSIRO, 1 ♀, AM), D.H.C., Z.R.L., S.J.P.; near Braidwood, ii 1953 (4 ♂, CSIRO), Z.R.L. Victoria: Kewell, Horsham district, no date (1 ♂, NMV), anon.

Habitat: specimens from 2 miles S of Mendooran taken on tree-trunks, mainly *Casuarina* sp., in partly cleared country; specimens from Goonoo Forest taken on trunks of *Eucalyptus* sp. in dry sclerophyll forest.

Lamprogaster sp. 2

♂ ♀. Similar to *L. relucens* and *L. hilaris* in most characters. The available material is inadequate for a detailed description but what appear to be the principal distinctive characters are given below. There is a distinct possibility that the two specimens are not conspecific.

Coloration. Mesoscutum with central blackish area not extending outside dorsocentral lines except posteriorly in ♂, in ♀ only defined towards anterior extremity of mesoscutum; ♂: pattern of greyish pruinescent stripes much as in *L. hilaris* except that the lateral postsutural stripe is much better developed and extends broadly almost to intra-alar bristle; ♀: dorsocentral pruinescent stripe not interrupted at suture and very broadly joined to median stripe immediately in front of suture, lateral stripe joined to dorsocentral stripe at suture and more narrowly joined to it at posterior extremity. Wing markings mostly very heavy and black; a brown blotch just before middle of second costal cell; stigmatal band broader than in *L. relucens* and *L. hilaris*, particularly in marginal cell.

Head. ♂: facial carina similar to that of *L. hilaris*, similarly rugose and only slightly broader; ♀: facial carina smooth, somewhat broader and slightly convex.

Abdomen. ♂: tergite 3 and especially tergite 4 shorter than in *L. hilaris;* ♀ tergites 3, 4, and 5 subequal in length.

Dimensions: total length, ♂ 7.2 mm, ♀ 8.4 mm; length of thorax, ♂ 4.0 mm, ♀ 4.4 mm; length of wing, ♂ 8.6 mm, ♀ 9.5 mm.

Distribution: Western Australia (probably South Western Division).

Material examined: "W. Australia", no date (1 ♂, 1 ♀, SAM), anon. Messrs N. McFarland and G. F. Gross of the South Australian Museum inform me that the labels appear to be those of A. M. Lea and are therefore likely to be correct, despite their inadequacy.

Lamprogaster poecila Hendel

Lamprogaster poecila Hendel, 1914b: 239–240.

♂ ♀. Resembling *L. relucens* but more slender; otherwise differing from that species principally as indicated below.

Coloration. Lower part of sternopleuron extensively suffused with deep brown; scutellum black with greenish lustre. Legs black to dark brown; basal segment of each tarsus tawny brown. Wing with humeral and sub-basal marks well-developed and joined in first basal cell; stigmatal stripe much wider than in *L. relucens*, extending broadly to centre of discal cell and extending along costal margin to unite with or touch discal mark; discal mark forming a large blotch on costa and vein 2, extending along costa to fill or almost fill distal end of marginal cell and touch the well-developed apical mark which extends from vein 2 to vein 4.

Abdomen. ♂: tergites 3 and 4 subequal in length and together slightly longer than tergite 5; ♀: tergites 3, 4, and 5 subequal in length; tergite 4 appearing strongly gibbous in the available dried material.

Dimensions: total length, ♂ 8.2–9.6 mm, ♀ 7.4–8.7 mm; length of thorax, ♂ 3.5–3.7 mm, ♀ 3.1–3.8 mm; length of wing, ♂ 8.5–8.7 mm, ♀ 7.5–8.6 mm.

Distribution: Queensland—from Mackay district to southern border district.

Holotype ♂: "Austral. sept." = northern Australia, probably Queensland, 1864 (WM), Thorey.

Other material examined: Marwood, near Mackay, i 1924 (1 ♂, AM), W. G. Harvey; Kilcoy, xii 1947 (1 ♂, 1 ♀, CSIRO), K.R.N.; Surprise Rock, Binna Burra, Lamington National Park, xi 1952 (1 ♀, CSIRO), anon.

Lamprogaster maculipennis Macquart
(Fig. 26)

Lamprogaster maculipennis Macquart, 1847: 89, pl. 6, fig. 5.

♂ ♀. Similar to *L. relucens* in most characters, and differing principally as indicated below.

Coloration of head and thorax, including markings of mesoscutum as described for *L. relucens*, except that there is a reddish-brown area on lower part of sternopleuron. Black sub-basal mark of wing strongly developed and filling base of first basal cell but only feebly extended towards costa immediately beyond humeral crossvein; a pale brown blotch near centre of second costal cell; stigmatal band broader and heavier than in *L. relucens*, extending to middle of discal cell; discal spot on vein 2 and apical mark absent altogether. Abdomen coloured as in *L. relucens*.

Head. Facial carina slightly narrower than in *L. relucens*, not rugose. Arista bare. Prelabrum very prominently projecting forwards.

Abdomen. ♂: tergite 5 slightly longer than tergites 3 and 4 together; ♀: tergites 3, 4 and 5 subequal in length.

Dimensions: total length, ♂ 7.3 mm, ♀ 6.9–7.3 mm; length of thorax, ♂ 4.2 mm, ♀ 3.7–4.3 mm; length of wing, ♂—, ♀ 8.4–9.4 mm.

Distribution: Australian Capital Territory.

Material examined: no locality on label but given as "Nouvelle Hollande" by Macquart, no date (lectotype ♀, here designated, left wing missing, paralactotype ♂, right wing missing, left wing damaged OXN), L. Fairmaire; Blundell's near Canberra, iii 1948 (1 ♀, CSIRO), S.J.P.

In the Bigot collection, now at Oxford, there is a large number of specimens now placed above the label "Lamprogaster maculipennis ♂ Macq Coll Fairmaire D. Ex.", all of which are without individual labels. Only two of these agree with Macquart's description and I have regarded these two as syntypes, the others probably having been added by Bigot or others. In the Paris Museum there is a specimen of *L. laeta* (Macquart) erroneously labelled as type of this species.

Lamprogaster macrocephala Hendel

Lamprogaster macrocephala Hendel, 1914a: 108, pl. 10, fig. 186; 1914b: 230–231.

Lamprogaster fuscibasis Malloch, 1930a: 433–434, new synonym.

♂ ♀. *Coloration* generally testaceous; head, thorax, and abdominal tergites with numerous and often dense black dots. Postfrons reddish-brown, not shining; face and cheek suffused with brown in some specimens; antenna and palpus fulvous to tawny brown. Legs fulvous. Wing membrane strongly yellowish towards costal margin; a brown mark surrounding anal crossvein and extending anteriorly to fork of veins 2 and 3; basal part of first basal cell suffused with yellowish brown; a compact brown spot surrounding anterior crossvein; squama and haltere tawny.

Head. Postfrons sloping, but not steep; facial carina well-developed; parafacial much wider than third antennal segment; height of cheek 0.44–0.48 of height of eye. Antenna approximately half as long as distance from its basal insertion to epistomal margin. Prelabrum much less developed than in other species of the genus, receding; palpus of moderate width

Thorax broad, strongly convex dorsally; scutellum broadly rounded, convex dorsally; the following bristles present: humeral, two notopleurals, supra-alar, postalar, intra-alar, dorsocentral, prescutellar acrostichal, four to seven pairs of marginal scutellars, a strong mesopleural. Fore femur with rather weak posterodorsal brown bristles; hind femur with a few brown dorsal bristles distally. Distal section of vein 4 slightly arched through most of its length; posterior distal angle of discal cell acute.

Abdomen. ♂: tergite 4 slightly shorter than tergite 3; tergite 5 about twice as long as tergite 4. ♀: tergites 3 and 4 subequal; tergite 5 slightly longer than tergite 4. Aedeagus short; preglans bearing an almost straight, tapering terminal process which is a little shorter than the rather elongate, cylindrical glans; the two filaments short, equal, each about 0.7 of length of glans.

Dimensions: total length, ♂ 10.8–11.6 mm, ♀ 13.6 mm; length of thorax, ♂ 5.9–6.4 mm, ♀ 6.3 mm; length of wing, ♂ 12.1–13.0 mm, ♀ 12.5 mm; length of glans of aedeagus 0.76 mm.

Distribution: West New Guinea; northeast New Guinea; Papua; ? North Queensland.

Type material examined: Milne Bay, Papua, no date (holotype ♂ of *L. macrocephala*, WM), anon.; Kuranda, Queensland, no date (holotype ♂ of *L. fuscibasis*, SPHTM), F.P.D.

Other material examined. Northeast New Guinea: Gabumi and Sibog villages, Finisterre Range, near Saidor, v–vi 1958 (2 ♂, BPB), W. W. Brandt; Simbang, near Finschhafen, 1899 (1 ♂, 1 ♀, det. Hendel as *L. macrocephala*, MNM), L. Biró; Busu R., E of Lae, 100 m., ix 1955 (1 ♂, 1 ♀, BPB), J. L. Gressitt; Mount Missim, E of Bulolo, vi 1968 (1 ♂, BPB), J. Sadlacek. Papua: Milne Bay, no date (1 ♀, MNM, det. Hendel as *L. macrocephala*), anon. West New Guinea; Ok Sibil, near Star Mountains, 4° 50¹ S, 140° 37¹ E, viii 1970 (1 ♀, AM), O.K. McCaw.

I am doubtful if this species occurs within Australian limits. The locality label on the type specimen of *L. fuscibasis* is in the handwriting of F. H. Taylor who curated Dodd's material after it was received at SPHTM. F. P. Dodd also collected in New Guinea where he may have collected this specimen.

All the specimens from Simbang and Milne Bay determined by Hendel as *L. macrocephala* are labelled "Typus" or "Paratype". As this name first became available through publication of a figure without description, the figured specimen is the holotype, the other specimens having no type status. I am indebted to Dr F. Mihályi and Dr A. Kaltenbach for making careful comparisons of Hendel's specimens with the published figure. From this I have concluded that the specimen listed above is the holotype.

IX. GENUS **DUOMYIA** WALKER

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

Campigaster Macquart, 1855: 122. New synonym. Type species *C. testacea* Macquart.

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

Helocnemia Enderlein, 1924: 128. New synonym. Type species *Chromatomyia apicalis* Walker.

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

Head rather large for the size of the body, its outline, viewed anteriorly, subcircular; posterior surface broadly flattened and usually fitting closely to anterior surface of thorax; antennal grooves usually deep and well-defined and separated by a distinctly margined, flat-topped carina, in a few species the carina obsolescent and the antennal grooves shallower; cheek with or without an oblique carina near middle; prelabrum normally developed; antenna with segment 2 short and compact, segment 3 usually elongate but very variable; arista usually bare or with very short hairs near base only, in very few species plumose, but the distal third always bare; two short fronto-orbital bristles sometimes present; ocellar bristles variably developed, often absent; inner and outer verticals well-developed; postverticals absent or poorly differentiated; posterior cheek bristle present or absent.

Thorax. Mesoscutum usually much longer than wide but the proportions variable, usually with the following bristles: one humeral, 1 + 1 notopleural, anterior supra-alar, postalar, posterior intra-alar, one posterior dorsocentral, prescutellar acrostichal; scutellum bare or haired, with two to four pairs of marginal bristles; pleura extensively haired, without differentiated bristles; supra-squamal ridge with a group of fine erect hairs.

Legs of normal proportions, or, in some species, rather short for the length of the body.

Wings of normal size or rather short; radial vein without setulae before level of humeral crossvein; veins 3 and 4 converging apically, often very strongly so; second basal cell not enlarged; posterior distal angle of anal cell obtuse; squama usually large and rounded, sometimes reduced in size but always larger than antisquama.

Abdomen usually subcylindrical or ovoid-cylindrical with segment 1 only slightly narrowed, rarely more broadly ovate, preabdominal tergites 1–5 well-developed, the first two fused; spiracles of segments 1–5 situated below lateral margins of tergites.

Coloration. Thorax and abdomen usually black, often with greenish metallic sheen, or sometimes much of surface obscured by greyish pruinescence; in some species the thoracic pleura, or the entire thorax and abdomen yellowish-brown. Wings never with elaborate pattern; sometimes wing apex or distal costal region with dark cloud or spot, or the subcostal cell and region of the principal crossveins darkened, or the greater part of wing surface suffused with brown.

Type species: *Duomyia obscura* Walker.

Duomyia, the platystomatid genus containing the largest number of Australian species, has proved difficult to divide into discrete species-groups. A group of species having a haired scutellum with two pairs of scutellar bristles forms a relatively well defined group for which the subgeneric name *Duomyza* Malloch is available. The remaining species show very diverse character combinations and, though there are some obvious small groups of related species, there are also marginal forms which make these difficult to define morphologically. On the other hand species I have grouped together in the key for practical reasons are not always

more closely related to each other than they are to species appearing in other parts of the key. The character of posteroventral spines on the fore femur, on which Enderlein based the genus *Helocnemia*, is shared by species of several unrelated groups. For these reasons I have refrained from presenting any subdivision of the genus into species-groups, despite its somewhat unwieldy size.

Key to species of **Duomyia**

1 Scutellum with numerous hairs on dorsal surface 2

——— Scutellum bare, except for the marginal bristles 23

2 (1) 3 pairs of scutellar bristles 3

——— 2 pairs of scutellar bristles 4

3 (2) Scutellum predominantly reddish-brown, sometimes with metallic dark green area in centre; mesoscutum rather densely grey-pruinescent, finely and separately pitted at base of each hair; wing with slight brown stain but not noticeably darker on costal margin ..... *scutellaris* (Macquart)

——— Scutellum entirely black with slight green lustre; mesoscutum not grey-pruinescent except at lateral margins, very densely and roughly pitted; apex of wing with diffuse grey cloud on costal margin ..... *personata* n. sp.

4 (2) Fore femur with short, thick, black posteroventral spines 5

——— Fore femur without such spines 7

5 (4) Scutellum tawny with yellowish pruinescence; mesoscutum with greyish pruinescence on most of surface; femora fulvous; costal region of wing not darkened ..... *pallipes* n. sp.

——— Scutellum partly or entirely black with green lustre; mesoscutum and scutellum not pruinescent except near margins; femora with extensive dark brown or black areas; costal region of wing with dark cloud distally 6

6 (5) Scutellum brown or tawny at sides; postfrons light fulvous; a greyish cloud surrounding anterior crossvein; posteroventral spines of fore femur much shorter than half the diameter of femur ..... *convallis* n. sp.

——— Scutellum entirely black; postfrons reddish-brown, sharply contrasting with the much paler parafacial; no greyish cloud around anterior crossvein; posteroventral spines of fore femur at least as long as half the diameter of femur ..... *commoni* n. sp.

7 (4) Scutellum light brown; palpus not entirely blackish, usually fulvous 8

——— Scutellum predominantly black, often with metallic lustre; palpus not entirely fulvous, usually blackish 15

8 (7) ♂♂ 9

——— ♀♀ 12

9 (8) Hind tibia with dorsal gibbosity or tubercle 10

——— Hind tibia without dorsal gibbosity or tubercle 11

10 (9) Hind tibia with gibbosity surmounted by a prominent rounded tubercle, without dark sub-basal ring; fore tarsus entirely fulvous ..... *tomentosa* Hendel

——— Hind tibia without tubercle surmounting the longitudinally keeled gibbosity, with dark sub-basal ring; distal 4 segments of fore tarsus rather dark brown ..... *monteithi* n. sp.

11 (9) Facial carina between antennal bases no wider than first antennal segment; palpus brown with tawny apex; preglans very short with a broad membranous lobe; glans without lobe ..... *triquetra* n. sp.

——— Facial carina between antennal bases distinctly wider than first antennal segment; palpus tawny or yellowish; preglans slender, elongate, with vestigial lobe; glans with long leaf-like lobe near base ..... *foliata* n. sp.

12 (8) Antenna reaching to epistomal margin; palpus brown with tawny apex .... *triquetra* n. sp.

——— Antenna extending not more than three quarters of distance from its basal insertion to epistomal margin; palpus fulvous 13

13 (12) Hind femur entirely fulvous; hind tibia with one brown mark beyond middle only ..... *tomentosa* Hendel

——— Hind femur with diffuse variable brown dorsal patch; hind tibia with brown mark just beyond base, another just beyond middle, and another at apex 14

14 (13) Fore tarsus usually with four distal segments light brown or tawny.... *foliata* n. sp.

——— Fore tarsus usually with four distal segments dark brown ..... *monteithi* n. sp.

15 (7) Abdominal tergites 3–5 with pale pruinescence at least on area near lateral margins 16

——— Abdominal tergites 3–5 without pruinescence or almost so 17

16 (15) Palpus with tawny apex; pruinescence on tergites 3–5 diffuse, extending faintly to dorsal surface ..... *triquetra* n. sp.

——— Palpus entirely blackish; tergites 3–5 with pruinescence confined to the conspicuous whitish, triangular lateral areas ..... *sericea* Hendel

17 (15) Parafacial without setiferous pits on upper half below the dark mark at its junction with postfrons 18

——— Parafacial with several setiferous pits on upper half 20

18 (17) Hind femur with numerous short black anteroventral bristles; pruinescence on mesopleuron confined to its upper and posterior margins ..... *botulus* n. sp.

——— Hind femur without black anteroventral bristles; pruinescence on mesopleuron extending broadly across upper posterior angle 19

19 (18) Fore femur with black dorsal bristles; third antennal segment rounded at apex; parafacial with conspicuous band of silvery pruinescence, expanded above to cover the dark mark at its summit ..... *argentata* n. sp.

——— Fore femur with all dorsal bristles white; third antennal segment mucronate at apex; silvery band on parafacial narrow and inconspicuous ..... *eremia* n. sp.

20 (17) Mesopleuron with whitish pubescence or pruinescence confined to small patches on upper and posterior margins 21

——— Mesopleuron with the whole of upper part pruinescent-pubescent almost to centre..22

21 (20) Parafacial smooth at junction with cheek; ♂: outer surstylus not much narrowed before apex, but strongly curved forward and truncated ..... *smaragdina* n. sp.

——— Parafacial strongly rugose at junction with cheek; ♂: outer surstylus almost straight, narrowed before the somewhat expanded apex ..... *lacunosa* n. sp.

22 (20) Costal margin of wing with brown stripe from subcostal cell to apex; surface of parafacial carina with weak irregular rugosity ..... *marginalis* n. sp.

——— Costal margin not strongly browned beyond subcostal cell; facial carina with strong vertical plications ..... *chaetostigma* n. sp.

23 (1) Fore femur with one or more of the posteroventral bristles thickened into black spines 24

——— Fore femur without posteroventral black spines or spinescent bristles 28

24 (23) Arista with some rather long hairs on basal half; humeral bristle absent 25

——— Arista almost bare, with minute pubescence near base only; humeral bristle well developed 26

25 (24) Scutellum covered with greyish white pruinescence; postfrons with a blackish spot between ocelli only; fore femur with prominent ventral tooth (at least in ♂) ..... *irregularis* Malloch

——— Scutellum without pruinescence; postfrons with a large blackish mark covering ocellar triangle and a similar blackish mark on each side covering upper orbits; fore femur without ventral tooth ..... *spinifemorata* Malloch

26 (24) No strong pteropleural bristle, scutellum black ..... *serra* n. sp.

——— A strong black pteropleural bristle among the whitish hairs; scutellum largely yellow-brown 27

27 (26) Abdomen fulvous; thorax fulvous with a large black central area on mesoscutum; scutellum unmarked; facial carina at widest part only slightly wider than antennal groove ..... *lutea* n. sp.

——— Abdomen with tergites 1 to 4 black; thorax with most of mesoscutum, centre of scutellum, and lower part of sternopleuron black; facial carina at widest part about twice as wide as antennal groove ..... *apicalis* (Walker)

28 (23) Postfrons distinctly pitted on greater part of surface 29

——— Postfrons almost smooth except, in some species, for the median and lateral humps..40

(28) Arista plumose on basal half or more, the hairs about as long as width of third antennal segment ..... *ameniina* n. sp.

——— Arista bare or with very short basal hairs only 30

30 (29) Anterior and discal crossveins clouded with brown 31

——— Crossveins not clouded with brown, or the anterior one very faintly so 33

31 (30) Basal crossvein not clouded with brown; hind femur browned on distal half or more; ♂: hind trochanter without posterior prominence ..... *montium* n. n.

——— Basal crossvein clouded with brown; hind femur variably marked; ♂: hind trochanter with posterior tubercle or gibbosity 32

32 (31) Hind femur darkened at extreme apex only; ♂: filaments of aedeagus less than twice as long as glans ..... *decora* (Macquart)

——— Hind femur dark brown on basal half; ♂: filaments of aedeagus more than twice as long as glans ..... *scintilla* n. sp.

33 (30) Wing without conspicuous dark markings; vertex not raised into a sharp ridge; postfrons without median hump in front of ocelli 34

——— Wing with blackish costal mark from subcostal cell to apex; vertex raised into a sharp, somewhat backwardly directed ridge; postfrons usually with median hump in front of ocelli 38

34 (33) Palpus fulvous 35

——— Palpus brown or black 36

35 (34) Wing strongly stained with yellow basally; palpus broadened; femora and tibiae black to dark brown; antenna bright orange; postfrons strongly pitted on anterior third ..... *azurea* Hendel

——— Wing not stained with yellow; palpus slender; femora and tibiae generally tawny, or, if darker, third antennal segment partly browned; postfrons weakly pitted..65

36 (34) All tarsi black or brown-black; facial carina sharply margined only on upper part; parafacial with horizontal grooves on upper part ..... *adelaidae* n. sp.

——— Tarsi usually tawny or reddish-brown; facial carina distinctly margined throughout; parafacial at most rugose only at lower end 37

37 (36) Distal section of vein 4 parallel with vein 3 except at apical end where it is slightly curved forwards to end approximately at wing apex; thorax with slightly bluish reflections, abdomen shining but without coloured reflections .... *parallela* n. sp.

——— Distal section of vein 4 curving forwards through most of its length and thus strongly converging with vein 3 distally, ending distinctly in front of wing apex; thorax and abdomen with blue-green to yellow-green reflections ..... *iris* n. sp.

38 (33) Fore femur and tibia black, fore tarsus dark brown; aedeagus with filament and bulb together much shorter than glans ..... *brevifurca* n. sp.

——— Fore legs with at least the tibia and tarsus fulvous to yellowish-brown; filament and bulb together almost as long as or longer than glans 39

39 (38) Facial carina completely rounded off and undefined; filament of aedeagus very much longer than glans ..... *hebes* n. sp.

——— Facial carina sharply defined near upper end, obsolete below; aedeagus with filament and bulb together about as long as glans ..... *rudis* n. sp.

40 (28) Postfrons with median hump or elevation in front of ocelli and sometimes another near anterior margin (if thorax is almost entirely tawny, without blackish areas see couplet 52) 41

——— Surface of postfrons even, without median elevations 51

41 (40) Wing with conspicuous dark apical mark, often confined to costal region 42

——— Wing not darkened apically, sometimes the greater part of wing suffused with brown 47

42 (41) Arista with numerous hairs on basal half, the longer ones with length equal to about half the width of third antennal segment ..... *mithrax* Hendel

——— Arista bare or with very minute basal pubescence 43

43 (42) Facial carina broad, flat, sharply margined; palpus blackish .. *maculipennis* Hendel

——— Facial carina not as above, if sharply margined, then carina short and narrow, or elongate; palpus usually yellowish, at least at apex 44

44 (43) Third antennal segment attenuated, about 7 times as long as maximum width; most or all of pleura and part or all of scutellum tawny 45

——— Third antennal segment less than five times as long as wide; pleura and scutellum black 46

45 (44) Upper end of antennal groove, central dorsal region of scutellum, humeral callus, and lower part of sternopleuron all black; facial carina margined on less than upper half of face only, its sculpture weak, not cancellate; ♂: fore tarsal segments 3 and 4 very broadly, asymmetrically lobed ..... *loxocerina* n. sp.

——— The above parts all tawny to fulvous; facial carina margined for most of length of face, its surface vertically corrugated and finely horizontally rugose; ♂: fore tarsus with segments 3 and 4 not very broadly lobed or conspicuously asymmetrical ..... *cancellata* n. sp.

46 (44) Wing with apical dark mark and that in subcostal cell broadly confluent along costal margin; femora entirely blackish ..... *nigricosta* Malloch

——— Wing with apical dark mark separate from that in subcostal cell; femora brownish-yellow with darker brown markings ..... *glebosa* n. sp.

47 (41) Mesoscutum broadly margined with reddish-brown; scutellum also reddish-brown.. ..... *howensis* n. sp.

——— Mesoscutum black, at most slightly brown at extreme margins; scutellum black, sometimes brown at sides 48

48 (47) No dark mark at summit of parafacial; first segment of fore tarsus tawny except at apex ..... *thalassina* Walker

——— A large blackish mark at summit of each parafacial between antenna and eye; fore tarsus entirely blackish 49

49 (48) Dark brown area covering frontal lunule not continued over the interantennal transverse ridge on to face, except to a slight extent on margins of antennal sockets; wing not distinctly infuscated outside subcostal cell ..... *hypene* n. sp.

——— Upper extremity of face dark brown between bases of antennae; wing coloration variable 50

50 (49) Wing clouded with brown except near base; glans of aedeagus more than 2.0 mm long; apices of terminal filaments slender ..... *obscura* Walker

——— Wing not distinctly browned; glans of aedeagus under 1.9 mm long; apices of terminal filaments expanded and obliquely truncate ..... *gigas* (Macquart)

51 (49) Mesoscutum tawny 52

——— Mesoscutum predominantly or wholly black 59

52 (51) Wing not darkened distally, usually extensively tinged with yellow 53

——— Wing shaded with brown in distal part 55

53 (52) Antenna not more than $\frac{2}{3}$ as long as distance from its basal insertion to middle of epistomal margin; ♂: face sharply bicoloured, creamy above, reddish tawny below; distal section of outer surstylus very short and broad; aedeagus with preglans much shorter than glans ..... *testacea* (Macquart)

——— Antenna more than $\frac{2}{3}$ as long as distance from its basal insertion to middle of epistomal margin; ♂ (where known): face not sharply bicoloured, generally slightly darker below; distal section of outer surstylus rather narrowly prolonged beyond apex of inner surstylus; aedeagus with preglans longer than glans 54

54 (53) Parafacial much narrower than third antennal segment; height of cheek less than 0.25 of height of eye; ♂ with characters as indicated above .... *aurantiaca* n. sp.

——— Parafacial about as wide as third antennal segment; height of cheek greater than 0.25 of height of eye; ♂ unknown ..... sp. 1

55 (52) Ocellar bristles absent; facial carina strongly convex; third antennal segment about eight times as long as wide ..... *scipio* n. sp.

——— Ocellar bristles distinct; facial carina not convex; third antennal segment not over five times as long as wide 56

56 (55) Wing with distal brown area forming a more intense band on costal margin which runs basally to subcostal cell and to bases of marginal and submarginal cells .... *umbrosa* n. sp.

——— Wing with distal brown area not thus extended basally 57

57 (56) Fronto-orbital bristles vestigial, scarcely longer than surface hairs of postfrons; species from south-western Australia ..... *dete* n. sp.

——— Fronto-orbital bristles well-developed but slender; species from coastal eastern Australia 58

58 (57) Wing with dark distal area not intensified towards costa; facial carina of ♀ becoming obsolete about half way between antennal socket and epistomal margin (longer in ♂); fore tarsus with two distal segments only brown; aedeagus with filaments shorter than glans ..... *curta* n. sp.

——— Wing with dark distal area intensified towards costa; ♀: facial carina extending much more than half way from antennal socket to epistomal margin; fore tarsus with three distal segments brown; aedeagus with filaments longer than glans .... *octoseta* n. sp.

59 (51) Scutellum entirely tawny or reddish-brown 60

——— Scutellum black or blackish-brown, at least on central part 61

60 (59) Facial carina with strong vertical corrugations; tergite 5 of ♂ abdomen tawny (♀ unknown); glans of aedeagus not more than 0.40 mm long; filaments more than twelve times as glans ..... *longicauda* n. sp.

——— Facial carina not strongly corrugated; tergite 5 black in both sexes; glans of aedeagus more than 0.45 mm long; filaments less than seven times as long as glans .... *capnodes* n. sp.

61 (59) Facial carina absent; palpus fulvous; wing heavily marked or shaded distally ..62

——— Facial carina well-defined, either with sharp edges, or at least dropping away abruptly at lateral margins; other characters variable 63

62 (61) Arista with rather numerous short hairs towards base; hairs on postfrons fine, normal ..... *rasa* n. sp.

——— Arista bare; hairs on postfrons conspicuously thickened ..... *latipilus* n. sp.

63 (61) Palpus fulvous 64

——— Palpus black or dark brown, at least on distal part 67

64 (63) Wing with brown apical zone; scutellum tawny with dorsal blackish patch; antenna much shorter than face; species from coastal eastern Australia ..... *picta* n. sp.

——— Wing not darkened distally; scutellum metallic black; antenna extending approximately to centre of epistomal margin of face; species from south-western Australia 65

65 (35, 64) Dorsal surface of thorax without green reflections; glans of aedeagus more than 0.70 mm long ..... *acrogenea* n. sp.

——— Dorsal surface of thorax with green reflections; glans of aedeagus less than 0.68 mm long 66

66 (65) Femora entirely yellowish tawny; oral angle of head prominent, the anterior angle of cheek forming an acute angle within it; dorsal surface of thorax with bright yellowish green reflections; glans of aedeagus more than 0.40 mm long; bulb very short and inconspicuous ..... *viridaurea* n. sp.

——— Femora suffused with brown or black on distal halves; oral angle of head less prominent, the anterior angle of cheek not forming an acute angle; dorsal surface of thorax with duller bluish green reflections; glans of aedeagus less than 0.40 mm long; bulb large ..... *uptoni* n. sp.

67 (63) Antenna unusually short, extending only halfway from its basal insertion to centre of epistomal margin in ♀; facial carina broad, flat, little raised, its lateral margins distinct but not very sharp ..... *brevicornis* n. sp.

——— Antenna longer; facial carina of different conformation 68

68 (67) Parafacial divided by an oblique fold into a smooth dorsally expanded orbital area and a slightly rugose anteroventral area; scutellum usually brown at sides, black centrally; wing with dark apical cloud ..... *ustulata* n. sp.

——— Parafacial without oblique fold; scutellum entirely black; wing without dark apical cloud 69

69 (68) Cheek more than half as high as eye; postfrons forming an acute angle with face in profile; antenna almost entirely black ..... *capitalis* n. sp.

——— Cheek less than half as high as eye; face and postfrons not forming an acute angle in profile; antenna largely yellowish brown 70

70 (69) Scutellum finely but strongly sculptured; mesoscutum of ♂ with an over-storey of long black hairs in addition to the usual shorter ones; abdominal tergite 2 and sides of tergites 3 and 4 with rather dense white hairs ..... *angustata* n. sp.

——— Scutellum smooth or very weakly sculptured, glossy; mesoscutum with rather short hairs only; hairs on the abovementioned parts of abdomen less developed 71

71 (70) 2 pairs of well-developed fronto-orbital bristles; facial carina convex centrally; wing strongly stained with yellow basally ..... *lonchaeina* n. sp.

——— Fronto-orbital bristles absent; facial carina with median groove; wing not stained with yellow ..... *uptoni* n. sp.

Duomyia scutellaris (Macquart)

(Fig. 31)

Senopterina scutellaris Macquart, 1851: 282–283, pl. 26, fig. 5.

Senopterina grandis Schiner, 1868: 289, new synonym.

Duomyia grandis: Hendel, 1914b: 101–102; Steyskal, 1968: 55.4.

Duomyia scutellaris: Hendel, 1914a: 58; 1914b: 102.

♂ ♀. *Coloration.* Head pale yellowish to fulvous; postfrons and upper part of parafacial brown, with whitish pruinescence on orbital margins; occiput with a dark brown area on each side largely obscured by whitish pruinescence. Antenna tawny, with arista black beyond base. Palpus brown-black. Thorax with thin covering of grey pruinescence on most of surface; mesoscutum black, with lateral margins broadly reddish brown behind suture; hairs of mesopleuron mostly short and pale, with an admixture of black ones, some longer black ones immediately in front of suture; humeral callus and notopleuron reddish-brown, the former shining, without pruinescence; scutellum reddish-brown with thin greyish pruinescence; pleura reddish-brown, lower part of sternopleuron and most of hypopleuron dark brown. Legs

tawny; femora with variable brown suffusions. Wing with faint yellowish tinge which is intensified in distal part of subcostal cell, without dark markings; squama whitish. Haltere yellowish or tawny, sometimes with brownish capitellum. Abdomen with greyish or yellowish pruinescence confined to lateral parts of tergites 1 and 2; ♂: abdominal tergites tawny; ♀: abdomen black with distal part of tergite 5 tawny.

Head. Postfrons sloping, its width anteriorly 0.40–0.47 of width of head, posteriorly a little narrower, surface smooth, with fine pale hairs; facial carina rather strongly elevated, much narrowed between antennal sockets where it varies from about one quarter the width of third antennal segment (in smallest ♂) to almost as wide as that segment (in largest ♀), the lateral margins well-defined but not very sharp above, completely rounded off below, surface with variable vertical ridges; parafacial somewhat rugose at lower extremity, otherwise smooth, its narrowest part always narrower than antennal groove; height of cheek 0.31–0.39 of height of eye; ocellar and one fronto-orbital bristle each represented by a weak black hair; cheek bristle well-developed, black. Antenna extending almost to level of epistomal margin in ♂, about three-quarters as long in ♀; segment 3 rounded apically; arista almost bare in ♂, with few very short basal hairs in ♀. Palpus of moderate width.

Thorax. Scutellum with rather sparse mostly pale hairs, longer than those on central part of mesoscutum, and 3 pairs of long bristles; pteropleuron with one to three black bristles among the long pale hairs. Fore femur with black dorsal bristles, often in two rows, and more numerous long white ventral bristles; middle femur with mostly black posterior bristles on distal part; hind femur with series of dorsal bristles, white basally, black distally, but not reaching apex. Wing with anterior crossvein slightly longer than or subequal to fourth section of costa (between veins 3 and 4); distal section of vein 4 curving forward apically to end slightly in front of wing apex.

Abdomen. Tergite 5 about twice as long as tergite 4 in ♂, about 1.5 times as long in ♀, ♂ postabdomen: outer surstylus with distal section narrowing from just beyond its origin, then abruptly widened into a sub-triangular apical expansion; stipe of aedeagus with only extremely minute pubescence on a line which runs on to terminal process; preglans well differentiated and sclerotized, with a broad, rounded, sclerotized basal lobe which runs on to stipe and partially encloses a cavity, distally with a short membranous lobe; glans elongate-cylindrical, curved, without lobes; bulb with pair of membranous caeca arising from near base which are narrowed distally; filaments equal, slender, slightly less than three times as long as glans, each with a very narrow membranous margin.

Dimensions: total length, ♂ 6.4–7.2 mm, ♀ 6.5–11.0 mm; length of thorax, ♂ 2.7–3.4 mm ♀ 2.4–4.6 mm; length of wing, ♂ 6.2–7.3 mm, ♀ 5.5–9.1 mm; length of glans of aedeagus 0.70 mm (two specimens).

Distribution: New South Wales and southern Queensland—coastal districts; Tasmania (doubtful record).

Type material examined: "Tasmanie", no date (holotype ♀ of *S. scutellaris* Macquart, PM), J.P.V.; "Chili" (error), no date (apparent holotype ♂ of *S. grandis* Schiner, WM), "Novara-Reise."

Other material examined. Queensland: Noosa National Park, Nambour district, xii 1966 (1 ♀, UQ), B. Cantrell. New South Wales: Iluka, Clarence R., xi 1970 (1 ♀, AM), D.K.M.; Royal National Park, near Sydney, xi xii 1966–1970 (9 ♂, 5 ♀, AM, 1 ♂, 1 ♀, BM, 1 ♂, USNM), G. Daniels, J. Walsh, G.A.H., and D.K.M.; 3 miles S of Crescent Head, Kempsey district, iii 1965 (1 ♂, CSIRO), I.F.C. and M.S.U.; 4 miles SW of Gosford, iii 1965 (1 ♀, CSIRO), I.F.C. and M.S.U.

Habitat: specimens from Royal National Park in dry sclerophyll forest, that from Iluka in rain forest near edge of dry sclerophyll, all taken with mercury vapour lamp.

Duomyia personata n. sp.

(Fig. 32)

♂ ♀. Resembling *D. scutellaris* and agreeing with the description given for that species except as indicated below.

Coloration. Postfrons reddish-brown, becoming tawny posteriorly, darker brown anteriorly; ptilinum, summit of facial carina, and, in ♂, most of parafacial dark brown, in ♀ parafacial usually less extensively darkened. Antenna with segment 2 tawny; segment 3 dark brown, sometimes more tawny towards base. Thorax black with broken greenish reflections; mesoscutum and scutellum devoid of pale pruinescence except towards lateral margins, with hairs mostly white; pleura with grey pruinescence or pubescence except on sternopleuron and lower anterior part of mesopleuron, with hairs white except for some black ones on mesopleuron and pteropleuron. Femora black with fulvous apices; tibiae tawny-brown with darker markings; tarsi tawny or fulvous. Wing with slight brown tinge which is intensified as an apical cloud in vicinity of apices of veins 2 to 4. Haltere with brown capitellum. Abdominal tergites black with green reflections; hairs on tergites 1 and 2 mainly white, those on other tergites black except for some white ones on lateral margins.

Head. Postfrons weakly pitted, facial carina broad below, less strongly narrowed above than in *D. scutellaris*, with variable corrugations or rugosity, sharply margined on entire lateral margins in ♂, margins becoming indistinct below in ♀; height of cheek 0.29–0.36 of height of eye. Arista bare or almost so.

Thorax. Hairs on scutellum more numerous than in *D. scutellaris*. Fore femur often with a few black posteroventral bristles among the fine hair-like white ones.

Abdomen. Tergite 5 about one and a half times to twice as long as tergite 4. ♂ postabdomen: outer surstylus broad, not much contracted before the apical expansion, with a strong black tubercle at base of distal section on inner surface; stipe of aedeagus with narrow stripe of short inconspicuous pubescence extending on to the slight terminal process; preglans short, sclerotized, simple basally, with short membranous lobe distally; glans rather similar to that of *D. scutellaris;* caeca of bulb not narrowed distally; filaments slightly more than 5 times as long as glans, with membranous margins better developed than in *D. scutellaris*.

Dimensions: total length, ♂ 8.6–8.7 mm, ♀ 6.8–9.7 mm; length of thorax, ♂ 3.4–3.8 mm, ♀ 3.0–4.3 mm; length of wing, ♂ 7.2–7.4 mm, ♀ 6.7–8.5 mm; length of glans of aedeagus 0.73–0.80 mm.

Distribution: New South Wales—Tablelands and Western Slopes; Australian Capital Territory.

Holotype ♂: Black Mountain, Canberra, 11 iii 1964 (CSIRO), I.F.C.

Other material examined: Black Mountain, Canberra, i ii 1959–1964 (paratypes, 2 ♀, CSIRO, 1 ♂, AM), I.F.C.; river crossing, 1 mile W of Uralla, Armidale district, i 1967 (1 ♂, 1 ♀, UQ, 1 ♀, AM), B. Cantrell; Goonoo State Forest, 5 miles S of Mendooran, v 1970 (1 ♂, AM), G.A.H. and D.K.M.

Comparative notes. This species differs from all others except *D. scutellaris* in having a haired scutellum with three pairs of bristles. It is readily distinguished from *D. scutellaris* by the details of coloration and structure of the aedeagus as indicated above.

Duomyia convallis n. sp.

♀. Somewhat similar to *D. pallipes* and agreeing with the description for that species, except as indicated below. ♂ unknown.

Coloration. Palpus black. Thorax darker than in *D. pallipes* with more conspicuous metallic green reflections dorsally, because of the thinner and somewhat less extensive pruinescence; humeral callus shining metallic black without pruinescence; mesoscutum often with three indistinct brown longitudinal stripes; scutellum reddish-brown with metallic blackish central patch. Femora dark brown to blackish, often with a very variable tawny region near middle, apices of fore and middle femora pale yellowish; tibiae brown or black with tawny or yellowish base and tawny band just beyond middle; fore tarsus with basal segment yellowish with black apex, the other segments black; middle and hind tarsi with basal segment yellowish with brown apex, the other segments preponderantly brown. Wing with most of membrane faintly stained with brown; apical part of costal margin from end of vein 1 to end of vein 4 covered by a dark brownish cloud; anterior crossvein with a brown mark. Abdomen black with dull metallic green lustre, with grey pruinescence only near lateral margins of tergites 2 to 5.

Head. Postfrons and facial carina slightly narrower than in *D. pallipes;* height of cheek 0.38–0.39 of height of eye.

Thorax. Fore femur with series of strong dorsal bristles, the basal ones whitish, the distal ones black, finer white posteroventral bristles, and four to eight thick black posteroventral spines; middle femur with strong black posterior bristles distally. Wing with discal crossvein less oblique than in *D. pallipes*, slightly curved outwards.

Abdomen. Tergite 5 about one and a half times as long as tergite 4 or slightly more.

Dimensions: total length 6.9–9.1 mm; length of thorax 3.0–4.0 mm; length of wing 5.3–6.9 mm.

Distribution: Queensland—western side of Great Dividing Range.

Holotype ♀: Carnarvon Gorge, Injune district, 30 i 1962 (QM), E. Exley.

Other material examined: Carnarvon Gorge, i 1962 (paratypes, 3 ♀, UQ, 1 ♀, AM), E. Exley; Stannary Hills, W of Atherton, c. 3,000 ft (1 ♀, BM), T.L.B.

Comparative notes. Agrees with *D. pallipes* in the haired scutellum and posteroventral spines on fore femur. Readily distinguished from that species by characters of coloration and other characters given above.

Duomyia commoni n. sp.

♀. Somewhat similar to *D. convallis* and *D. pallipes*, agreeing with description given for latter except as indicated below. ♂ unknown.

Coloration. Postfrons brown. Antenna tawny to brown. Prelabrum and palpus black. Thorax coloured as in *D. convallis* but darker with less grey pruinescence; scutellum black, distinctly pruinescent only on sides. Femora black with fulvous apices; tibiae yellowish brown with darker areas just before middle and near apices; fore tarsus with basal segment tawny, brown apically, the remaining segments brown; other tarsi tawny, gradually becoming brown apically. Wing faintly tinged with grey; distal part of subcostal cell yellowish brown; a grey apical cloud from distal part of marginal cell to apex of vein 4. Abdomen black, somewhat shining.

Head. Postfrons moderately wide, with well-developed white recurved hairs; facial carina moderately broad with almost straight sides; parafacial a little narrower than antennal groove; height of cheek 0.25–0.28 of height of eye. Antenna reaching to level of centre of epistomal margin.

Thorax. Fore femur with mixed black and white dorsal bristles and a series of six to eight black spinescent posteroventral bristles mixed with finer white hairs.

Abdomen. Tergite 5 about as long as tergites 3 and 4 together.

Dimensions: total length 6.0–7.4 mm; length of thorax 2.5–3.2 mm; length of wing 5.4–6.7 mm.

Distribution: Queensland—northeast.

Holotype ♀: 9 miles W of Paluma, 2,500 ft, iv 1969 (CSIRO), I.F.C. and M.S.U.

Other material examined: 7 miles SW of Mount Garnet, iv 1969 (paratype ♀, CSIRO), I.F.C. and M.S.U.

Comparative notes. Similar to *D. pallipes* and *D. convallis* in having a haired scutellum and posteroventral spines on fore femur, but distinguished from both by the brown postfrons.

Duomyia pallipes n. sp.

(Fig. 27)

♂ ♀. *Coloration.* Head fulvous; ocellar spot black; face pale yellowish; posterior part of cheek and occiput whitish-pruinescent. Antenna fulvous; arista black beyond base. Prelabrum tawny; palpus fulvous. Thorax with predominantly black ground colour, appearing grey from the extensive covering of white pruinescence and hairs; humeral callus and posterior notopleural callus sometimes tawny (as in holotype); scutellum tawny with white hairs and thin whitish pruinescence. Legs fulvous with mostly pale hairs; apices of tibiae slightly browned. Wing clear, without markings; veins fulvous; squama whitish. Haltere pale yellowish. Abdominal tergites 1–4 with entirely black ground colour or with a small fulvous area on median line (in holotype only), covered with grey pruinescence except towards median line and sometimes towards their posterior margins; tergite 5 almost entirely fulvous in ♂ or with anterior part brown, with light grey pruinescence except on anterior part, in ♀ black, sometimes fulvous distally, with an anterolateral area of grey pruinescence and an anterior median area of thinner grey pruinescence.

Head. Postfrons very wide, minutely pitted, especially towards lateral margins, with minute pale recurved hairs; facial carina very broad, at narrowest part (between antennae) broader than antennal groove, each lateral margin raised into a sharp flange, surface with well-developed vertical corrugations, becoming fine and irregular on lower median section; parafacial broader than antennal groove, almost smooth; cheek with oblique carina, its height 0.36–0.41 of height of eye; ocellar, fronto-orbital, and cheek bristles absent. Antenna reaching almost to level of epistomal margin in ♂, about three-quarters as long in ♀; third segment slender, slightly angular at apex; arista bare, curved near base. Prelabrum feebly developed. Palpus moderately narrow.

Thorax. Mesoscutum with numerous fine white recurved hairs, which become longer just in front of scutellum; scutellum with numerous pale, more or less recurved hairs and two pairs of bristles; pleura with longer hairs. Legs short and thick; fore femur with numerous strong yellow dorsal bristles, four to seven strong posteroventral black spines beyond middle, and some longer yellowish bristles between these and base; fore tibia with some black dorsal setulae distally among the paler hairs; middle femur with a few strong posterior bristles towards apex, all yellow in ♂, apical ones black in ♀; hind trochanter loosely haired on ventral surface; hind femur somewhat swollen, with a dorsal series of numerous yellow bristles, its apex dilated in ♂; ♂: hind tibia with strong gibbosity on dorsal surface a short distance before apex surmounted by a weak oblique ridge but not forming such a prominent tubercle as in *D. tomentosa*, at outer side of apex of tibia a few black setulae, at least one of which is thickened into a short spur; basal segment of hind tarsus with strong apical gibbosity on posterior side;

♀: hind tibia without dorsal gibbosity but with apical setulae and spurs as in ♂; basal segment of hind tarsus without apical gibbosity. Wing with anterior crossvein longer than fourth section of costa (between veins 3 and 4); vein 4 strongly curved down into discal cell before anterior crossvein, distal section of vein 4 forming a sigmoid curve, strongly converging with vein 3 distally and ending well in front of wing apex; discal crossvein forming a sigmoid curve or its posterior part straight.

Abdomen. Tergite 5 as long as tergites 3 and 4 together; tergites 3, 4, and 5 with median strip furnished with longer hairs, which, on tergite 5 of ♀, is broadened posteriorly to form a triangular area. ♂ postabdomen: basal section of outer surstylus rather broad basally, distally gradually narrowing into the distal section which has an obtusely subtriangular apical expansion; inner surstylus somewhat shorter with blunt terminal tooth; aedeagus with heavily sclerotized stipe having a line of well-developed pubescence distally; preglans strongly differentiated and sclerotized, slender, curved, with a pair of membranous wing-like lobes on posterior surface, one of which runs on to glans; glans narrowed and curved basally with a prominent spine at extreme base and a longer membranous lobe near middle of posterior surface; bulb elongate and lightly sclerotized, with two very long soft, thin-walled caeca, the smaller arising from junction of bulb with glans; filaments of approximately equal length, almost four times as long as glans, membranous margins obsolete except towards apices.

Dimensions: total length, ♂ 6.8–10.0 mm, ♀ 8.9–9.7 mm; length of thorax, ♂ 2.9–4.0 mm, ♀ 3.8–4.6 mm; length of wing, ♂ 6.3–8.4 mm, ♀ 8.1–8.3 mm; length of glans of aedeagus 0.93 mm (holotype).

Distribution: Queensland—southeast; New South Wales—coast to Western Slopes district.

Holotype ♂: Childowlah (or Chidowla), near Burrinjuck Dam, Murrumbidgee R., New South Wales, 30 xii 1956 (CSIRO), E.F.R.

Other material examined. New South Wales and Australian Capital Territory: Childowlah, Murrumbidgee R., xii 1956 (paratype ♂, CSIRO), E.F.R.; Uriarra, near Canberra, x 1960 (paratype ♂, CSIRO), K.R.N.; Sydney, xii 1931 (paratype ♀, AM), K. K. Spence; "Bondi Sandhills", near Sydney, i 1934 (paratype ♂, AM), K. K. Spence; river crossing, 1 mile W of Uralla, i 1967 (paratypes, 2 ♀, UQ), B. Cantrell. Queensland: Sunnybank, near Brisbane, iv 1951 (1 ♀, UQ), B. Champ.

Habitat: sandy situations are indicated by some label data. The specimen from Uriarra is reared and is labelled "Pupa in sand." The Bondi sandhills no longer exist as the area is now a residential suburb of Sydney.

Comparative notes. Closely related to *D. tomentosa* but distinguished from that species by the strong posteroventral spines of the fore femur. Distinguished from *D. convallis*, which also has such spines, as indicated under that species.

Duomyia tomentosa Hendel

(Fig. 28)

Duomyia tomentosa Hendel, 1914a: 58 (nomen nudum); 1914b: 100–101; Malloch, 1929: 507.

♂ ♀. Very closely related to *D. pallipes* and *D. foliata* and differing from description of former principally as indicated below.

Coloration very similar to that of *D. pallipes*. Wing often with an indistinct grey apical cloud. Ground colour of abdominal tergites 1–4 almost wholly black, that of tergite 5 black anteriorly, fulvous posteriorly; the proportion of each colour very variable, the whole of tergites with dense yellow-grey pruinescence, except when rubbed, in which case there is a small area devoid of pruinescence and hairs on each side of tergite 5, well clear of its margins.

Thorax. Legs as in *D. pallipes* except as follows: fore femur without black spines, all bristles yellow; middle femur with all posterior bristles yellow; ♂: hind tibia with dorsal gibbosity forming a strongly elevated tubercle with rather narrowly rounded summit; hind tarsus with basal segment slightly convex on posterodorsal surface but without distinct gibbosity.

Abdomen. Tergite 5 a little shorter than tergites 3 and 4 together. ♂ postabdomen: outer surstylus with small apical expansion; stipe and preglans of aedeagus rather similar to those of *D. pallipes;* glans basally less narrowed and curved than *D. pallipes*, and the spine less developed, membranous lobe forming a longitudinal flange; filaments each about five times as long as glans, with distinct membranous margin which is widened towards the curved apex.

Dimensions: total length, ♂ 9.4–10.8 mm, ♀ 7.0–11.0 mm; length of thorax, ♂ 3.9–4.6 mm, ♀ 3.5–4.9 mm; length of wing, ♂ 7.1–8.4 mm, ♀ 7.6–8.1 mm; length of glans of aedeagus 0.67–0.77 mm.

Distribution: Queensland—east coast as far north as Cairns district; New South Wales—far north; Northern Territory.

Holotype ♀: Townsville, no date (BM), F.P.D.

Other material examined. Queensland: Upper Daintree R., xii 1964 (1 ♂, CNC) G.M.; Kuranda, ix 1910 (2 ♀, BM), F.P.D.; Waugh's Pocket, near Innisfail, i 1962 (1 ♂, CSIRO), P.B.C. and E.B.B.; Forrest Beach, near Ingham, iii 1963 (1 ♀, CSIRO), K. L. Harley; 10 miles S of Bowen, ix 1950 (1 ♀, CSIRO), E.F.R.; Caloundra, i 1961 (1 ♂, UQ), E. C. Dahms; Bribie Island, i 1914 (1 ♀, UQ), anon.; Stradbroke Island, xii 1913 (1 ♀, BM, 1 ♀, UQ), H.H. New South Wales: Yetman, ii 1963 (1 ♂, CSIRO), A.L.D.

In BM there is a reared specimen with the label data "Bred from mandarin, Sunnybank, x 1917, H. Laughton". As it is a female specimen without fore legs, killed when newly emerged, it is difficult to decide if it belongs to this species, *D. pallipes*, or *D. foliata.*

Duomyia monteithi n. sp.

♂ ♀. Generally similar to *D. pallipes*, *D. foliata*, and *D. tomentosa;* Agreeing with description given for the first species except as indicated below.

Coloration. Postfrons sometimes with brown mottling. Mesoscutum with three longitudinal darker grey lines, often rather indistinct. Femora each with a dark brown distal patch, sometimes confined to ventral surface; tibiae each with a dark brown mark just before middle, another beyond middle, and dark apex.

Wing with apical grey cloud, sometimes indistinct. Ground colour of abdomen varying from entirely blackish to almost entirely tawny, darker in ♀ than in ♂.

Head. Height of cheek 0.33–0.36 of height of eye.

Thorax. Fore femur armed as in *D. tomentosa*, without black ventral spines; ♂: hind femur straight, not dilated distally; hind tibia with distinct dorsal gibbosity, less prominent than in *D. pallipes* and *D. tomentosa* and longitudinally keeled.

Abdomen. Tergite 5 about one and a half times as long as tergite 4. ♂ postabdomen: preglans without membranous wing on right side but with well-developed one running the full length of left side and broadly overlapping glans; glans not much narrowed basally, without lobes or basal spine; filaments very slender, especially towards apices, about seven times as long as glans, with narrow membranous margins.

Dimensions: total length, ♂ 7.6–9.0 mm, ♀ 5.5–9.6 mm; length of thorax, ♂ 3.0–4.0 mm, ♀ 2.6–4.8 mm; length of wing, ♂ 5.9–7.9 mm, ♀ 5.0–8.4 mm, length of glans of aedeagus 0.55–0.61 mm.

Distribution: Queensland—north-east.

Holotype ♂: Upper Daintree R., 27 xii 1964 (CSIRO), G.M.

Other material examined: Upper Daintree R., xii 1964 (paratypes, 2 ♂, CNC, 1 ♂, UQ), G.M.; Claudie R., near Mount Lamond, Iron Range district, v 1966 (paratype ♀, AM), D.K.M.

Comparative notes. Resembles *D. tomentosa* and *D. foliata* in having a haired, pale scutellum and no black posteroventral spines on fore femur. The male is readily distinguished from these species by the armature of the hind tibia and structure of the aedeagus. The female is best distinguished from related species by the differences in leg coloration given in the key.

Duomyia foliata n. sp.

(Fig. 29)

♂ ♀. Very similar to *D. tomentosa* and *D. pallipes;* agreeing with the description given for the latter species except as indicated below.

Coloration of head and thorax as in *D. pallipes.* Legs fulvous; middle femur with ventral brownish patch beyond middle; hind femur with dorsal brownish patch beyond middle which may be very diffuse; fore and middle tibiae with apical brown mark, often also with brown marks just beyond base and just beyond middle; hind tibia with all three of these brown marks present; fore tarsus often with the three or four distal segments somewhat browned. Wing often faintly clouded with grey apically. Preabdominal tergites entirely covered with greyish pruinescence (partly yellowish on tergite 5 of ♂), except for a shining posterolateral patch on either side of tergites 3, 4 and 5 in some ♀♀, perhaps caused by rubbing behaviour of ♂♂.

Head. Facial carina of ♂ narrower than in *D. pallipes*, that of ♀ less noticeably so; parafacial, at narrowest part, usually narrower than antennal groove but somewhat variable; height of cheek 0.26–0.32 of height of eye. Antenna and mouthparts as described for *E. pallipes.*

Thorax. Fore femur with well-developed dorsal and posteroventral pale yellowish bristles, without any thickened black bristles or spines; middle femur with posterior bristles distally of which the terminal one is often black, the others pale yellowish; hind femur with well developed yellowish dorsal bristles; hind tibia without trace of dorsal gibbosity or tubercle; apical gibbosity on basal segment of hind tarsus of ♂ barely distinguishable. Wing with discal crossvein less oblique than in *D. pallipes* and *tomentosa*, curved anteriorly.

Abdomen. ♂ postabdomen: surstyli somewhat similar in form to those of *D. pallipes;* aedeagus with stipe much as in *D. pallipes;* preglans elongate and slender, curved, with pair of very narrow longitudinal membranous flanges on posterior surface; glans curved, somewhat narrowed basally without spinous process at base, but with long membranous foliaceous lobe before middle; bulb elongate, soft, strap-shaped, with a pair of long delicate caeca; filaments long, slender, of equal length and nearly seven times as long as glans, each with a membranous flange extending for most of its length except towards base; cercus elongate and slender.

Dimensions: total length, ♂ 6.2–8.2 mm, ♀ 5.3–9.8 mm; length of thorax, ♂ 2.4–3.6 mm, ♀ 2.3–4.8 mm; length of wing, ♂ 4.5–6.5 mm, ♀ 5.1–8.3 mm; length of glans of aedeagus, 0.42–0.47 mm.

Distribution: Queensland—widely distributed in tropical zone; Northern Territory; North Western Australia.

Holotype ♂: Cannonvale, NE of Proserpine, Queensland, 1 iv 1967 (CSIRO), M.S.U.

Other material examined. Queensland: Cannonvale, NE of Proserpine, iv 1967 (paratype ♂, CSIRO), M.S.U.; Red Island Point, near Cape York, iii 1964 (paratypes, 1 ♂, CSIRO, 1 ♂, AM), I.F.C. and M.S.U.; Yorkeys Knob, near Cairns, viii 1963 (paratype ♂, UQ), B. V. Timms; Mount Garnet Road, 13 miles W of Ravenshoe, v 1967 (paratype ♀, CSIRO), D.H.C.; Yeppoon, xii 1964 (paratype ♂, CSIRO), I.F.C. Northern Territory: 15 miles N of Tennant Creek, ii 1967 (1 ♂, CSIRO), M.S.U. Western Australia, Peewah R., 14 miles NNE of Whim Creek, between Roebourne and Port Hedland, vi 1953 (1 ♀, damaged, CSIRO), J. H. Calaby.

Comparative notes. Males may be distinguished from those of *D. tomentosa* by the simple hind tibia and structure of aedeagus, and from other species by structure of aedeagus. Females are less easy to distinguish from *D. tomentosa* and *D. triquetra* but coloration of palpus and legs, as given in key, appears to provide useful characters.

Duomyia triquetra n. sp.

(Fig. 30)

♂ ♀. Similar to *D. foliata* and *D. pallipes* in a majority of characters, but differing from the description given for the latter species in the characters given below.

Coloration of pale form agreeing rather closely with that of *D. pallipes*, except that: (1) palpus coloured as in type form of present species; (2) each tibia with a black or brown mark beyond middle, best developed on hind tibia, in addition to the apical mark; (3) wing marked as in type form of present species; (4) abdomen entirely light tawny in ground colour.

Coloration of type form. Head coloured much as in *D. pallipes*. Antennal segment 3 tawny-brown. Palpus blackish with apex broadly tawny. Thorax black with rather thin grey pruinescence; scutellum yellowish brown to black. Femora fulvous with variable brown suffusion or largely blackish with fulvous apices; tibiae marked much as in *D. foliata* but slightly variable. Wing, except in immature specimens, with an apical grey cloud covering ends of veins 2, 3 and 4. Abdomen black with thin grey pruinescence on lateral parts of tergites 2 to 4.

Head. Facial carina rather similar to that of *D. foliata*, lateral margins almost straight making the outline almost triangular in ♂, less nearly triangular in ♀ on account of the broader summit; parafacial about as wide as antennal groove, rugose at lower end; height of cheek 0.29–0.35 of height of eye. Antenna with segment 3 extending to level of epistomal margin in both sexes, slightly longer and more acutely pointed in ♂ than in ♀.

Thorax generally as described for *D. pallipes*. Legs as described for *D. foliata*.

Abdomen. ♂ postabdomen: outer surstylus with rather broad apical expansion; stipe of aedeagus with only a small pubescent patch near distal end extending on to preglans; preglans short and compact, less than twice as wide as long, with a short membranous lobe commencing in groove between stipe and preglans and running longitudinally; glans elongate, curved, without lobe; bulb much as in *D. pallipes*, with pair of caeca arising from near base; filaments of equal length, long and slender, compressed, nearly seven times as long as glans.

Dimensions: total length, ♂ 6.2–8.4 mm, ♀ 5.4–7.0 mm; length of thorax, ♂ 2.5–3.6 mm, ♀ 2.4–2.9 mm; length of wing, ♂ 5.3–6.3 mm, ♀ 4.9–5.7 mm; length of glans of aedeagus 0.50–0.57 mm,

Distribution: Queensland—north-east coast.

Holotype ♂: 13 miles W of Ravenshoe, Mount Garnet Road, Queensland, 2 v 1967 (CSIRO), D.H.C.

Other material examined: 13 miles W of Ravenshoe, Mount Garnet Road, v 1967 (paratype ♀, CSIRO), D.H.C.; Gap Creek, 6 miles N of Bloomfield R., xi 1965 (paratype ♂, UQ), G.M.; 15 miles NW of Bowen, ix 1950 (paratype ♀, CSIRO), E.F.R.

Comparative notes. The bicoloured palpus and structure of aedeagus appear to be the most reliable characters for distinguishing this from related forms with pruinescent abdomen.

Duomyia sericea Hendel

Duomyia sericea Hendel, 1914a: 58 (nomen nudum); 1914b: 99–100 (described).

♂ ♀. Somewhat resembling *D. lacunosa* and agreeing with the description given for that species except as indicated below.

Coloration. Postfrons largely reddish-brown; a brown mark towards each side of facial carina with a pale cream blotch immediately above it. Thorax black, the reflections not distinctly greenish; mesopleuron with whitish pruinescence or very short pubescence on upper posterior part, not quite extending to centre. Legs coloured much as in *D. lacunosa.* Wing with distal part of subcostal cell yellow. Abdomen black, often with bronzy reflections; lateral parts of tergites with white pruinescence which on tergites 2 to 5 forms conspicuous triangular areas; tergites with coarse curved white hairs along median line, and fine, straight white hairs on lateral pruinescent areas.

Head. Facial carina broad in both sexes, its surface weakly currugated only on lateral parts, its lateral margins sharply raised, somewhat curved outwards; height of cheek 0.30–0.33 of height of eye.

Thorax. The short, curved hairs on scutellum not becoming noticeably longer towards posterior margin.

Abdomen. ♂ postabdomen: stipe of aedeagus slender, without evident pubescence or terminal process; preglans very short, but well differentiated and sclerotized, with a small rounded basal lobe; glans rather short and stout, almost ovoid; bulb large, longer than glans, the two caeca at its base exceedingly short and thick; filaments slender, without distinct membranous margins, each a little more than three times as long as glans.

Dimensions: total length, ♂ 6.2 mm, ♀ 5.9–8.6 mm; length of thorax, ♂ 2.5 mm, ♀ 2.6–3.3 mm; length of wing, ♂ 4.6 mm, ♀ 4.6–5.7 mm, length of glans of aedeagus 0.35 mm.

Distribution: Queensland—southeast.

Type material examined: Burpengary, 26 miles N of Brisbane, no date (lectotype ♀ here designated, upper specimen on pin, paralectotype ♀, lower specimen on same pin, BM), T.L.B.

Other material examined: Belmont, near Brisbane, iv 1959 (1 ♂, 1 ♀, UQ), I.C.Y.

Duomyia botulus n. sp.

(Fig. 33)

♂. Closely related to *D. lacunosa* and agreeing with that species except as indicated below; ♀ unknown.

Coloration. Thorax with purplish-blue reflections. Black rings on fore and hind tibiae tending to coalesce, making these parts predominantly blackish. Abdomen with purplish-blue to greenish-blue reflections.

Head. Parafacial narrower than antennal groove, without any setiferous pits on upper part below the black mark, lower part strongly rugose; cheek 0.34 of height of eye. Antenna with segment 3 rounded apically. Legs as described for *D. lacunosa* except that hind femur has numerous rather short black anteroventral bristles on distal half. Wing with vein 6 a little better developed than in *D. lacunosa.*

Abdomen. Tergite 5 fully twice as long as tergite 4. ♂ postabdomen: outer surstylus almost straight, narrowing gradually for most of length, without well defined apical expansion, with preapical tubercle on posterior margin; stipe of aedeagus with extensive longitudinal pubescent strip; preglans with terminal rounded membranous lobe overlapping base of glans; glans more elongate and curved than in *D. lacunosa*, without lobes; filaments more slender than in *D. lacunosa* or *D. smaragdina*, as long as glans, without membranous margins.

Dimensions: total length 8.6 mm; length of thorax 3.7 mm; length of wing 6.4 mm; length of glans of aedeagus 0.88 mm.

Distribution: Victoria—north-west of state.

Holotype ♂: Wyperfield National Park, Hopetoun district, xi 1966 (CSIRO), I.F.C. and M.S.U.

Comparative notes. This species should also be compared with *D. argentata* and *D. eremia* to which it is closely related. It can be distinguished from both these species by the presence of numerous anteroventral bristles on the hind femur and the more restricted pruinescence of the mesopleuron.

Duomyia argentata n. sp.

♀. Resembling *D. eremia* and *D. lacunosa;* agreeing with description of the latter except as indicated below. ♂ unknown.

Coloration. Head predominantly tawny; postfrons brown except posteriorly and along orbital margins; face whitish to creamy; orbital margins of postfrons and parafacial with broad silvery pruinescent stripe which is expanded to cover the brownish mark at junction of postfrons and parafacial. Antenna with segments 1 and 2 tawny. Palpus dark brown. Entire upper part of mesopleuron with whitish pruinescence or pubescence, extending almost to centre. Wing with yellowish pterostigma in subcostal cell. Abdomen with white hairs less developed than in *D. lacunosa.*

Head. Postfrons rather weakly pitted; facial carina less narrowed between antennae than in ♀ of *D. lacunosa;* parafacial without setiferous pits; height of cheek approximately 0.34 of height of eye. Antenna as long as distance from its basal insertion to epistomal margin, apex of segment 3 rounded; arista apparently bare.

Thorax. Fore femur with short but strong black dorsal bristles, and slightly elevated posteroventral gibbosity; middle femur with some posterior bristles black.

Abdomen. Tergite 5 about 1.6 times as long as tergite 4.

Dimensions: total length 6.6–7.7 mm; length of thorax 2.5–3.1 mm; length of wing 5.6–6.2 mm.

Distribution: New South Wales—Tablelands Districts; Australian Capital Territory.

Holotype ♀: Blundell's, near Canberra, 21 i 1931 (CSIRO), A.L.T.

Other material examined: river crossing, 1 mile W of Uralla, i 1967 (paratype ♀, UQ), B. Cantrell.

Comparative notes. Distinguished from *D. botulus* and *D. eremia* by the presence of short strong black dorsal bristles on the fore femur, and from *D. lacunosa*, *D. marginalis* and *D. chaetostigma* by the absence of setiferous pits on the parafacial.

Duomyia eremia n. sp.

(Fig. 34)

♂. Somewhat similar to *D. lacunosa* and agreeing with the description given for that species except as indicated below; ♀ unknown.

Coloration. Postfrons fulvous except for the black ocellar spot. Thorax black with broken green reflections; upper posterior part of mesopleuron with whitish pruinescence or very short pubescence which does not quite extend to centre. Tibiae blackish, the fore and middle ones becoming tawny at each end; fore tarsus brown, becoming paler on basal part of first segment, other tarsi tawny. Abdomen without pale pruinescence on tergites.

Head. Postfrons somewhat pitted but with rather fine hairs; facial carina broad, its lateral margins sharply raised, curved outwards, surface with fine, irregularly reticulate rugosity; parafacial at narrowest point slightly narrower than antennal groove, not pitted, finely indistinctly rugose above, coarsely rugose at junction with cheek, a rather sharp ridge on upper part running just outside ptilinal suture; height of cheek 0.28–0.36 of height of eye. Antenna with segment 3 strongly pointed anteriorly at apex.

Thorax. Middle femur with posterior bristles on distal part, those nearest apex black. Wing with discal crossvein having distinct sigmoid curvature.

Abdomen. Tergite 5 fully twice as long as tergite 4. ♂ postabdomen: outer surstylus with elongate subcylindrical distal section, terminal surface truncated; inner surstylus very much shorter than outer surstylus; stipe of aedeagus without pubescence, with lateral ridges which run on to base of preglans; preglans short and stout, without lobe; glans very stout, slightly curved, without lobe; bulb with vestigial caeca; filaments rather stout, only slightly longer than glans, with a stout process on their conjoined bases.

Dimensions: total length 7.9–8.8 mm; length of thorax 3.3–3.6 mm; length of wing 6.4–6.5 mm; length of glans of aedeagus 0.50–0.53 mm.

Distribution: Central Australia.

Holotype ♂: 48 miles WSW of Alice Springs, 10 ii 1966 (CSIRO), E.B.B., M.S.U. and McInnes.

Other material examined: same data as holotype (paratype ♂, AM).

Comparative notes. In addition to the characters given in the key the aedeagus of this species is very distinctive.

Duomyia smaragdina n. sp.

(Figs 35, 38)

♂ ♀. Very similar to *D. lacunosa* and agreeing with the description given for that species except as indicated below.

Coloration. Thorax black with conspicuous metallic green reflections. Abdomen with golden-green reflections.

Head. Parafacial not as wide as antennal groove, upper part with a number of slight setiferous pits, the rest of surface quite smooth; height of cheek 0.22–0.28 of height of eye. Antenna with segment 3 rounded apically.

Thorax. Surface of scutellum and mesopleuron almost smooth.

Abdomen. Tergite 5 about twice as long as tergite 4. ♂ postabdomen; outer surstylus with distal section not much narrowed basally, curved backwards, the apex obliquely truncated; inner surstylus with the two points of preapical tooth quite prominent; aedeagus much as in *D. lacunosa;* glans stouter than in West Australian specimens of that species, filaments with wider membranous margins.

Dimensions: total length, ♂ 5.6 mm, ♀ 5.3–6.8 mm; length of thorax, ♂ 2.3 mm, ♀ 2.2–2.7 mm; length of wing, ♂ 4.4 mm, ♀ 4.1–5.0 mm; length of glans of aedeagus 0.66 mm.

Distribution: Western Australia—Monte Bello Islands.

Holotype ♂: Cocoa Beach, Trimouille Island, 12 xi 1953 (CSIRO), T.G.C.

Other material examined: same data as holotype (paratypes, 2 ♀, CSIRO, 1 ♀, AM).

Comparative notes. This species is most reliably distinguished from the very closely related *D. lacunosa* by the absence of grooving on the parafacial and by the genitalia characters of the male.

Duomyia lacunosa n. sp.

(Figs 36, 37)

♂ ♀. *Coloration.* Head predominantly pale fulvous; ocellar spot black; postfrons tawny, with white pruinescence along orbital margins; a blackish spot at summit of each parafacial against eye; occiput with large blackish area on each side. Antenna brown; arista black with tawny base. Prelabrum reddish-brown. Palpus black. Thorax black, often with metallic blue-green reflections, with pale grey pruinescence on lateral margins of mesoscutum and scutellum, on propleuron, upper margin and a small part of posterior margin of mesopleuron, posterior extremities of pteropleuron and sternopleuron, pleurotergite, and much of hypopleuron; almost all thoracic hairs white. Femora black, with tawny apices except sometimes that of hind femur; tibiae tawny, each with three blackish rings, the broadest just before middle, one just beyond middle, and one apical; tarsi fulvous, the fore tarsus suffused with brown except at base of first segment. Wing clear; distal part of subcostal cell with brown pterostigma; squama white. Haltere light brown. Abdomen black, often with metallic reflections as on thorax, without areas of pale pruinescence; lateral parts of tergites 2 to 4 with fine white hairs, median part of tergites 2 to 5 with coarse, curved white hairs, most numerous on tergite 5, the remaining parts of tergites with black hairs.

Head. Postfrons pitted on much of surface, especially so anteriorly, with numerous coarse white curved hairs; frontal lunule separated from face by a sharp transverse ridge; facial carina irregularly corrugated, its lateral margins strongly raised, in ♂ broadly subtriangular in shape, narrowed above to less than twice width of first antennal segment, in ♀ slightly less narrowed above and with slightly convex lateral outlines; parafacial about as wide as antennal groove (♂) or slightly wider (most ♀♀), with longitudinal row of setiferous pits, and often additional ones at upper end, lower part irregularly rugose; height of cheek 0.30–0.37 of height of eye; fronto-orbital bristles absent; ocellar bristle scarcely differentiated from surrounding hairs; cheek bristle vestigial. Antenna as long as distance from its basal insertion to epistomal margin in ♂, very slightly shorter in ♀; segment 3 narrow and parallel-sided, rounded or indistinctly angular at apex; arista with a little pruinescence or exceedingly minute pubescence on base only. Palpus of moderate width.

Thorax. Mesoscutum and scutellum with numerous short curved hairs, becoming longer towards posterior margin of mesoscutum; scutellum and greater part of mesopleuron finely irregularly rugose; two pairs of scutellar bristles. Legs short and thick; femora without ventral spines; fore femur with well-developed white posterodorsal and posteroventral bristles; middle femur with white posterior bristles near apex; hind femur with well-developed series of dorsal bristles; tibiae unmodified. Wing without setulae on pterostigma; vein 4 somewhat curved down into discal cell before anterior crossvein, its distal section converging with vein 3 throughout and curved forward apically to end well in front of apex; discal crossvein slightly curved; vein 6 represented by an unpigmented fold distally.

Abdomen. Tergite 5 about one and a half times to almost twice as long as tergite 4. ♂ postabdomen: outer surstylus narrowed gradually from commencement of free distal section, with obtusely subtriangular apical expansion, a rounded tubercle on inner surface just before narrowest part; inner surstylus rather slender distally, the preapical tooth on its inner surface elongate, with two points; stipe of aedeagus with pubescence reduced to a small terminal tuft, usually well-developed in Victorian specimens, vestigial in West Australian specimens; preglans short and stout, less than twice as long as wide, with a short membranous lobe; glans elongate, curved, a little stouter in Victorian specimens, without lobes; bulb elongate, compressed, soft and membranous, with two moderately long membranous caeca; filaments about three times as long as glans, each with a membranous margin for its whole length.

Dimensions: total length, ♂ 5.4–9.9 mm, ♀ 5.3–9.9 mm; length of thorax, ♂ 2.2–4.1 mm, ♀ 2.1–4.1 mm; length of wing, ♂ 4.3–7.9 mm, ♀ 4.4–7.4 mm; length of glans of aedeagus 0.67–0.72 mm.

Distribution: south-western Australia; Victoria—north-western districts.

Holotype ♂: Nedlands, near Perth, Western Australia, 24 i 1961 (CSIRO), M.W.

Other material examined. Western Australia: Nedlands, near Perth, i ii iii (x–xi) xii 1960–1961 (paratypes, 6 ♂, 3 ♀, CSIRO, 2 ♂, 1 ♀, AM, 1 ♂, USNM), M.W.; Perth, iii 1936 (paratypes, 2 ♀, BM), R.E.T.; Crawley, near Perth, ii iii xi xii 1934–1953 (paratypes, 2 ♂, 3 ♀, CSIRO), K.R.N., O. K. Lee; Guildford, near Perth, xii (paratype ♂, BM), H. Brown; Cottesloe, near Perth, xii 1952 (paratype ♀, CSIRO), H. Lee; Fremantle, iii 1950 (paratypes, 2 ♀, CSIRO), J. A. Mahon; Yanchep, 32 miles N of Perth, xii 1935–ii 1936 (paratypes, 2 ♀, BM), R.E.T.; 13 miles ENE of Kojonup, xi 1952 (paratype ♂, CSIRO), McIntosh and J. A. Calaby; Pingrup, xi 1958 (paratype ♂, CSIRO), E.F.R. Victoria: Wyperfield National Park, Hopetoun district, xi 1966 (2 ♂, 1 ♀, CSIRO, 1 ♂, AM), I.F.C. and M.S.U.; Little Desert, 5 miles S of Kiata, ii 1956 (4 ♂, 1 ♀, CSIRO), I.F.C.

Comparative notes. This species is most clearly distinguished from other species with pitted parafacial by the structure of the aedeagus; the sculpturing of the lower end of the parafacial and reduced pruinescence of the mesopleuron are further distinctive features.

Duomyia marginalis n. sp.

(Fig. 39)

♂ ♀. Resembling *D. lacunosa* and agreeing with the description given for that species except as indicated below.

Coloration. Head approximately as in *D. lacunosa* but sometimes darker, in holotype relatively pale with dark mark at summit of parafacial obsolete. Mesopleuron with grey pruinescence on upper posterior part extending almost to middle; pteropleuron with some pruinescence extending to anterior margin. Wing with blackish pterostigma and dark brown costal margin from pterostigma to end of vein 4.

Head. Surface of facial carina with rather fine, dense, irregular rugosity; height of cheek 0.25–0.29 of height of eye. Antenna as long as distance from basal insertion to epistomal margin in both sexes.

Abdomen. ♂ postabdomen: surstyli not observed; stipe with very minute pubescence scattered over a broad stripe, distally with a slight ridge which runs on to preglans where it bears a linear brush of longer pubescence; preglans with very large membranous lobe extending beyond each of its extremities; glans curved, shorter and stouter than in *D. lacunosa;* filaments very slender, without membranous margins, almost 7 times as long as glans.

Dimensions: total length, ♂ 7.8 mm, ♀ 6.6–7.5 mm; length of thorax, ♂ 3.1 mm, ♀ 2.7–2.9 mm; length of wing, ♂ 6.3 mm, ♀ 5.4–6.8 mm; length of glans of aedeagus 0.50 mm.

Distribution: Queensland—Tablelands in southeast; New South Wales—North Coast District.

Holotype ♂: Stanthorpe, Queensland, 11 ii 1930 (QM), anon. but possibly F.A.P.

Other material examined. Queensland: Amiens, 11 miles NW of Stanthorpe, xii 1966 (paratype ♀, CSIRO), T.G.C. New South Wales: Bannyabba, c.40 miles N of Grafton, xi 1965 (paratype ♀, AM), G.L.B.

Comparative notes. The very attenuated terminal filaments of the aedeagus, together with the strongly darkened costal margin of the wing, serve to differentiate this from other closely related species.

Duomyia chaetostigma n. sp.

(Fig. 40)

♂. Resembling *D. lacunosa* and *D. marginalis;* agreeing with description of former except as indicated below.

Coloration. Facial carina whitish. Mesopleuron with pale pruinescence on most of upper part, more extensive posteriorly, extending almost to centre. Wing faintly brownish at apex between veins 2 and 4.

Head. Facial carina a little less broadened below and less narrowed above than in ♂ of *D. lacunosa;* parafacial narrower than antennal groove, with single series of setiferous pits; height of cheek 0.27 of height of eye.

Thorax. Wing with three short setulae on upper surface of pterostigma, similar to those situated on vein 1.

Abdomen. Tergite 5 about twice as long as tergite 4. Outer surstylus with short distal section narrowed basally, with small apical expansion; aedeagus much as in *D. marginalis* but differing in detail; membranous lobe of preglans undeveloped basally; the two caeca of bulb much longer than in *D. marginalis;* filaments comparatively stout, each with membranous margin which is expanded distally, almost four times as long as glans.

Dimensions: total length 6.7 mm; length of thorax 2.6 mm; length of wing 5.5 mm; length of glans of aedeagus 0.53 mm.

Distribution: New South Wales—North West Slopes District.

Holotype ♂: "Wheogo", 12 miles NE of Dunedoo, xi 1931 (AM), A.M.

Comparative notes. If the presence of macrotrichia in the subcostal cell should prove to be an unreliable character, this species will still be distinguishable from *D. marginalis* by the strong plications on the facial carina and the characters of the aedeagus.

Duomyia apicalis (Walker) n. comb.

Chromatomyia apicalis Walker, 1849: 804–805.

Lamprogaster apicalis Walker, 1849: 1162; Hendel, 1914b: 227.

Duomyia annulipes Hendel, 1914a: 57 (nomen nudum); 1914b: 98–99 (described). New synonym.

Helocnemia apicalis Walker: Enderlein, 1924: 128.

♂ ♀. *Coloration.* Head yellow; postfrons with a diffuse light brown mark on each side of posterior half; hairs on postfrons black; upper occiput brown with white pruinescence, tawny towards vertex. Antenna fulvous, third segment brownish-tawny; arista tawny at base, dark brown beyond. Palpus fulvous. Mesoscutum black, tawny at sides behind suture, also on humeral callus and posterior notopleural callus; scutellum fulvous with large black central blotch; pleura tawny to reddish-brown; lower part of sternopleuron extensively blackened. Legs tawny; femora conspicuously browned or blackened near middle, the fore one especially so; tibiae each with three blackish marks, one before middle, one beyond middle, and one at distal extremity; tarsi tawny. Wing clear; distal part of subcostal cell yellowish; faint brown marks surrounding anterior, basal, and anal crossveins; squama whitish. Haltere creamy. Abdomen black to dark brown; distal part of tergite 5 tawny.

Head. Postfrons almost smooth; parafacial rugose at lower end, facial carina well developed, flat-topped, smooth, sharply margined, usually rather broad but narrower in very small specimens; a weak black fronto-orbital and smaller ocellar bristle; cheek bristle well-developed. Antenna as long as distance from its basal insertion to centre of epistomal margin in ♂, somewhat shorter in ♀; arista bare. Prelabrum much reduced; palpus of moderate width.

Thorax. Humeral and prescutellar acrostichal bristles present; scutellum with three pairs of bristles and no hairs; pteropleuron with a strong black bristle in addition to long pale hairs. Femora rather stout; fore femur with black dorsal bristles, a series of yellow posteroventral bristles and two to four shorter spinescent black posteroventral bristles; middle femur with black posterior bristles distally; hind femur with yellow and a few black anterodorsal bristles. Wing with distal section of vein 4 slightly bent forward from junction with discal crossvein, then almost parallel with vein 3 for much of its length, curving forward apically; anal crossvein almost straight; squama moderately large.

Abdomen. Tergite 5 about twice as long as tergite 4, with some strong black posterolateral bristles; often also some posterolateral black bristles on tergite 4; in ♀ only, pleural membrane in region of segments 3 and 4 with strong black bristles. ♂ postabdomen: stipe of aedeagus long and slender, slightly expanded basally, where it has a fringe of short hairs on each side; preglans sclerotized, simple, slightly shorter than glans; glans short, ovoid; membranous bulb very short; filaments long and slender, about five times as long as glans.

Dimensions: total length, ♂ 4.9–8.6 mm, ♀ 4.8–9.3 mm; length of thorax, ♂ 1.9–4.3 mm, ♀ 1.8–4.1 mm; length of wing, ♂ 4.4–8.5 mm, ♀ 4.5–9.3 mm.

Distribution: south-western Australia.

Type material examined: "W. Australia", no date (lectotype ♀, here designated, and paralectotype ♀ of *Chromatomyia apicalis* Walker, BM), anon.; Swan R., no date (holotype ♂ of *D. annulipes* Hendel, WM), anon.

Other material examined: Perth, xi 1935 (3 ♂, BM, 1 ♂, AM), R.E.T.; King's Park, Perth, xi 1936 (2 ♂, 1 ♀, CSIRO, 1 ♀, AM), K.R.N.; Nedlands, near Perth, x–xi 1960 (1 ♂, CSIRO), M.W.; Crawley, near Perth, x xi 1934 (2 ♀, CSIRO), K.R.N.; Yallingup ix–x xi 1913–1958 (3 ♂, BM, 1 ♀, CSIRO), R.E.T., E.F.R.; Margaret R., xi 1958 (2 ♂, CSIRO, 1 ♂, AM), E.F.R.

Duomyia lutea n. sp.

♂. Similar to *D. apicalis* in most characters; agreeing with description given for that species except as indicated below. ♀ unknown.

Coloration. Hairs on postfrons pale, short and inconspicuous. Third antennal segment light fulvous; arista yellow-brown. Mesoscutum black dorsally, broadly margined with tawny-orange all round; scutellum and the entire pleura tawny-orange, the latter with white pruinescence on much of surface. Legs fulvous; fore femur suffused with tawny-brown near middle of posterior surface; other femora with a small ventral mark near middle. Abdomen tawny-orange.

Head. Postfrons almost horizontal, forming a right angle with face in profile; parafacial wider than third antennal segment; height of cheek 0.35 of height of eye. Palpus rather narrow.

Thorax. Fore femur with one spinescent black posteroventral bristle. Wing with anal crossvein quite straight.

♂ *postabdomen.* Aedeagus with base of stipe not visible in types; preglans long and slender, slightly longer than glans; glans elongate-cylindrical; filaments very short, stout basally, rapidly tapering, each slightly more than half as long as glans.

Dimensions: total length 7.9–8.0 mm; length of thorax 3.0–3.3 mm; length of wing 7.9 mm; length of glans of aedeagus 0.60–0.65 mm.

Distribution: south-western Australia.

Holotype ♂: Nannup, 12 xi 1958 (CSIRO), I.F.C.

Other material examined: Yallingup, ix–x 1913 (paratype ♂, BM), R.E.T.

Comparative notes. This species is distinguished from others with spinescent posteroventral bristles on the fore femur by the more general fulvous yellow coloration of the thorax and abdomen; it is further distinguished from the related species *D. apicalis* and *D. longicauda* by the much shorter filaments of the aedeagus.

Duomyia spinifemorata Malloch

Duomyia spinifemorata Malloch, 1929: 508–509, figs 1a, 2a.

♂. *Coloration.* Head tawny; postfrons with a blackish mark on each side near vertex, in addition to a black ocellar spot; orbital margins of postfrons and parafacial with line of silvery pruinescence; lunule light brown or blackish; occiput blackish with whitish pruinescence, except on upper third. Antenna, including arista, tawny, some brown suffusion on segments 1 and 2. Prelabrum brown; palpus brown, paler apically. Thorax shining black, with greenish reflections on mesoscutum; greyish pubescence or pruinescence covering notopleural region, propleuron, upper posterior part of mesopleuron, upper posterior extremity of pteropleuron, pleurotergite, and most of hypopleuron, none on humeral callus or scutellum. Femora black to dark brown, narrowly fulvous at apices; tibiae dark brown; tarsi fulvous, four distal segments of fore tarsus and two distal segments of other tarsi brown. Wing clear; distal part of subcostal cell yellowish-brown; a diffuse pale brown apical cloud on costal margin and a very indistinct brown mark on anterior crossvein; squama white. Haltere yellowish. Abdomen black or brown-black with purplish reflections.

Head. Vertex rounded off, not carinate; postfrons almost smooth, nearly horizontal posteriorly, steeply sloping anteriorly; parafacial as wide as third antennal segment or almost so, with exceedingly minute, regular rugosity; facial carina broad and flat, sharply margined, almost smooth; height of cheek 0.41–0.45 of height of eye; ocellar bristle very minute;

fronto-orbital indistinguishable; cheek bristle black and quite distinct or pale and less conspicuous. Antenna extending about $\frac{2}{3}$ the distance from its basal insertion to epistomal margin; arista with well-developed hairs on basal half, of which the longer are slightly over half as long as width of third antennal segment. Prelabrum rather small; palpus of moderate width.

Thorax. Scutellum minutely roughened, without hairs; humeral bristle absent; prescutellar acrostichal present; three pairs of scutellars; pteropleural bristle not clearly differentiated. Fore femur with two series of rather short strong black dorsal bristles, and a series of seven to ten short black posteroventral spines, no posteroventral tooth; middle femur with a few black posterior bristles near apex; hind femur with series of black anterodorsal bristles. Wing with distal section of vein 4 almost straight and subparallel with vein 3 on basal half, on distal half strongly curved forward, ending very slightly in front of wing apex; anal crossvein curved; squama of moderate size.

Abdomen. Tergite 5 about three times as long as tergite 4.

Dimensions: total length 5.3–5.9 mm; length of thorax 2.2–2.3 mm; length of wing 3.8–4.1 mm.

Distribution: Northern Territory—vicinity of Darwin (= Palmerston).

Holotype ♂ (re-examined): Palmerston, xii 1908 (DEI), anon. but probably F.P.D., ex Lichtwardt collection.

Other material examined: Darwin, ii 1909 (2 ♂, BM), anon. but probably collected by F. P. Dodd who was at Darwin at that time and sent material to Brunetti and Lichtwardt.

Duomyia irregularis Malloch

Duomyia irregularis Malloch, 1929: 509–510, fig. 1b.

♂. Very similar to *D. spinifemorata* in most characters, differing principally as indicated below. ♀ unknown.

Coloration. Dark marks on each side of upper part of postfrons indistinct or absent; median area of postfrons suffused with tawny-brown. Antenna reddish brown with tawny arista. Palpus greyish brown. Humeral callus, posterior margin of mesoscutum, and dorsal surface of scutellum covered with light grey pruinescence; pruinescence on mesopleuron extending broadly to posteroventral corner; centre of upper margin of sternopleuron and anterior margin of pteropleuron also pruinescent. Fore tarsus entirely brown. Wing without apical cloud or mark on anterior crossvein. Abdomen with grey pruinescence covering segment 1.

Head. Parafacial wider than third antennal segment; height of cheek 0.50–0.60 of height of eye.

Thorax. Fore femur with a broad, rounded compressed posteroventral tooth at about one third of length from distal end, and immediately beyond it two or three rather small black posteroventral spines.

Dimensions: total length 5.6–5.9 mm; length of thorax 2.3 mm; length of wing 3.7–4.0 mm.

Distribution: Northern Territory—vicinity of Darwin (= Palmerston).

Holotype ♂ (re-examined): Palmerston, xii 1908 (DEI), anon.

Other material examined: Darwin, ii iii 1909 (2 ♂, BM), anon. As with *D. spinifemorata* it is probable that all known material was collected by F. P. Dodd.

Duomyia serra n. sp.

♂. Somewhat resembling *D. apicalis* and *D. lutea;* agreeing with description given for the former species except as indicated below. ♀ unknown.

Coloration. Postfrons with brown mark extending before and behind ocelli but without lateral brown marks. Third antennal segment fulvous. Thorax black with green reflections and all hairs whitish. Femora tawny, the fore and middle ones slightly, the hind one strongly suffused with brown on distal half; tibiae tawny-brown, slightly darker distally; all tarsi dark brown. Wing with distal part of subcostal cell tawny, otherwise unmarked. Abdomen black with greenish and coppery reflections.

Head. Parafacial broader than third antennal segment, smooth; facial carina with margins very sharply raised, surface with a few rather strong plications; height of cheek 0.43 of height of eye. Antenna slightly shorter than distance from its basal insertion to epistomal margin.

Thorax. Pteropleural bristle absent. Fore femur with about six rather short strong black posteroventral spines. Wing with distal section of vein 4 converging with vein 3 throughout, almost straight just beyond discal crossvein, rather strongly curved forward on distal half to end well in front of wing apex.

Abdomen. Tergite 4 without strong bristles; tergite 5 with moderately developed black bristles on posterior margin. ♂ postabdomen: stipe of aedeagus sclerotized and compressed (basal part not visible); preglans very long and slender, curved, slightly thickened distally, with membranous flange for most of its length; glans slender cylindrical, almost straight; filaments very short, about ⅔ as long as glans, fused for slightly more than half their length.

Dimensions: total length 9.5 mm; length of thorax 3.7 mm; length of wing 7.4 mm, length of glans of aedeagus 1.03 mm.

Distribution: Queensland—Cape York Peninsula.

Holotype ♂: Chester R., Silver Plains, Coen district, xii 1961 (CSIRO), J. L. Wassell.

Comparative notes. This may be distinguished from other species with bare scutellum and ventrally spinose fore femur by the bare arista and absence of a pteropleural bristle. The aedeagus, with long, attenuated preglans and very short filaments is also characteristic.

A specimen from Groote Eylandt, Northern Territory, (SAM) resembles this species, but differs in having the hairs of the pteropleuron thickened into strong black setulae and in having the legs almost entirely dark brown to black. The aedeagus closely resembles that of the present species. More material is needed to decide the status of this form.

Duomyia umbrosa n. sp.

♂ ♀. Similar to *D. octoseta* in most characters; agreeing with description given for that species except as indicated below.

Coloration. Postfrons light tawny; no brown blotch on upper end of parafacial. Third antennal segment light tawny. Femora entirely tawny; tibiae brownish apically; fore tarsus with only the apical segment brown. Wing with brown distal area as in *D. octoseta* which is intensified in costal region and, in addition, extended basally to fill marginal and submarginal cells, and extended over vein 3 to form a blotch surrounding anterior crossvein; base and anterior margin of first basal cell also with light yellow-brown suffusion. Abdomen tawny.

Head. Parafacial about as wide as third antennal segment; facial carina well defined but its margins not very sharp; height of cheek 0.30–0.37 of height of eye; fronto-orbitals even more developed than in *D. octoseta.* Antenna about $\frac{2}{3}$ to $\frac{3}{4}$ as long as distance from its basal insertion to epistomal margin; arista with a few very minute hairs near base.

Thorax. Three pairs of scutellar bristles only. Wing with distal section of vein 4 curved backwards immediately beyond discal crossvein, then becoming almost straight, curved forwards apically, ending very slightly behind wing apex.

Abdomen. Tergite 5 about twice as long as tergite 4 in ♂, about $1\frac{1}{2}$ times as long in ♀. ♂ postabdomen: aedeagus with slender stipe; preglans elongate but not as long as glans, without membranous flange; glans elongate cylindrical, slightly curved; bulb very short; filaments short, united for about half their length, abruptly bent near apices, each approximately 0.57 of length of glans.

Dimensions: total length, ♂ 8.9 mm; ♀ 8.6–9.0 mm; length of thorax, ♂ 3.5 mm, ♀ 3.6–3.8 mm; length of wing, ♂ 7.9 mm, ♀ 8.2–8.8 mm; length of glans of aedeagus 0.93 mm.

Distribution: Southern Queensland—Stradbroke Island.

Holotype ♀: Dunwich, North Stradbroke Island, 7 v 1966 (QM), R. Chamberlin.

Other material examined: Dunwich, North Stradbroke Island, iv 1965 (paratype ♂, CNC), G.M.; Stradbroke Island, v xii 1911–1912 (paratypes, 1 ♂, 1 ♀, in copula, UQ, 1 ♀, CSIRO), H.H., anon.

Comparative notes. The wing markings distinguish this species from related forms with pale mesoscutum.

Duomyia curta n. sp.

♂ ♀. Closely resembling *D. octoseta* in most characters, and agreeing with the description given below for that species, except as indicated.

Coloration. No dark blotch at upper end of parafacial. Mesoscutum entirely tawny. Fore tarsus with only two distal segments brown. Wing with distal brown area diffuse, not much intensified towards costal margin.

Head. Parafacial less than half as wide as third antennal segment, smooth; facial carina distinctly margined for only half the distance from antennal socket to epistomal margin in ♀, slightly longer in ♂. Antenna as long as distance from its basal insertion to centre of epistomal margin in ♀, slightly longer in ♂. Arista almost bare.

Thorax. Three or four pairs of scutellars. Distal section of vein 4 with slight sigmoid curvature.

Abdomen. Tergite 4 about $\frac{2}{3}$ as long as tergite 5. ♂ postabdomen: surstyli slender, free distal section of outer surstylus about twice as long as that of inner surstylus, with a prominence immediately beyond apex of latter, narrowly obtuse and slightly curved forwards at apex; aedeagus with preglans slender, curved, about as long as glans, with a narrow membranous wing extending the full length of anterior surface; glans cylindrical, slightly curved; bulb short, without membranous caeca; terminal filaments short, thickened basally, its length 0.61–0.66 of length of glans.

Dimensions: total length, ♂ 6.2–6.4 mm, ♀ 5.5–6.8 mm; length of thorax, ♂ 2.6–2.7 mm, ♀ 2.6–2.9 mm; length of wing, ♂ 5.5–5.6 mm, ♀ 5.7–6.7 mm; length of glans of aedeagus 0.58–0.59 mm.

Distribution: New South Wales—North Coast.

Holotype ♂: Iluka, Clarence R., 26 xi 1970 (AM), D.K.M.

Other material examined: Iluka, iii xi 1970 (paratypes, 2 ♂, 9 ♀, AM, 1 ♀, BM, 1 ♀, USNM), G.A.H., D.K.M.

Habitat: rain forest near sea. One pair taken in copula at mercury vapour lamp shortly after dark.

Comparative notes. This species is nearest *D. octoseta* from which it differs in the shorter facial carina, in having only the two apical segments of fore tarsus brown, and in the structure of the aedeagus. Among the other species of *Duomyia* with entirely light-coloured thorax and wing shaded distally, it may be distinguished from *D. umbrosa* by the less developed wing markings, and from *D. scipio* by the less slender antenna and well developed fronto-orbitals.

Duomyia octoseta n. sp.

♂ ♀. *Coloration.* Head fulvous; postfrons largely rust-coloured; a brownish blotch at upper end of parafacial; occiput scarcely darkened. Antenna tawny; third segment somewhat darker; arista dark brown or blackish beyond base. Prelabrum and palpus tawny. Thorax tawny; mesoscutum more rusty brown, especially towards centre; pleural hairs mostly yellowish, a few black ones on mesopleuron and some black hairs or setulae on pteropleuron. Legs tawny; femora usually slightly suffused with brown distally; fore and hind tibiae variably darkened apically; fore tarsus with three distal segments brown. Wing membrane strongly tinged with yellow, distal third including distal extremity of discal cell brown, intensely so near costal margin, becoming much paler behind vein 3; squama creamy. Haltere creamy with light brown capitellum. Abdomen tawny brown to brown black; distal half of tergite 5 yellow.

Head. Postfrons almost smooth; parafacial narrower than third antennal segment, nearly smooth, slightly pitted at junction with postfrons; facial carina well-developed, extending well below middle of face, rather sharply margined above, flat-topped, surface finely rugose, without major corrugations; height of cheek 0.22–0.28 of height of eye; ocellar and two pairs of fronto-orbital bristles well-developed but slender; cheek bristle strong. Antenna as long as distance from its basal insertion to epistomal margin; segment 3 elongate but not attenuated, obtusely rounded at apex; arista with a number of minute hairs just beyond base, each shorter than basal diameter of arista. Prelabrum rather small; palpus of moderate width.

Thorax. Scutellum bare; humeral and prescutellar acrostichal bristles present; usually four pairs of well-developed scutellars, rarely three pairs; no well-developed pteropleural bristle. Femora moderately stout; fore femur with double series of black dorsal bristles and a series of long fine yellowish posteroventral bristles; middle femur with strong black posterior bristles distally; hind femur with series of black dorsal bristles. Wing with distal section of vein 4 gradually curving forward from a short distance beyond junction with discal crossvein, ending at wing apex; anal crossvein almost straight; squama moderately large.

Abdomen. Tergite 5 about twice as long as tergite 4. ♂ postabdomen: aedeagus with stipe well sclerotized, somewhat broadened and compressed; preglans elongate and slender with a broad membranous flange extending its entire length; glans much stouter, strongly curved; bulb well-developed, with one long and one short membranous caecum; filaments slightly longer than glans.

Dimensions: total length, ♂ 5.1–9.9 mm, ♀ 5.2–9.2 mm; length of thorax, ♂ 1.9–3.9 mm, ♀ 2.2–4.0 mm; length of wing, ♂ 4.5–8.4 mm, ♀ 5.5–8.9 mm; length of glans of aedeagus 0.56–0.93 mm.

Distribution: Queensland—South Coast; New South Wales—North Coast.

Holotype ♂: Iluka, Clarence R., New South Wales, 22 ii 1965 (AM), R.L. and D.K.M.

Other material examined. New South Wales: Brunswick Heads, i 1961 (paratype ♀, CSIRO), K.R.N.; Iluka, Clarence R., iii xi 1970 (paratypes, 3 ♂, 4 ♀, AM, 1 ♀, BM), G.A.H., D.K.M. Queensland: Dunwich, North Stradbroke Island, iv v 1964–1965 (paratypes, 1 ♂, UQ, 1 ♂, 1 ♀, CNC), T. Weir, G.M.

Habitat: holotype taken in rain forest near sea.

Comparative notes. This is distinguished from other species with tawny mesoscutum, except *D. scipio* and *D. curta* by the distinct distal cloud on the wing which does not extend to anterior crossvein. From the former species it is distinguished by the distinct ocellar bristles, short-haired arista, and less elongate third antennal segment. For comparison with *D. curta* see under that species.

Duomyia scipio n. sp.

♀. Very similar to *D. octoseta* but apparently a distinct species in view of the differences noted below. ♂ unknown.

Coloration. Fore tarsus entirely light fulvous. Discal crossvein outlined in light brown, instead of standing in a light brown field as in *D. octoseta.*

Head. Postfrons with slight median hump in front of ocelli; parafacial much wider than antenna; facial carina strongly convex in centre; height of cheek 0.32 of height of eye; ocellar bristle indistinguishable; fronto-orbital weak and not much differentiated from the surrounding hairs. Antenna slightly longer than distance from its basal insertion to epistomal margin; third segment very attenuated, length 7.7 times width near middle; arista quite bare.

Thorax. Scutellum with four pairs of bristles.

Dimensions: total length 12.5 mm; length of thorax 4.7 mm; length of wing 9.8 mm.

Distribution: Queensland—South Coast.

Holotype ♀: Noosa, ii 1960 (QM), "H.G.G.".

Habitat: in "woods".

Comparative notes. This species has the third antennal segment more elongate than in any other species with entirely pale mesoscutum.

Duomyia sp. 1

Some ♀ specimens resembling *D. testacea* and *D. aurantiaca* are of doubtful status, and may represent variants of either of these species or one or two additional species. The two specimens do not agree very well with one another in detail but may be run to sp. 1 in the key.

Distribution: New South Wales—coast districts.

Material examined: Taree, x 1929 (1 ♀, CSIRO), J. L. Wassell; Broulee, 7 miles NE of Moruya, iv 1966 (1 ♀, CSIRO), M.S.U.

Duomyia aurantiaca n. sp.

♂ ♀. Very similar to *D. testacea* in most characters and agreeing with the description given for that species except as indicated below.

Coloration. Face creamy-fulvous on carina, gradually becoming light tawny towards epistomal margin, but not distinctly bicoloured. Antenna with third segment brownish-tawny. Prelabrum and palpus light tawny. Sternopleuron not darkened, with all hairs yellowish. Legs tawny; each femur with a small brown ventral mark; tibiae each with preapical brown mark; tarsi with apical segment brown. Wing with very indistinct brownish apical cloud; squama creamy.

Head. Parafacial much less than half as wide as third antennal segment; facial carina extending below middle of face; antennal grooves broad and deep, extending below level of centre of epistomal margin; height of cheek 0.18 of height of eye; ocellar and two pairs of fronto-orbital bristles well-developed but slender. Antenna in ♂ distinctly longer than distance from its basal insertion to epistomal margin, in ♀ almost as long as that distance; arista with very minute hairs near base.

Thorax. No additional black bristles near the prescutellar acrostichals and dorsocentrals; three or four pairs of scutellars. Wing with distal section of vein 4 slightly bent forward from discal crossvein, then running subparallel to vein 3 to near apex where it is curved forwards, ending distinctly behind wing apex; anal crossvein straight.

Abdomen. Tergite 5 about one and a half times as long as tergite 4 in ♂. ♂ postabdomen: outer surstylus more elongate than in *D. testacea*, with a prominent tubercle on posterior side near level of apex of inner surstylus, beyond which it is gradually narrowed and curved forwards; preglans elongate, somewhat curved, especially so near base, longer than glans, with a membranous flange extending for most of its length; glans rather stout; bulb short; length of filaments 0.85 of length of glans.

Dimensions: total length, ♂ 5.5 mm, ♀ 7.6 mm; length of thorax, ♂ 2.4 mm; ♀ 3.2 mm; length of wing, ♂ 5.0 mm, ♀ ———; length of glans of aedeagus 0.43 mm.

Distribution: New South Wales—far North Coast.

Holotype ♂: Brunswick Heads, 9 ii 1962 (CSIRO), D.E.H.

Other material examined: same data as holotype (paratype ♀, CSIRO).

Comparative notes. This is nearest to *D. testacea* from which it may be distinguished by the larger antenna, narrower cheek, and coloration of the face in the male.

Duomyia testacea (Macquart) n. comb.

Campigaster testacea Macquart, 1855: 122–123; Hendel, 1914a: 169.

♂ ♀. *Coloration.* Head orange-fulvous; a narrow line of pale pruinescence along orbital margins of postfrons and parafacial; no brown blotch at upper end of parafacial; face of ♂ sharply bicoloured, upper part pale fulvous, somewhat shining, lower part reddish-tawny, dull, thickly pruinescent; face of ♀ similar but the upper and lower sections not sharply differentiated and the colours less contrasted. Antenna tawny, third segment sometimes predominantly dark brown. Prelabrum and palpus tawny. Thorax orange-tawny; bristles black; hairs and setulae both black and yellowish, or almost entirely black; sternopleuron sometimes largely blackish. Legs almost entirely tawny, or variably darkened; femora and tibiae often brown or black; two or three distal segments of each tarsus usually brown. Wing strongly tinged with yellow, especially towards base, without darker markings; squama yellowish. Haltere fulvous. Abdomen fulvous or with tergites 2 and 3 variably browned.

Head. Postfrons almost smooth; parafacial almost smooth, narrower than third antennal segment in ♂, about as wide as that segment in ♀; facial carina well-defined only on upper half where it is flat, rather sharply margined, with fine vertical grooves, much narrowed between antennal bases; ocellar bristle small; fronto-orbitals very weak and variable; cheek bristle rather strong. Antenna slightly more than half as long as distance from its basal insertion to middle of epistomal margin, standing out a little more from face than usual because first segment is less deeply sunken; arista quite bare. Prelabrum moderately developed; palpus rather narrow.

Thorax. Scutellum without hairs; humeral and prescutellar acrostichal bristles present; several additional bristles in vicinity of dorsocentrals and acrostichals; scutellum with three or four pairs of bristles, in the latter case the basal pair often shorter than the others. Fore femur with two rows of black dorsal bristles, posteroventral bristles reduced to long fine pale hairs; middle femur with some black posterior bristles distally; hind femur with series of black dorsal bristles. Wing with distal section of vein 4 slightly converging with vein 3, slightly curving forward, principally on distal half, ending at wing apex; anal crossvein curved; squama rather large.

Abdomen. Tergite 5 twice as long as tergite 4 in ♂, somewhat less than twice as long in ♀. ♂ postabdomen: outer surstylus stout, its distal section short and broad, sheathing apex of inner surstylus; preglans weakly sclerotized, without membranous flange, slightly more than half as long as glans; glans cylindrical, rather short, almost straight; bulb membranous, rather short; filaments about 1.3 times as long as glans.

Dimensions: total length, ♂ 3.9–7.9 mm, ♀ 6.4–8.8 mm; length of thorax, ♂ 1.6–3.8 mm, ♀ 2.9–4.4 mm; length of wing, ♂ 4.0–7.7 mm, ♀ 6.9–9.1 mm; length of glans of aedeagus 0.55 mm.

Distribution: Southern New South Wales and Victoria—sea coast.

Holotype ♂ (re-examined): "De la nouvelle Hollande" (Macquart), "Austral." on label (not original), no date (OXN), anon.

Other material examined. New South Wales: Durras, near Bateman's Bay, xi 1953 (1 ♀, CSIRO), S.J.P.; Bateman's Bay, i 1963 (1 ♀, CSIRO), I.F.C. and M.S.U.; Broulee, S of Bateman's Bay, i xii 1935–1962 (1 ♂, 1 ♀, CSIRO), I.M.M., M.S.U.; Narooma, xi 1930 (1 ♂, CSIRO), A.L.T. Victoria: 17 miles NW of Orbost, xii 1956 (1 ♂, CSIRO), E.F.R.; Seaford, Port Phillip Bay, v 1921 (?) (2 ♀, NMV, 1 ♀, AM), W. F. Hill.

This species shows greater colour variation than is usual in the genus, and the limits of variation will only be understood when much more material is studied. A ♀ from North Beach, Bellinger R., N.S.W. (AM), resembles this species in colour and structure of face, but has longer antennae, minute hairs on arista, and very narrow parafacial, characters which are more suggestive of *D. aurantiaca.*

Duomyia dete n. sp.

♂. A very slender insect somewhat resembling *D. testacea* and *D. octoseta* but perhaps more closely related to *D. longicauda* and *D. lutea;* agreeing with description given for *D. testacea* except as indicated below.

General coloration fulvous, without dark markings, except for the black ocellar spot. Major bristles of head and thorax black. Wing lightly suffused with yellowish brown distally.

Abdomen. Tergites 4 and 5 without strong bristles. ♂ postabdomen: outer surstylus moderately broad, its distal section at first narrowed, then expanded with a prominence on posterior side just beyond apex of inner surstylus; stipe of aedeagus broad and compressed distally; preglans very short, not much longer than wide, but well defined and sclerotized; glans short, ovoid; bulb very short; filaments very long, about thirteen times as long as glans.

Dimensions: total length 6.5 mm; length of thorax 2.4 mm; length of wing 5.6 mm; length of glans of aedeagus 0.37 mm.

Distribution: south-western Australia.

Holotype ♂: Deep Dene, near Karridale, iii 1964 (CSIRO), L. M. O'Halloran.

Comparative notes. This species appears to be closely related to *D. apicalis* and *D. lutea*, from which it may be distinguished by the absence of spinescent posteroventral bristles on the fore femur and by the exceedingly long filaments of the aedeagus. It is also related to *D. dete* from which it differs in the preponderantly black mesoscutum and characters of the aedeagus.

Duomyia capnodes n. sp.

♂ ♀. Resembling *D. ustulata* and agreeing with the description given for that species except as indicated below.

Coloration. Postfrons tawny-brown, darkest anteriorly. Mesoscutum smoother between the hair sockets than in *D. ustulata*, the reflections less distinctly greenish; scutellum entirely tawny; pleura reddish brown to tawny with white hairs and pruinescence; lower part of sternopleuron shining dark brown, without pruinescence. All femora with well-developed dark brown preapical areas; tibiae extensively suffused with brown, the fore one almost entirely dark brown except at base; fore tarsus dark brown, with base of each segment fulvous; other tarsi fulvous with light brown suffusions. Wing with distal part of subcostal cell pale yellowish; apical cloud very diffuse, rarely almost indistinguishable; squama without distinct brown mark. Abdomen shining black with coppery-tinted reflections; tergite 1 sometimes tawny.

Head much less angular in profile than in *D. ustulata;* parafacial narrower than in *D. ustulata*, without oblique carina; cheek not rugose, its height 0.31–0.44 of that of eye. Third antennal segment of ♂ broader than in *D. ustulata*, antenna of ♀ shorter, extending about three-quarters of distance from its basal insertion to centre of epistomal margin.

Thorax. Prescutellar acrostichal bristle present; three pairs of scutellars. Femora usually with white bristles only. Distal section of vein 4 with slight sigmoid curvature, usually subparallel with vein 3, except at distal end where it terminates distinctly behind wing apex.

Abdomen. Tergite 4 a little over half as long as tergite 5. ♂ postabdomen: surstyli more slender than in *D. ustulata*, the free distal section of outer surstylus smaller; preglans short and stout; glans very stoutly cylindrical; bulb moderately developed but without membranous caeca; terminal filaments about five times as long as glans, slightly swollen basally but not pubescent.

Dimensions: total length, ♂ 6.0–7.4 mm, ♀ 6.8–8.2 mm; length of thorax, ♂ 2.4–3.3 mm, ♀ 2.7–3.5 mm; length of wing, ♂ 5.3–7.4 mm, ♀ 6.5–7.6 mm; length of glans of aedeagus 0.50–0.52 mm.

Distribution: south-western Australia.

Holotype ♂: Cape Naturaliste, 2 iv 1968 (CSIRO), I.F.C. and M.S.U.

Other material examined: same data as holotype (paratypes, 2 ♂, CSIRO, 1 ♂, AM); Yanchep National Park, 5 miles N of Yanchep, iv 1968 (paratype ♂, CSIRO), I.F.C. and M.S.U.; Mount Claremont, near Perth, iv 1968 (paratype ♂, CSIRO), I.F.C. and M.S.U.; 4 miles W of Margaret R., iv 1968 (paratypes, 1 ♂, 1 ♀, CSIRO, 1 ♀, AM), I.F.C. and M.S.U.; 5 miles N of Nannup, iv 1968 (paratype ♂, CSIRO), I.F.C. and M.S.U.; 5 miles NW of Augusta, iv 1968 (paratype ♀, CSIRO), I.F.C. and M.S.U.

Comparative notes. This species is to some extent intermediate between *D. ustulata* and *D. longicauda.* It differs from the first in the absence of an oblique parafacial carina, the smoother mesoscutum without the characteristic silky appearance of *D. ustulata,* and the entirely tawny scutellum. It differs from *D. longicauda* in the structure of the facial carina and paler abdomen. The structure of the aedeagus further differentiates it from both these species.

Duomyia ustulata n. sp.

♀. *Coloration.* Head fulvous; upper part of occiput with a blackish area on each side which is somewhat obscured by grey pruinescence. Antenna with segments 1 and 2 tawny, segment 3 grey-brown; arista tawny at base, brown beyond. Palpus tawny with dark brown or blackish apex. Mesoscutum black with finely broken green reflections, becoming reddish-brown towards lateral margins, with short whitish hairs; scutellum black on dorsal surface, usually reddish-brown on margins; pleura reddish-brown, mesopleuron often with large central greenish-black suffusion; lower part of sternopleuron extensively blackened; all pleural hairs white. Legs tawny with hairs and most bristles whitish; femora with preapical brown suffusions; tibiae with some irregular brown markings; fore tarsus brown, fulvous at base of first segment. Wing almost clear; distal part of subcostal cell yellowish-brown; a diffuse brown apical cloud extending into marginal cell anteriorly; anterior crossvein surrounded by a small brown cloud; discal crossvein very faintly or not at all clouded; squama white, with a brown marginal mark near inner posterior angle. Haltere tawny with brown capitellum. Abdomen black with broken greenish reflections; segment 1 and part of segment 2 reddish-brown, in ♂ part of tergite 5 also reddish-brown; grey pruinescence confined to lateral parts of segments 1 and 2.

Head. Postfrons gradually and evenly descending anteriorly to form approximately a right angle with face in profile, almost smooth; parafacial divided by an oblique carina from near antennal base to just below centre of lower margin of eye, fully twice as wide as antennal groove in larger ♀♀, narrower in ♂♂ and smaller ♀♀; facial carina moderately broad, flat, well-defined, but not very elevated, and not very sharply margined, with median groove; cheek rugose; height of cheek 0.36–0.47 of height of eye; fronto-orbital and cheek bristles absent; ocellar very minute or absent. Antenna slightly longer than distance from its basal insertion to centre of epistomal margin in ♂, very slightly shorter than that distance in ♀; third segment rather slender, obtuse at apex; arista bare. Prelabrum much reduced; palpus rather short and narrow.

Thorax. Scutellum minutely sculptured, without hairs; humeral bristle present; prescutellar acrostichal present or absent; usually three pairs of scutellars, four on one side, three on other in holotype. Femora rather stout, especially the fore one; fore femur with two series of pale yellowish dorsal bristles and a single series of longer pale posteroventral bristles; middle femur with series of posterior bristles on distal half, of which two or three distal ones are black; hind femur with series of pale anterodorsal bristles which do not extend to apex. Wing with distal section of vein 4 very slightly converging with vein 3 for most of length, curved forward apically to end at wing apex; anal crossvein somewhat curved; squama rather broad.

Abdomen. Tergite 5 subequal in length to tergites 3 and 4 together in ♂, somewhat shorter in ♀. ♂ postabdomen: outer surstylus moderately stout, its free distal section short with rounded apex; aedeagus with well-sclerotized cylindrical preglans; glans stoutly cylindrical, slightly curved; bulb very short, apparently without membranous caeca; terminal filaments about four times as long as glans, without membranous margins, not much tapering distally, their bases broadly swollen and densely pubescent.

Dimensions: total length, ♂ 6.1–8.4 mm, ♀ 4.6–10.0 mm; length of thorax, ♂ 2.0–3.2 mm, ♀ 2.0–4.4 mm; length of wing, ♂ 4.8–7.1 mm, ♀ 5.5–8.9 mm; length of glans of aedeagus 0.49–0.53 mm.

Distribution: Southwestern Australia.

Holotype ♀: Crawley, near Perth, iv 1935 (CSIRO), K.R.N.

Other material examined: 19 miles W of Watheroo, iv 1968 (paratypes, 2 ♂, CSIRO), I.F.C. and M.S.U.; 24 miles W of Moora, iv 1968 (paratypes 2 ♂, CSIRO), I.F.C. and M.S.U.; 18 miles W of Mogumber, iv 1968 (paratype ♂, CSIRO), I.F.C. and M.S.U.; 5 miles N of Nannup, iv 1968 (paratypes, 4 ♂, 1 ♀, CSIRO, 1 ♂, 1 ♀, AM), I.F.C. and M.S.U.; 4 miles W of Margaret R., iv 1968 (paratype ♀, CSIRO), I.F.C. and M.S.U.

Comparative notes. In addition to the characters given in the key, the smooth, pale postfrons, apical wing cloud, and fine, close sculpturing of the mesoscutum and scutellum, which gives a silky appearance, aid in distinguishing this from related species.

Duomyia brevicornis n. sp.

♀. Somewhat similar to *D. ustulata* and agreeing with description given for that species except as indicated below. ♂ unknown.

Coloration. Postfrons dark brown, sometimes becoming reddish-brown posteriorly. Scutellum black, tawny at apex in paratype, almost all of sternopleuron black; some fine black hairs on posterior part of mesopleuron in paratype only, and one or more black hairs or setulae on pteropleuron. Fore femur dark brown to black, tawny at apex; other femora with more extensive tawny suffusions; tibiae tawny with small brown preapical marking, fore tibia with brown mark before middle also; tarsi tawny, slightly brownish apically. Wing with distal part of subcostal cell yellow; anterior crossvein with faint yellow suffusion; discal crossvein not clouded.

Head. Postfrons forming an obtuse angle with face in profile; parafacial about as wide as third antennal segment and no wider than antennal groove, without oblique carina; facial carina similar to that of *D. ustulata* but flatter and a little less strongly margined, almost smooth, without median groove; height of cheek 0.35–0.43 of height of eye; ocellar bristle short but distinct; two distinct but small fronto-orbitals, posterior one curved backwards, anterior one curved inwards; cheek bristle present. Antenna approximately half as long as distance from its basal insertion to epistomal margin; third segment not slender; arista with very minute basal hairs. Palpus larger than in *D. ustulata.*

Thorax. Prescutellar acrostichal bristle present; three pairs of scutellars. Fore femur with some black dorsal bristles; the pale ventral bristles longer and finer than in *D. ustulata;* middle femur with well-developed black posterior bristles distally; hind femur with finer pale anterodorsal bristles. Wing with anal crossvein only curved at anterior end.

Abdomen. Tergite 5 slightly more than twice as long as tergite 4.

Dimensions: total length 10.0–10.4 mm; length of thorax 3.9–4.0 mm; length of wing 7.8–8.5 mm.

Distribution: New South Wales—Sydney district.

Holotype: ♀ Flat Rock Crossing, Royal National Park, 28 xii 1970 (AM), D.K.M.

Other material examined: Gundamaian, Royal National Park, i 1926 (paratype ♀, CSIRO), A. J. Nicholson.

Habitat: holotype taken in dry sclerophyll forest near stream, at mercury vapour lamp.

Comparative notes. Differs from other species of the genus with preponderantly black thorax in the extremely short antenna. It may be most closely related to *D. picta*, which may prove to have the antenna equally short in the ♀, but that species has paler palpi and scutellum. There is a strong superficial resemblance to *D. ustulata*, which has an oblique ridge on the parafacial and a median groove on the facial carina, among other character differences, and may not be closely related.

Duomyia angustata n. sp.

(Fig. 42)

♂. *Coloration.* Postfrons brown with tawny markings posteriorly, with long black hairs posteriorly and finer white ones anteriorly; parafacial and cheek fulvous; face cream, upper half of occiput black with silvery pruinescence, tawny towards centre of vertex. Antenna tawny, with third segment mostly brownish; arista dark brown. Prelabrum dark brown to fulvous; palpus black. Thorax black with reflections green or slightly coppery; pleural hairs nearly all pale, a few black setulae on posterior margin of mesopleuron and on pteropleuron. Femora black; tibiae tawny; fore tibia with variable brown suffusion on posterior surface; tarsi tawny, becoming brownish distally. Wing almost clear; distal part of subcostal cell yellowish; anterior crossvein faintly suffused with brown; squama white. Haltere brown. Abdomen black with green or slightly coppery reflections; tergites 1 and 2 and sides of tergites 3 and 4 with numerous long white hairs, hairs elsewhere black.

Head. Postfrons almost smooth, indistinctly pitted anterolaterally; parafacial about as wide as third antennal segment; facial carina strongly elevated, with sharp, raised margins throughout, very broad below, narrowing above to become almost linear from a short distance below antennal sockets, surface irregularly rugose, convex in centre; epistomal margin of face deeply sinuate in centre; height of cheek 0.40–0.44 of height of eye; ocellar bristle well-developed; one or two reclinate fronto-orbitals and an anterior incurved one; cheek bristle well-developed. Antenna longer than distance from basal insertion to centre of epistomal margin; third segment rounded at apex; arista slightly stouter than usual, compressed beyond base, with numerous very minute hairs on swollen basal region. Prelabrum much reduced; palpus broad.

Thorax. Mesoscutum with rather long hairs and setulae; scutellum bare, its surface minutely roughened; humeral bristle present; several long prescutellar bristles or setulae in addition to dorsocentral and acrostichal; three pairs of scutellars. Fore femur with irregularly arranged black dorsal bristles and longer, finer posteroventral black bristles mixed with equally long pale hairs; middle femur with black posterior bristles distally and white posterior hairs; hind femur with black anterdorsal bristles and long white hairs on anterior and ventral surfaces. Wing with distal section of vein 4 bent forwards from discal crossvein, then slightly converging with vein 3, curved forward apically to end a little in front of wing apex; anal crossvein curved for a short distance anteriorly, then almost straight; squama somewhat narrowed beyond base.

Abdomen. Tergite 5 about three and a half to four times as long as tergite 4. ♂ postabdomen: aedeagus with stipe rather broad and compressed; preglans very short, scarcely longer than wide, well-defined and sclerotized, without flange; glans rather short, cylindrical, very slightly curved; bulb exceptionally long, tightly spirally coiled in about

five whorls, fully as long as glans without uncoiling; filaments exceedingly long, about eighteen times the length of glans, coiled like a watch spring.

Dimensions: total length 6.6–7.0 mm; length of thorax 2.8–3.0 mm; length of wing 5.4–5.7 mm; length of glans of aedeagus 0.55–0.56 mm.

Distribution: Western Australia—Geraldton district to Perth district.

Holotype ♂: Fremantle, 23 vii 1934 (CSIRO), K.R.N.

Other material examined: Dongara, S of Geraldton, viii 1935 (paratype ♂, BM), R.E.T.

Comparative notes. The aedeagus, with elongate, spirally twisted bulb, is unlike that of any other species examined except *D. iris* which it closely resembles. Though undoubtedly closely related, *D. angustata* differs from *D. iris* in the smooth postfrons, presence of some black cheek hairs, broader palpus, more numerous black bristles on fore femur, and paler tibiae.

Duomyia lonchaeina n. sp.

(Fig. 41)

♂. Somewhat similar to *D. angustata* in many characters; agreeing with description given for that species except as indicated below.

Coloration. Face bright fulvous yellow. Third antennal segment orange, brownish on anterior margin and at apex. Prelabrum tawny; palpus dark brown. Thoracic pleura with all hairs white, no black hairs or setulae. Tibiae and tarsi black to dark brown. Wing strongly stained with yellow, especially on basal half; squama cream.

Head. Parafacial slightly narrower than third antennal segment; facial carina less broad below than in *D. angustata*, with margins less strongly raised, surface almost smooth, convex; height of cheek 0.33–0.38 of height of eye.

Thorax. Hairs on mesoscutum and pleura shorter than in *D. angustata;* scutellum smooth and shining; three or four pairs of scutellars. Fore femur with all posteroventral bristles pale; all femora with pale hairs shorter and less conspicuous than in *D. angustata.* Wing with distal section of vein 4 in its mid-region subparallel with vein 3, ending at or slightly behind wing apex.

Abdomen. Tergite 5 slightly more than twice as long as tergite 4. ♂ postabdomen: preglans elongate but shorter than glans, with a short membranous lobe near distal end; glans somewhat elongate and curved; bulb very short; filaments very short, with small basal swelling, narrowed on distal third, each half as long as glans.

Dimensions: total length 7.4–7.6 mm; length of thorax 3.3 mm; length of wing 7.0–7.2 mm; length of glans of aedeagus 0.88–0.90 mm.

Distribution: south-western Australia.

Holotype ♂; Cannington, near Perth, 14 x 1934 (CSIRO), K.R.N.

Other material examined: Walpole, Frankland R. district, xi 1958 (paratype ♂, CSIRO), I.F.C.

Comparative notes. In the smooth scutellum and strong yellow tinge of the wing this species resembles *D. azurea*, but differs in the smooth postfrons. Otherwise it closely resembles *D. angustata* but differs in the smooth scutellum and very different aedeagus.

Duomyia capitalis new sp.

♂ ♀. *Coloration.* Head dull fulvous; postfrons dark brown to blackish, with white pruinescence along orbital margin; parafacial brownish along anterior margin; upper part of occiput blackish with grey pruinescence. Antenna brown; segment 3 blackish brown beyond insertion of arista; arista black beyond base. Prelabrum brown; palpus black, brown at base. Thorax black, with all hairs pale, major bristles black; sides of mesoscutum, propleuron, upper part of mesopleuron, pteropleuron, pleurotergite, most of hypopleuron with grey pubescence or pruinescence. Legs black, knees and extreme bases of middle and hind tarsi narrowly yellowish brown. Wings clear; distal part of subcostal cell brown; squama cream. Haltere light brown basally with dark brown capitellum. Abdomen black.

Head. Postfrons descending slightly immediately in front of ocellar triangle, then becoming almost horizontal as far as antennal bases, not pitted; parafacial as broad as third antennal segment in ♂, broader in ♀; antennal groove broad and deep, especially in ♂ where it reaches almost to epistomal margin; face in profile forming an acute angle with outline of postfrons, receding below; facial carina strongly elevated, flat-topped, smooth, very sharply margined at sides; height of cheek 0.57–0.69 of height of eye; cheek carina not prominent, rounded off. Antenna of ♂ about as long as distance from its basal insertion to lowest extremity of cheek; segment 3 much enlarged, with rounded apex; antenna of ♀ reaching only to middle of epistomal margin of face, with segment 3 shorter and narrower; arista bare. Prelabrum vestigial; palpus moderately short.

Thorax with rather long fine hairs on much of surface, those on mesoscutum shorter in ♀; scutellum bare; bristles rather fine; humeral absent; three to five pairs of scutellars. Fore femur with a few weak black dorsal bristles distally; femora ventrally with rather long hairs but no bristles. Wing with vein 4 slightly dipped into discal cell before anterior crossvein; distal section of vein 4 curved basally, then subparallel with vein 3 for most of its length; squama moderately developed; suprasquamal ridge with a few fine hairs.

Abdomen. Tergite 5 about one and a half times as long as tergite 4.

Dimensions: total length, ♂ 4.2–7.3 mm, ♀ 4.4–7.6 mm; length of thorax, ♂ 1.6–2.7 mm, ♀ 1.7–2.7 mm; length of wing, ♂ 3.9–5.8 mm, ♀ 4.5–6.5 mm.

Distribution: Australian Capital Territory.

Holotype ♂: Black Mountain, Canberra, 24 iii 1966 (CSIRO), I.F.C.

Other material examined: Black Mountain, Canberra, ii iii iv 1955–1968 (paratypes, 40 ♂, 17 ♀, CSIRO, 2 ♂, 1 ♀, BM, 3 ♂, 1 ♀, AM, 2 ♂, 1 ♀, USNM), I.F.C., D.H.C.

Comparative notes. The angular outline of the head and very dark entenna, which is enlarged in the male, help to distinguish this from the most closely related species.

Duomyia picta n. sp.

♂. Similar to *D. rasa* in most characters; agreeing with description given for that species except as indicated below. ♀ unknown.

Coloration. Head fulvous; postfrons dark brown with orbital margins, vertex, and area immediately surrounding ocellar triangle orange-fulvous; occiput with a large black area on each side of upper part. Mesoscutum black with part of lateral margins, including notopleural callus, tawny; scutellum orange-fulvous with a median dorsal blackish patch; postnotum brownish-black; pleura tawny with part of propleuron, sternopleuron except its upper margin, and parts of pleurotergite and hypopleuron black. Femora black, the fore one shining, the

others pruinescent; tibiae tawny with slight brown suffusion; tarsi tawny, with three distal segments of fore tarsus brownish. Wing markings much as in *D. rasa* but no distinct marks on crossveins; squama fulvous. Haltere fulvous. Abdomen with tergites 1 and 5 and sides of tergite 2 tawny; remainder of preabdominal tergites brown.

Head. Face only very slightly concave on lower part in profile, with a very broad, rather flat carina restricted to upper half, with a few weak plications; height of cheek 0.32–0.37 of height of eye; ocellar bristle small and weak; fronto-orbitals present but weak. Antenna slightly shorter than distance from its basal insertion to centre of epistomal margin; arista with only a few minute hairs basally. Prelabrum moderately developed.

Thorax. Scutellum broad, evenly rounded, almost smooth; pteropleuron with some black setulae and sometimes also a few on posterior margin of mesopleuron. Fore femur with some quite strong black dorsal bristles in two irregular series. Wing with distal section of vein 4 rather strongly converging with vein 3 throughout its length, ending at wing apex; anal crossvein rather strongly curved at anterior end; squama well developed.

Abdomen. Tergite 5 slightly less than twice as long as tergite 4. ♂ postabdomen: surstyli somewhat similar to those of *D. latipilus* but free apical section of outer surstylus larger, subtriangular, extending considerably beyond apex of inner surstylus; aedeagus: preglans strongly curved, with a broad longitudinal membranous wing, little more than half as long as glans, separated from stipe by a deep constriction; glans elongate cylindrical, curved; bulb elongate, without membranous caeca; terminal filaments unequal, with broad membranous margins except near apices where they are finely tapered, the longer filament nearly five times as long as glans.

Dimensions: total length 6.9–7.7 mm; length of thorax 2.7–2.9 mm, length of wing 5.9–6.5 mm; length of glans of aedeagus 0.73–0.79 mm.

Distribution: New South Wales—North Coast.

Holotype ♂: Iluka, Clarence R., 25 xi 1970 (AM) D.K.M.

Other material examined: Iluka, xi 1970 (paratype ♂, AM), D.K.M.

Habitat: edge of rain forest, taken at mercury vapour lamp.

Comparative notes. Closely related to *D. rasa* and *D. latipilus* but differing from both in the broad, flat facial carina which is only distinctly margined on upper part of face.

Duomyia rasa n. sp.

♀. *Coloration.* Head brownish-tawny; postfrons darker brown; a stripe of silvery pruinescence along orbital margins of postfrons and parafacial; occiput brown to black on upper part, with whitish pruinescence except for a broad upper marginal area. Antenna tawny; arista black beyond base. Prelabrum and palpus tawny. Mesoscutum almost entirely black including humeral callus (holotype), or black with broad reddish-brown margins including humeral callus (paratype); scutellum reddish-brown with variable black central area; pleura reddish-brown, propleuron and adjacent parts of mesopleuron and sternopleuron blackish in holotype, entirely reddish-brown in paratype. Legs fulvous; fore femur variably suffused with brown; fore tarsus variably browned distally, apical segment relatively pale in holotype, dark brown in paratype. Wing membrane faintly tinged with yellow-brown; distal part of subcostal cell brown; a broad brown apical cloud, darkest on but not confined to costal margin; slight brown suffusions on fork of veins 2 and 3, and basal and anal crossveins; broader brown marks on anterior and discal crossveins, that on the latter more or less separate from apical cloud in holotype, confluent with it in paratype; squama creamy white. Haltere tawny. Abdomen black or reddish brown.

Head. Vertex not sharply carinate; postfrons steeply sloping, smooth, with moderately fine pale hairs; parafacial narrower than third antennal segment; face concave in profile, with epistomal margin prominent, not sinuate in centre; facial carina almost completely obsolete but defined by the moderately developed antennal grooves; height of cheek 0.25–0.37 of height of eye; ocellar bristle present, rather small; fronto-orbitals not well-differentiated from surrounding hairs; cheek bristle present. Antenna as long as distance from its basal insertion to epistomal margin or almost so; third segment moderately elongate; arista with numerous hairs on basal third, many of which are a little longer than basal diameter of arista. Prelabrum rather well developed; palpus moderately elongate.

Thorax. Scutellum short and broad, with posterior margin more transverse than usual, dorsal surface finely sculptured, without hairs; pleura with pale hairs only, no black setulae or bristles; humeral and prescutellar acrostichal bristles present; three pairs of scutellars, the basal pair shorter. Fore femur with rather fine black dorsal bristles and longer yellow posteroventral bristles; middle femur with a few long fine black posterior bristles distally; hind femur with black anterodorsal bristles also finer than usual. Wing with distal section of vein 4 only slightly converging with vein 3 through most of its length, slightly more curved forward apically, ending at wing apex; anal crossvein slightly curved at anterior end, otherwise almost straight; squama smaller than usual for genus.

Abdomen. Tergite 5 about twice as long as tergite 4.

Dimensions: total length 6.4–7.6 mm; length of thorax 2.4–3.0 mm; length of wing 5.0–7.1 mm.

Distribution: Queensland—Atherton Tableland.

Holotype ♀: Kuranda, 11 i 1967 (AM), G.A.H. and D.K.M.

Other material examined: Millaa Millaa Falls, near Millaa Millaa, xii 1966 (paratype ♀, UQ), B. Cantrell.

Comparative notes. The broad apical wing cloud and normal, fine postfrontal hairs distinguish this from other forms with smooth postfrons and obsolete facial carina.

Duomyia latipilus n. sp.

♂. Similar to *D. rasa* in most characters; agreeing with description given for that species except as indicated below. ♀ unknown.

Coloration. Postfrons brown-black, becoming reddish-brown near vertex; parafacial, face, and cheeks pale ochraceous; antennal grooves and upper half of face with glistening cream pruinescence; upper part of occiput black on each side, tawny in centre. Third antennal segment variably suffused with brown. Thorax black; posterior part of mesopleuron, pteropleuron, and pleurotergite sometimes reddish brown. Fore femur black with tawny apex, other femora blackish-brown with tawny apices and more broadly tawny bases; tibiae tawny with brown preapical marks, best-developed on hind tibia; tarsi tawny, fore tarsus with three distal segments dark brown. Wing with dark brown costal band from end of subcosta to apex, expanding distally to fill apical fifth of wing, becoming much paler behind vein 4; basal and anal crossveins not clouded; anterior and discal crossveins not distinctly clouded. Abdomen dark brown to black; tergite 1 paler brown.

Head. Postfrons rather flat, less steeply sloping than in *D. rasa*, with conspicuously broadened, compressed, curved white hairs; face as in *D. rasa* but flatter, less concave in profile, with epistomal margin not prominent and antennal grooves shallow; height of cheek 0.29–0.36 of height of eye; ocellar bristle pale, small and fine or somewhat thickened; fronto-orbitals small and weak. Antenna about as long as distance from its basal insertion to centre of epistomal margin; arista bare or almost so. Prelabrum small.

Thorax. Scutellum a little narrower and more rounded in outline than in *D. rasa*, more finely sculptured; pteropleuron usually with one or more black setulae in addition to the pale hairs. Fore femur very stout, with broad low rounded postoventral tooth just beyond middle, dorsal bristles shorter than in *D. rasa;* middle femur with white posterior bristles only; hind femur with only a few black dorsal (or anterodorsal) bristles distally.

Abdomen. Tergite 5 slightly more than twice as long as tergite 4. ♂ postabdomen: surstyli rather short, the outer one exceeding the inner one by a short distance its apex rounded, not compressed; aedeagus with rather slender stipe; preglans well-defined, elongate, compressed, as long as glans, without membranous wings; glans subcylindrical, almost straight; bulb well-developed but not elongate, apparently without membranous caeca; filaments slender, without membranous margins, each slightly more than three times as long as glans, apices truncate and very slightly expanded.

Dimensions: total length 6.0–7.0 mm; length of thorax 2.2–2.7 mm; length of wing 4.9–5.9 mm; length of glans of aedeagus 0.46–0.47 mm.

Distribution: New South Wales—coastal districts.

Holotype ♂: Iluka, Clarence R., 25 xi 1970 (AM), D.K.M.

Other material examined: Iluka, xi 1970 (paratype ♂, AM), D.K.M.; Depot Beach. 10 miles N of Bateman's Bay, xii 1967 (paratype ♂, CSIRO), I.F.C.

Habitat: specimens from Iluka taken near edge of rain forest at mercury vapour lamp,

Comparative notes. This species differs from *D. rasa* in the conspicuously thickened hairs of the postfrons, and from *D. nigricosta*, *D. hebes*, and allied forms, in the smooth, flat postfrons.

Duomyia parallela n. sp.

♂ ♀. Very similar to *D. iris* in most characters; agreeing with description given for that species except as indicated below.

Coloration. Postfrons light reddish-brown, with moderately fine white hairs; upper occiput with white pruinescence restricted to four spots, a pair above occipital foramen and one on each side near eye margin. Prelabrum tawny; palpus dark brown. Thorax with green reflections less brilliant than in *D. iris;* mesoscutum with hairs almost all white. Fore tarsus brownish-tawny; other tarsi somewhat paler. Wing with distal part of subcostal cell only faintly yellowish. Abdomen shining but reflections not coloured.

Head. Face rather strongly convex in both sexes; height of cheek 0.31–0.35 of height of eye; ocellar and fronto-orbital bristles weaker than in *D. iris*, but still quite distinct. Prelabrum reduced; palpus short.

Thorax. Scutellum roughened on upper surface; prescutellar acrostichal bristle weak or not readily distinguishable from the surrounding long white hairs; three or five pairs of scutellar bristles. Fore femur with dorsal bristles mixed black and white, sometimes mostly white; middle and hind femora with all bristles white. Wing with distal section of vein 4 slightly bent forward from discal crossvein, subparallel with vein 3 for most of its length, slightly curved forward apically, ending slightly in front of apex; anal crossvein curved only at anterior end.

Abdomen. Tergite 5 slightly more than twice as long as tergite 4.

Dimensions: total length, ♂ 5.3–6.3 mm, ♀ 5.7 mm; length of thorax, ♂ 2.1–2.5 mm, ♀ 2.2 mm; length of wing, ♂ 3.9–4.3 mm, ♀ 4.2 mm; length of glans of aedeagus 0.37 mm.

Distribution: South Western Australia—further north than *D. iris.*

Holotype ♂: Dongara, ix–x 1935 (BM), R.E.T.

Other material examined: same data as holotype (paratypes, 2 ♂, 1 ♀, BM, 1 ♂, AM).

Comparative notes. This species may be distinguished from *D. azurea* by the dark brown palpus, from *D. adelaidae* by the paler tarsi, and from *D. iris* by the almost parallel-sided first posterior cell of the wing.

Duomyia adelaidae n. sp.

♂ ♀. Similar to *D. iris* in most characters; agreeing with description given for that species, except as indicated below.

Coloration. Postfrons with tawny markings posteriorly; face light fulvous. Antenna with third segment dark greyish-brown in ♂, in ♀ brown with tawny base; arista reddish-brown. Palpus dark brown. Thorax without coloured reflections. Legs entirely black, with all hairs and bristles pale. Abdomen without coloured reflections; some pale hairs on all tergites.

Head. Parafacial broad, slightly wider than third antennal segment in ♂, about twice as wide as that segment in ♀, with a variable number of spaced horizontal grooves; facial carina strongly convex, with variable irregular rugosity, margined at most on upper half, often less; height of cheek 0.40–0.55 of height of eye. Third antennal segment especially large and broadened in ♂, narrower and almost cylindrical in ♀. Prelabrum much reduced; palpus short, extending for only about half the distance from its basal attachment to anterior extremity of prelabrum.

Thorax. Fore femur with rather fine white dorsal bristles. Wing with distal section of vein 4 subparallel with vein 3 for most of its length, very slightly curved forwards apically, ending distinctly behind wing apex; anal crossvein curved only at anterior end or slightly dipped into anal cell.

Abdomen. Tergite 5 about one and a half times to twice as long as tergite 4. ♂ postabdomen: aedeagus with preglans short, simple; glans fusiform-cylindrical; bulb well-developed, with caeca reduced to a pair of tubercles; filaments very roughly five times as long as glans.

Dimensions: total length, ♂ 5.1–6.4 mm, ♀ 5.2–7.9 mm; length of thorax, ♂ 2.4–2.8 mm, ♀ 1.8–3.1 mm; length of wing, ♂ 5.0–5.5 mm, ♀ 4.3–6.3 mm; length of glans of aedeagus 0.61–0.67 mm.

Distribution: South Australia—Adelaide district.

Holotype ♂: National Park, near Adelaide, 21 x 1951 (CSIRO), E.F.R.

Other material examined: National Park, x 1951 (paratypes, 1 ♂, 1 ♀, CSIRO, 1 ♂, AM), E.F.R.; Mount Lofty, no date (paratypes, 2 ♂, SAM, 1 ♀, BM), J. G. O. Tepper; Tanunda, xi 1901 (paratype ♀, SAM), J. G. O. Tepper.

Comparative notes. This species is nearest *D. parallela* from which it differs in the darker tarsi. It differs from *D. azurea* in the much darker palpus and antenna and almost colourless wing membrane.

Duomyia iris n. sp.

♂ ♀. *Coloration.* Head fulvous; postfrons reddish-brown posteriorly, darker brown anteriorly, with coarse mostly white hairs; face cream; occiput black on upper part, tawny near vertex, with whitish pruinescence except on a broad upper marginal area. Antenna tawny; arista dark brown beyond base. Prelabrum fulvous in front, darker at sides; palpus black. Thorax black with strong green reflections; mesoscutum with mixed black and whitish hairs; pleura and humeral callus with long white hairs only. Legs black, the femora with green or coppery reflections; tarsi tawny, becoming brown distally. Wing with distal part of subcostal cell yellowish, otherwise clear; squama whitish. Haltere brown. Abdomen black with green or coppery reflections; tergites 1 and 2 with white hairs except on central part of posterior margin of tergite 2; white hairs also on lateral margins of tergites 3 and 4; elsewhere on tergites all hairs black.

Head. Postfrons steeply sloping anteriorly, not forming an angle with face in profile, its surface pitted, without median hump; parafacial about as wide as third antennal segment in ♂, much wider in ♀; facial carina elevated, rather broad below, with rather sharp margins, surface slightly rugose, slightly convex in ♂, strongly convex in ♀; height of cheek 0.33–0.41 of height of eye; ocellar, two pairs of fronto-orbitals, and cheek bristle all quite strongly developed. Antenna longer than distance from basal insertion to centre of epistomal margin in ♂, about as long as that distance in ♀; arista with very minute basal hairs. Prelabrum moderately small; palpus rather large but not much broadened.

Thorax. Scutellum almost smooth; humoral and prescutellar acrostichal bristles present, also some additional bristles or long setulae near the latter; three or four pairs of scutellars, in the latter case the basal pair somewhat shorter; pteropleural bristle absent. Fore femur with strong black dorsal bristles, posteroventral bristles whitish, long, almost hair-like; middle femur with some white posterior bristles on distal half, becoming stronger and black near apex; hind femur with white anterodorsal bristles near middle, and black more dorsally placed bristles distally. Wing with distal section of vein 4 slightly converging with vein 3 from junction with discal crossvein, strongly curved forwards apically to end slightly in front of wing apex; anal crossvein curved; squama rather long and narrow.

Abdomen. Tergite 5 almost twice as long as tergite 4.

Dimensions: total length, ♂ 5.3–7.1 mm, ♀ 5.2–8.7 mm; length of thorax, ♂ 2.1–3.0 mm, ♀ 2.2–3.4 mm; length of wing, ♂ 3.9–5.1 mm, ♀ 5.0–6.4 mm.

Distribution: south-western Australia.

Holotype ♂: Bunbury, i 1957 (AM), A. Snell.

Other material examined: Bunbury, i xii 1957–1958 (paratypes, 2 ♀, AM), A. Snell; Capel district, 18 miles S of Bunbury, i 1957 (paratypes, 2 ♀, AM), A. Snell; Yanchep, 32 miles N of Perth, xi xii 1935 (paratypes, 3 ♂, 2 ♀, BM), R.E.T.

Comparative notes. Somewhat related to *D. adelaidae* and *D. parallela*, this species differs from both in its pronounced metallic colouring and strong forward curvature of the distal section of vein 4. See also note under *D. angustata* (p. 107).

Duomyia acrogenea n. sp.

♂. Somewhat resembling *D. iris* and agreeing with the description given for that species except as indicated below. ♀ unknown.

Coloration. Face fulvous. Prelabrum and palpus fulvous. Reflections of thorax and abdomen slightly bronzy. Legs tawny; tarsi variably browned.

Head. Surface of postfrons rather weakly pitted and slightly rugose anteriorly towards sides; parafacial about as wide as or somewhat wider than third antennal segment; facial carina convex but not rugose, with narrow median groove; epistomal margin deeply sinuate; anterior angle of cheek markedly acutely produced, its lower margin steeply descending anteriorly; height of cheek 0.44–0.52 of height of eye; ocellar and fronto-orbital bristles weak, especially the former; cheek bristle little differentiated. Arista bare. Prelabrum weakly developed; proboscis elongate, cylindrical, with rather narrow labella.

Thorax. Scutellum minutely weakly sculptured, with three pairs of scutellar bristles. Wing with distal section of vein 4 subparallel with vein 3 except distally where it is rather strongly curved forward to end slightly behind wing apex.

Abdomen. ♂ postabdomen: surstyli moderately elongate, somewhat tapering, free distal section of inner surstylus very short, that of outer surstylus more elongate, nearly straight, tapering to the obtuse apex; aedeagus with preglans moderately slender, curved, a little over half as long as glans, without membranous wings; glans elongate cylindrical, slightly curved; bulb short, without membranous caeca; terminal filaments nearly three times as long as glans, with membranous margins from just beyond the somewhat thickened bases to beyond middle, apices attenuated.

Dimensions: total length 6.7–7.1 mm; length of thorax 2.7–2.8 mm; length of wing 6.3–6.5 mm; length of glans of aedeagus 0.83–0.92 mm.

Distribution: south-western Australia.

Holotype ♂: 24 miles W of Moora, 14 iv 1968 (CSIRO), I.F.C. and M.S.U.

Other material examined: same data as holotype (paratypes, 1 ♂, CSIRO, 1 ♂, AM).

Comparative notes. Distinguished from related species with fulvous palpus, *D. viridaurea* and *D. uptoni*, by the absence of green colouring on the thorax and abdomen, the more strongly produced cheeks, and longer glans of the aedeagus.

Duomyia uptoni n. sp.

♂ ♀. Somewhat resembling *D. iris* and agreeing with the description given for that species except as indicated below.

Coloration. Antenna greyish-brown. Prelabrum fulvous to yellowish brown; palpus fulvous, with or without dark brown apex. Thorax and abdomen with bluish-green reflections; hairs of mesoscutum yellowish; pleural hairs all yellowish or a single black one on pteropleuron. Femora dark brown, fulvous or tawny basally to a variable extent; tibiae dark brown, often more tawny ventrally, the middle tibia usually paler than the others; fore tarsus dark brown, each segment fulvous basally; other tarsi tawny with distal part of terminal segment brown. Haltere tawny, with brown capitellum.

Head. Postfrons rather evenly sloping in profile, not especially steep anteriorly, forming an obtuse angle with face, its surface weakly pitted or crumpled anteriorly, particularly towards sides; facial carina almost flat, with distinct median groove and sometimes additional weaker vertical plications; height of cheek 0.33–0.38 of height of eye; ocellar bristle vestigial; fronto-orbitals absent. Prelabrum much reduced in size; proboscis short, stout, with broad labella.

Thorax. Scutellum with very fine, weak rugosity, often almost smooth; no additional black setulae near prescutellar acrostichals; three pairs of scutellars, the basal one sometimes weak. Wing with distal section of vein 4 subparallel with vein 3 for much of its length, with slight sigmoid curvature, terminating slightly behind wing apex; anal crossvein nearly straight; squama moderately broad.

Abdomen. Tergite 4 slightly over half as long as tergite 5 in ♂, almost as long as tergite 5 in ♀. ♂ postabdomen: surstyli somewhat similar to those of *D. acrogenea* but the free distal section of outer surstylus shorter and broader; preglans rather compact, slightly shorter than glans; glans short, cylindrical, slightly curved; bulb well developed, without membranous caeca; terminal filaments between three and four times as long as glans, only slightly tapered, not much swollen basally, without distinct membranous margins.

Dimensions: total length, ♂ 5.0–6.6 mm, ♀ 7.1 mm; length of thorax, ♂ 2.0–2.7 mm, ♀ 2.8 mm; length of wing, ♂ 4.6–6.0 mm, ♀ 6.2 mm; length of glans of aedeagus 0.42–0.44 mm.

Distribution: south-western Australia—areas north of Perth.

Holotype ♂: 19 miles W of Watheroo, 15 iv 1968 (CSIRO), I.F.C. and M.S.U.

Other material examined: same data as holotype (paratypes, 3 ♂, CSIRO, 1 ♂, AM); 24 miles W of Moora, iv 1968 (paratype ♂, CSIRO), I.F.C. and M.S.U.; 18 miles W of Mogumber, iv 1968 (paratype ♀, CSIRO), I.F.C. and M.S.U.

Comparative notes. Most resembles *D. acrogenea* and *D. viridaurea* but differs from both in the shorter, stouter proboscis, less convex facial carina, darker legs, and characters of the aedeagus.

Duomyia viridaurea n. sp.

♂. Generally similar to *D. iris* and agreeing with the description given for that species except as indicated below. ♀ unknown.

Coloration. Postfrons reddish brown on most of surface; face fulvous. Prelabrum and palpus fulvous. Thorax and abdomen with bright yellow-green reflections. Legs tawny, the tibiae slightly darker than femora; tarsi brown, paler basally, the fore tarsus darkest, almost black distally. Haltere light brown.

Head. Postfrons rather weakly pitted and furrowed anteriorly; facial carina strongly elevated but not very sharply margined, convex, with a small median groove; anterior angle of cheek acutely produced, but less so than in *D. acrogenea;* height of cheek 0.28–0.36 of height of eye; ocellar and fronto-orbital bristles short and weak; cheek bristle moderate to weak. Prelabrum weakly developed; palpus elongate.

Thorax. Wing with distal section of vein 4 subparallel with vein 3 for most of its length, curved forwards apically to end slightly behind wing apex; anal crossvein curved only near anterior extremity; squama normal for the genus.

Abdomen. Tergite 5 about twice as long as tergite 4. Postabdomen: surstyli moderately elongate; free distal section of outer surstylus very short and broad, obtuse; aedeagus much as in *D. acrogenea* but preglans longer; glans shorter than in *D. acrogenea* but rather slender, straight; filaments more slender than in *D. acrogenea* with narrower membranous margins.

Dimensions: total length 4.9–6.6 mm; length of thorax 1.8–2.6 mm; length of wing 4.3–6.1 mm; length of glans of aedeagus 0.57–0.65 mm.

Distribution: south-western Australia—Esperance-Ravensthorpe district.

Holotype ♂: 27 miles E of Ravensthorpe, 25 iii 1968 (CSIRO), I.F.C. and M.S.U.

Other material examined: same data as holotype (paratypes, 2 ♂, CSIRO); 41 miles E of Esperance, 24 iii 1968 (paratypes, 3 ♂, CSIRO, 1 ♂, AM, 1 ♂, BM), I.F.C. and M.S.U.

Comparative notes. Closely related to *D. acrogenea* and *D. uptoni.* In addition to the characters given in the key it may be distinguished from *D. acrogenea* by the shorter, broader distal section of the outer surstylus and from *D. uptoni* by the more elongate proboscis.

Duomyia azurea Hendel

Duomyia azurea Hendel, 1914a: 57 (nomen nudum); 1914b: 97–98 (described).

♂ ♀. Rather similar to *D. iris* but more robust and distinguished mainly as indicated below.

Coloration. Postfrons reddish-brown with some fulvous markings posteriorly, with black hairs posteriorly, fine whitish hairs anteriorly; face, parafacial and cheek bright orange-fulvous. Prelabrum tawny, palpus orange-fulvous. Thorax with blue to blue-green reflections; mesoscutum with short black and yellowish hairs; humeral callus and pleura with yellowish hairs. Tarsi dark brown, paler at joints. Wing strongly stained with yellow, the colour fading towards apex and posterior margin. Haltere with yellowish pedicel and light brown scabellum. Abdomen black with greenish blue reflections.

Head. Parafacial very narrow in ♂, about as wide as third antennal segment in ♀; facial carina strongly elevated and well-defined, smooth, convex in centre, without sharp lateral margins, much narrowed above in ♂; height of cheek 0.28–0.39 of height of eye; ocellar bristle well developed; fronto-orbitals very short and weak. Third antennal segment of ♂ enlarged, with basal swelling, that of ♀ much shorter and narrower without basal swelling. Prelabrum well developed; palpus broad.

Thorax. Scutellum smooth, dorsally convex; three or four pairs of scutellars. Wing with distal section of vein 4 very slightly converging with vein 3 on most of its length, except near apex where it is strongly curved forward to end at or near wing apex.

Abdomen. Tergite 5 slightly more than twice as long as tergite 4 in ♂, twice as long as tergite 4 in ♀.

Dimensions: total length, ♂ 5.9–8.1 mm, ♀ 8.0–8.3 mm; length of thorax, ♂ 2.7–3.6 mm, ♀ 3.7–3.8 mm; length of wing, ♂ 6.1–7.5 mm, ♀ 7.6–7.9 mm.

Distribution: south-western Australia.

Type material examined: Swan R., no date (lectotype ♀ here designated, paralectotype, ? ♂, abdomen damaged, WM), Winthem.

Other material examined: Nedlands, near Perth, ix x xi 1959–1960 (5 ♂, CSIRO, 1 ♂, BM), M.W.; Crawley, near Perth, x 1934 (1 ♀, CSIRO), K.R.N.; Fremantle, ix x 1934 (1 ♂, 1 ♀, CSIRO), K.R.N.; Pinjarra, x 1964 (1 ♂, AM), G.L.B. An additional specimen in WM without locality data and labelled "Paratype" is evidently not a type.

Duomyia ameniina n. sp.

♂ ♀. Resembling *D. iris* and agreeing with the description given for that species except as indicated below.

Coloration. Postfrons bright fulvous. Palpus dark brown. Thorax with bright green or greenish blue reflections; a broad stripe of whitish pubescence from lower anterior part of notopleural area to upper posterior part of mesopleuron; the very short hairs on mesoscutum and long ones on pleura almost all white. Fore tarsus dark brown with basal segment tawny, at least towards its base; other tarsi fulvous with 2 distal segments brown. Wing with distal part of subcostal cell yellowish brown. Haltere with yellowish pedicel and brown capitellum. Abdomen with hairs on central region of tergite 2 bluish-green iridescent.

Head. Parafacial wider than third antennal segment in both sexes, especially so in ♀; facial carina sharply margined, slightly convex in centre in both sexes, with weak horizontal rugae below centre; height of cheek 0.34–0.46 of height of eye; ocellar bristle weak; fronto-orbital bristles weak or indistinguishable. Antenna short, length equal to about ⅔ the distance from its basal insertion to epistomal margin; third segment rather narrow; arista plumose, i.e. with long hairs forming a dorsal and a ventral series on basal half or more, the longest of which are about equal in length to the width of third antennal segment.

Thorax. Scutellum smooth and dorsally convex. Hind femur with black anterodorsal bristles. Wing with distal section of vein 4 very strongly curved forwards apically to end well in front of wing apex.

Abdomen. Tergite 5 about 3 times as long as tergite 4.

Dimensions: total length, ♂ 6.0–8.7 mm, ♀ 6.6–8.0 mm; length of thorax, ♂ 2.4–3.5 mm, ♀ 2.5–3.9 mm; length of wing, ♂ 4.4–6.1 mm, ♀ 5.0–7.0 mm.

Distribution: Queensland, including inland areas; north-western Australia.

Holotype ♂: Morven, Queensland, 18 i 1963 (CSIRO), D.E.H.

Other material examined. Queensland: same data as holotype (paratype ♂, CSIRO); Brisbane, ii 1918 (paratypes, 1 ♂, 1 ♀, UQ), H.H. Western Australia: Kimberley Research Station, near Kununurra, Ord R., ii 1952 (1 ♀, CSIRO), R. Lukins.

Comparative notes. Readily distinguished from *D. iris*, *D. azurea* and other related species by the long hairing of the arista.

Duomyia montium n.n.

Duomyia (*Duomyia*) *punctifrons* Malloch, 1929: 510, secondary junior homonym of *Ortalis punctifrons* Macquart, 1848 (see under *D. decora*).

♂ ♀. *Coloration.* Postfrons dark brown; parafacial and cheek fulvous, the former slightly browned on anterior margin; face creamy, with a brown mark on inner wall of antennal groove; upper part of occiput black, tawny towards vertex, with some whitish pruinescence, thickest in centre above neck and along posterior margins of eyes. Antenna tawny; third segment becoming reddish-brown beyond base; arista reddish-brown at base, blackish beyond. Prelabrum and palpus tawny. Thorax black with broken greenish reflections. Fore legs almost entirely black to dark brown; base of fore tibia tawny-brown; other legs tawny; middle femur with some brown suffusion on distal half; hind femur with distal half almost entirely dark brown; middle tibia variably browned distally; hind tibia broadly dark brown at distal end, with a brown dorsal longitudinal line; middle and hind tarsi with two apical segments brown. Wing clear; distal part of subcostal cell tawny; distal parts of marginal, submarginal, and first posterior cells faintly clouded with brown; anterior and discal crossveins distinctly clouded with brown; basal crossvein not clouded; short section of vein 5 between basal and anal crossveins slightly clouded; squama white. Haltere with brown capitellum and tawny pedical. Abdomen black with reflections slightly greenish.

Head. Postfrons steeply sloping strongly pitted anteriorly, less so posteriorly; parafacial slightly wider than third antennal segment in ♂, much wider than that segment in ♀; facial carina rather broad, flat, sharply margined above, finely rugose; height of cheek 0.33–0.39 of height of eye; ocellar and two pairs of fronto-orbital bristles well developed; cheek bristle usually distinct but pale. Antenna somewhat shorter than distance from its basal insertion to epistomal margin; third segment rather slender and not much smaller in ♀ than in ♂; arista with very minute basal hairs. Prelabrum moderately developed, slightly prominent anteriorly; palpus elongate.

Thorax. Scutellum finely but strongly roughened and rugose; humeral and prescutellar acrostichal bristles present; no secondary bristles near the latter; usually three, sometimes four pairs of scutellars; pteropleural bristle absent. Fore femur with very slight posteroventral pubescent gibbosity just beyond middle, with black dorsal bristles and long pale hair-like posteroventral bristles; middle femur with white posterior bristles and sometimes a few black ones near apex; hind femur almost straight basally, with series of white anterodorsal bristles which tend to become more dorsally placed on distal half, where a few black ones may be present; hind trochanter normal in both sexes, without any trace of tubercle on posterior surface. Wing with distal section of vein 4 gradually converging with vein 3 on most of its length, curving forwards apically to end a little in front of wing apex; anal crossvein curved on anterior part; squama moderately large.

Abdomen. Tergite 5 about four times as long as tergite 4 in ♂, usually slightly longer in ♀.

Dimensions: total length, ♂ 6.1–8.4 mm, ♀ 5.8–8.9 mm; length of thorax, ♂ 2.4–3.5 mm, ♀ 2.5–4.1 mm; length of wing, ♂ 5.2–7.5 mm, ♀ 5.6–8.4 mm.

Distribution: New South Wales—Tablelands Districts from the Blue Mountains to the Snowy Mountains; Australian Capital Territory—Canberra district.

Holotype ♂ (examined by author): Katoomba, Blue Mountains, 1912 (DEI), F.P.D.

Other material examined: Wilson's Valley, Snowy Mountains, ii 1963 (5 ♂, 6 ♀, AM, 1 ♂, 1 ♀, BM), D.K.M.; Sawpit Creek and vicinity, Snowy Mountains, ii 1963 (2 ♂, 8 ♀, AM, 1 ♂, 1 ♀, GLB), D.K.M.; Diggers Creek, near Mount Kosciusko, Snowy Mountains, i 1933 (1 ♂, 1 ♀, CSIRO), I.M.M.; Alpine Creek, near Kiandra, xi 1938 (1 ♀, CSIRO), A.L.T.; Kiandra, ii 1961 (1 ♂, CSIRO), E.F.R.; Pilot Hill, Bago Forest, near Batlow, iii 1957 (1 ♂, 1 ♀, CSIRO, 1 ♂, 1 ♀, USNM), T.G.C.; 4 miles E of Nimmitabel, iii 1963 (1 ♂, 1 ♀, CSIRO), D.H.C.; Brown Mountain, E of Nimmitabel, iii 1963 (3 ♀, CSIRO), D.H.C.; Tuross, E of Cooma, iii 1937 (2 ♂, 1 ♀, AM), K. C. McKeown; Mount Franklin, W of Canberra, ii 1965 (1 ♀, GLB), G.L.B.; Uriarra State Forest, W of Canberra, ii 1965 (1 ♀, CSIRO), Z.R.L.; Mount Gingera, near Canberra, i ii 1955–1964 (2 ♂, 1 ♀, CSIRO), I.F.C., Z.R.L., D. F. Waterhouse; Blundell's near Canberra, ii iii 1930–1952 (4 ♀, CSIRO), A.L.T., S.J.P.; Wee Jasper, near Burrinjuck Dam, i 1933 (1 ♀, CSIRO), M.F.; Woodford, Blue Mountains, i 1926 (1 ♀, CSIRO), I.M.M.; Leura, Blue Mountains, i 1932 (1 ♂, 1 ♀, AM), K. K. Spence; Katoomba, i ii 1961–1962 (2 ♀, AM), G.H.H.; Mount Victoria, Blue Mountains, i 1967 (2 ♂, UQ), J. C. Cardale.

Duomyia scintilla n. sp.

♂ ♀. Very similar to *D. montium* and *D. decora* in most characters; agreeing with description of the former except as indicated below.

Coloration. Postfrons reddish brown with tawny areas anteriorly and posteriorly; parafacial not browned anteriorly; brown mark on inner wall of antennal groove very indistinct. Thorax with bright green reflections dorsally. Fore tibia tawny becoming dark brown apically; middle and hind femora dark brown on approximately their basal halves or more, tawny distally; middle tibia not browned distally; hind tibia slightly browned distally. Wing with small but distinct brown suffusion on basal crossvein.

Head. Facial carina a little narrower than in *D. montium*, its lateral margins less sharp, almost straight; height of cheek 0.35–0.43 of height of eye; cheek bristle strong, black. Antenna slightly longer than distance from its basal insertion to epistomal margin.

Thorax. Three pairs of scutellar bristles. Middle femur with the stronger distal posterior bristles black; hind femur somewhat curved basally, with most dorsal and anterodorsal bristles black or brown; hind trochanter with rounded tubercle on posterior surface in ♂ only.

Abdomen. Tergite 5 approximately twice as long as tergite 4 in ♂, 3 times as long in ♀. ♂ postabdomen: aedeagus with preglans simple, moderately short, not very strongly sclerotized; glans elongate cylindrical, very slightly curved; bulb short with two short caeca; filaments slender, slightly more than twice as long as glans.

Dimensions: total length, ♂ 7.0–7.5 mm, ♀ 7.2–7.4 mm; length of thorax, ♂ 2.6–2.9 mm, ♀ 2.7 mm; length of wing, ♂ 5.2–5.4 mm, ♀ 5.3 mm; length of glans of aedeagus, 0.50–0.55 mm.

Distribution: New South Wales—coast district.

Holotype ♂, Gundamaian, Royal National Park, near Sydney, 1 i 1926 (CSIRO), A. J. Nicholson.

Other material examined: same data as holotype (paratypes, 1 ♂, 2 ♀, CSIRO, 1 ♂, BM), A. J. Nicholson, Bentham, I.M.M.; Royal National Park, v 1963 (paratype ♀, AM), D.K.M.; Halfway Creek, 18 miles S of Grafton, xi 1970 (paratypes, 1 ♂, 1 ♀, AM), D.K.M.

Comparative notes. Very similar to *D. decora* and most easily distinguished by the colour of the hind femur and characters of the aedeagus.

Duomyia decora (Macquart)

Senopterina decora Macquart, 1846: 208, pl. 18, fig. 10.

Ortalis punctifrons Macquart, 1848: 61, pl. 7, fig. 4.

Chromatomyia laeta Walker, 1849: 805. New synonym.

Lamprogaster laeta Walker, 1849: 1162.

Euchalcota decora: Loew, 1873: 40.

Duomyia decora: Hendel, 1914b: 95–96.

♂ ♀. Similar to *D. montium* and *D. scintilla* in most characters; agreeing with description given for *D. montium* except as indicated below.

Coloration. Postfrons reddish brown, with tawny markings posteriorly; inner wall of antennal groove with variable brown mark. Fore tibia tawny with dark brown apex; middle femur and tibia almost entirely tawny; hind femur and tibia tawny with brown apical marks. Wing with marks on anterior and discal crossveins broader and darker than in *D. montium;* basal and anal crossveins also with brown suffusion.

Head. Facial carina with lateral margins rounded off on most of their extent, usually forming a slightly curved outline, surface with rather strong, regular, mostly horizontal grooves. Antenna slightly longer than distance from its basal insertion to centre of epistomal margin in ♂, about equal to that distance or slightly shorter in ♀.

Thorax. Three pairs of scutellar bristles. Femora with chaetotaxy as described for *D. montium;* hind trochanter of ♂ with posterior tubercle much as in *D. scintilla.*

Abdomen. ♂: tergite 5 slightly more than twice as long as tergite 4; ♀: tergite 5 about two and a half to three times as long as tergite 4. ♂ postabdomen: aedeagus somewhat similar to that of *D. scintilla;* filaments less than twice as long as glans.

Dimensions: total length, ♂ 5.4–7.8 mm, ♀ 4.4–7.3 mm; length of thorax, ♂ 1.9–2.9 mm, ♀ 1.5–3.0 mm; length of wing, ♂ 3.7–5.8 mm, ♀ 3.4–6.6 mm.

Distribution: Tasmania; Victoria; New South Wales—as far north as Sydney district.

Type material examined. No locality, no date (holotype ♀ of *Ortalis punctifrons* Macquart, OXN), anon.; "New Holland", no date (lectotype ♂, here designated, of *Chromatomyia laeta* Walker, BM, "One of Walker's series so named"), anon.; "Tasmanie," no date (lectotype ♂, here designated, of *Senopterina decora* Macquart, OXN, paralectotypes, 1 ♂, 2 ♀, OXN) anon.

Other material examined. Tasmania: Waterhouse estate, 25 miles NE of Scottsdale, i 1948 (2 ♂, CSIRO), K.H.K., P.B.C., and Kerr; 8 miles E of Scottsdale, i 1948 (1 ♀, CSIRO), E.F.R.; near Saint Helens, i 1948 (1 ♂, 1 ♀, CSIRO), K.H.K., P.B.C., and Kerr; 8 miles NNW of Bicheno, i 1948 (1 ♀, CSIRO), K.H.K., P.B.C., and Kerr; Orford, i 1948 (1 ♀, CSIRO), E.F.R.; Eaglehawk Neck, i 1949 (1 ♂, CSIRO), E.F.R.; Snug, ii 1966 (4 ♀, CSIRO), M. J. Whitten; Lake Saint Clair, i 1949–1960 (1 ♀, UQ, 1 ♀, CSIRO, 1 ♀, AM), F. J. McDonald, E.F.R., D.K.M. Victoria: Berwick, near Melbourne, no date (1 ♀, NMV), anon. New South Wales: Jamberoo, near Kiama, i 1949 (1 ♂, AM), N. W. Rodd; McCarr's Creek, Kuringai Chase, near Sydney, i 1963 (1 ♂, 2 ♀, CSIRO), D.H.C.; Wentworth Falls, Blue Mountains, i 1963 (2 ♂, AM), D.K.M.; Mount Boyce, Blue Mountains, ii 1964 (2 ♂, AM), D.K.M.

Duomyia obscura Walker

(Fig. 45)

Duomyia obscura Walker, 1849: 800; Hendel, 1914a: 58, pl. 5, figs 106, 107, pl. 6, fig. 105; 1914b: 90–92; Malloch, 1928a: 351; 1929: 510–511.

This is the largest named species of the genus. Hendel (1914b) has given a rather full description but his material may also have included specimens of *D. gigas*. Reflections on abdominal tergite 2 are usually green while those on the more posterior tergites are often purplish blue. The wing is much more heavily shaded with brown than in related species.

Dimensions: total length, ♂ 12.7–16.9 mm, ♀ 14.0–16.8 mm; length of thorax, ♂ 5.2–6.3 mm, ♀ 5.2–7.9 mm; length of wing, ♂ 9.9–12.6 mm, ♀, 10.5–13.6 mm; length of glans of aedeagus 2.11–2.26 mm.

Distribution: Eastern Queensland; eastern New South Wales; Australian Capital Territory; Victoria.

Type material examined: "New Holland", no date (lectotype ♀, here designated, of *D. obscura* Walker, "One of Walker's series so named", BM), anon., pres. J. Hunter.

Other material examined. Queensland: Bowen, no date (1 ♂, 1 ♀, SAM), A. Simson; Binna Burra, Lamington National Park, v 1966 (1 ♂, CSIRO), Z.R.L.; Stanthorpe, i 1930 (1 ♀, UQ), anon. New South Wales and Australian Capital Territory: Katoomba, i iii 1955–1962 (2 ♀, AM), G.H.H.; Kellyville, near Sydney, iv 1959 (1 ♂, AM), F. Hall; Canberra, ii iii 1933–1949 (1 ♂, 1 ♀, CSIRO), M.F., S.J.P.; Tuross, iii 1937 (1 ♀, AM), K. C. McKeown. Victoria: Gelantipy, v 1953 (1 ♂, NMV), C. Hodge.

Malloch (1928a) records this species from Banks Island, Torres Straits. I have seen 2 ♀ from this locality (CSIRO, SAM), but these are not referable to *D. obscura*, having the lunule and face coloured more as in *D. hypene*. Until males are available it will not be possible to assess the status of this population.

Duomyia hypene n. sp.

♂ ♀. Similar to *D. howensis* in most characters and agreeing with the description given for that species except as indicated below.

Coloration. Mark at summit of each parafacial intensely black and connected to the blaskish area which covers the entire lunule; no dark coloration extending below the slight transverse ridge between antennal bases on to upper part of face except to a very slight extent on the margins of antennal sockets. Mesoscutum black except sometimes for a small amount of reddish brown on humeral and notopleural calli and in vicinity of postalar callus; surface reflections not green-tinted. Femora and tibiae with rather extensive but uneven blackish suffusion; fore tarsus entirely black; middle tarsus reddish brown with apical segments blackish; hind tarsus blackish brown, basal segment dark reddish brown. Wing with distal part of subcostal cell yellowish brown; marginal and submarginal cells faintly yellowish; remainder of membrane almost colourless; squama whitish. Abdominal tergites entirely black with rather bright yellowish green reflections.

Head. Height of cheek 0.43–0.54 of height of eye. Antenna not quite as long as distance from its basal insertion to centre of epistomal margin, slightly shorter in ♀, in each sex slightly longer than in the corresponding sex of *D. gigas* and *D. obscura.*

Thorax. Scutellum usually with three pairs of strong marginal bristles interspersed with a number of fine marginal setulae or hairs.

Abdomen. Tergite 5 about one and a half times as long as tergite 4 on median line. ♂ postabdomen: aedeagus much as described for *D. howensis:* terminal filaments almost cylindrical distally, without membranous margins, not expanded apically.

Dimensions: total length, ♂ 8.8–13.1 mm, ♀ 10.6–12.3 mm; length of thorax, ♂ 3.2–5.4 mm, ♀ 4.8–5.5 mm; length of wing, ♂ 7.3–10.6 mm, ♀ 9.4–10.5 mm; length of glans of aedeagus 1.17–1.67 mm.

Distribution: New South Wales—Western Slopes district.

Holotype ♂: Goonoo State Forest, 5 miles S of Mendooran, 1–3 v 1970 (AM), G.A.H. and D.K.M.

Other material examined: same locality as holotype, iii v 1970–1971 (paratypes, 6 ♂, 8 ♀, AM), G.A.H. and D.K.M.

Habitat: dry sclerophyll forest.

Comparative notes. Differs from the closely related species *D. howensis*, *D. gigas*, and *D. obscura* in having virtually no dark colouring on upper extremity of face between antennal bases. In this it resembles *D. thalassina*, but it differs from that species in having the lunule entirely blackish instead of tawny to reddish-brown in the centre, in the presence of a black mark at the summit of each parafacial, and in the darker tarsi.

Duomyia gigas (Macquart) n. comb.

Senopterina gigas Macquart, 1851: 282, pl. 26, fig. 4.

♂ ♀. Resembling *D. howensis* and agreeing with the description given for that species except as indicated below.

Coloration exceedingly like that of *D. hypene.* Upper extremity of face (between antennal sockets but below the transverse ridge separating lunule from face) dark brown. Mesoscutum and abdominal tergites with green to bluish green reflections; scutellum with purplish

reflections; sternopleuron more extensively blackened than in *D. hypene*, only a part of its upper margin reddish brown to tawny.

Abdomen. ♂ postabdomen: aedeagus much as in *D. howensis* and *D. hypene* except that terminal filaments have well developed membranous margins, their apices somewhat broadened and obliquely truncate apically.

Dimensions: total length, ♂ 10.3–14.3 mm, ♀ 10.1–13.3 mm; length of thorax, ♂ 4.0–5.9 mm, ♀ 4.5–5.7 mm; length of wing, ♂ 8.1–11.4 mm, ♀ 7.7–11.0 mm; length of glans of aedeagus 1.39–1.84 mm.

Distribution: Queensland—south-east; New South Wales—north-east.

Holotype ♀: "Tasmanie", (probable error), no date (PM), J.P.V.

Other material examined. Queensland: Woombye, near Nambour, x 1965 (1 ♂, CSIRO), D.H.C.; Brisbane, iii iv 1961–1965 (2 ♂, UQ), V. Zadek; Ipswich, iii 1960 (1 ♂, UQ), D. L. Lloyd; The Summit, near Stanthorpe, xii 1957 (1 ♀, UQ), H. G. Greening; Stanthorpe, i ii 1930–1965 (2 ♀, UQ), anon., P. Kerridge. New South Wales: "Fernbank", near Tenterfield, xii 1946 (2 ♀, AM), anon.; Coraki, i 1958 (1 ♀, CSIRO), I.F.C.; river crossing, 1 mile W of Uralla, i 1967 (paratype ♀, UQ), B. Cantrell; Shoal Bay, Port Stephens, i 1971 (10 ♀, AM), D. Sands.

Comparative notes. Most closely resembles *D. obscura*, but without distinct brown shading on wing, glans of aedeagus shorter and apices of aedeagal filaments of different form.

Duomyia thalassina Walker

(Fig. 46)

Duomyia thalassina Walker, 1849: 801; Hendel, 1914b: 92.

♂ ♀. Very similar to *D. howensis* in most characters, differing principally as indicated below.

Coloration. No dark blotch at junction of parafacial and postfrons. Mesoscutum almost entirely black with greenish reflections; humeral callus black; scutellum black, variably suffused with reddish brown at sides; pleura largely black; propleuron, lower parts of mesopleuron and pteropleuron, and upper anterior part of sternopleuron usually reddish brown. Femora black on basal half or more; tibiae reddish-brown with darker suffusions towards centre of fore and hind ones, sometimes the former proponderantly black. Wing with distal part of subcostal cell (stigma) yellow or brownish-yellow; apex with faint greyish suffusion; wing otherwise almost clear.

♂ postabdomen: aedeagus with glans somewhat longer than in *D. howensis;* filaments slightly more than twice as long as glans.

Dimensions: total length, ♂ 9.3–12.6 mm, ♀ 9.8–12.4 mm; length of thorax, ♂ 3.9–5.4 mm, ♀ 4.4–5.1 mm; length of wing, ♂ 7.9–10.4 mm, ♀ 8.8–9.6 mm; length of glans of aedeagus 1.50–1.80 mm.

Distribution: coastal eastern Australia, from Cape York (Hendel) to Victoria.

Type material examined: no locality, no date (lectotype ♀ here designated, paralectotype ♀, BM), anon.

Other material examined. Queensland: Currumbin, near Coolangatta, xii 1965 (1 ♀, UQ), C. Speed. New South Wales and Australian Capital Territory: Port Macquarie, i 1935 (1 ♀, CSIRO), M.F.D.; Barrington House, via Salisbury, Barrington Tops district, xii 1965 (1 ♂, UQ), B. Cantrell; Roseville, near Sydney, i 1958 (1 ♂, AM), K.E.; Heathcote, near

Sydney, i 1963 (1 ♂, AM), R. Witchard; Nowra, i 1929 (1 ♀, BM), F. A. Rodway; Bateman's Bay, i 1963 (1 ♂, 2 ♀, CSIRO), I.F.C. and M.S.U.; Black Mountain, Canberra, iii 1968 (1 ♂, CSIRO), I.F.C. Victoria: 13 miles WSW of Bairnsdale, i 1958 (2 ♂, 1 ♀, CSIRO, 1 ♂, AM), P.B.C., Helman, and T. Greaves; Berwick, near Dandenong, no date (1 ♂, NMV), anon.; Dandenong, ? date (1 ♀, NMV), collector's name illegible; Oakleigh, near Melbourne, no date (2 ♂, NMV), anon.

Duomyia howensis n. sp.

(Figs 43, 44)

♂ ♀. *Coloration.* Head pale buff; postfrons reddish brown; a large blackish blotch at summit of each parafacial; upper part of occiput with a large brown-black area on each side. Antenna, including arista, predominantly dark brown. Palpus brown-black. Thorax tawny to reddish brown, mainly shining; central part of mesoscutum broadly black for its whole length, leaving lateral areas reddish brown, more broadly so behind suture; lower part of sternopleuron black; posterior parts of hypopleuron and pleurotergite dull black. Legs tawny to reddish brown; fore femur with variable black dorsal stripe or patch, sometimes also darkened ventrally towards base; hind femur darkened ventrally towards base; fore tibia darkened apically; fore tarsus with basal segment tawny to reddish, more distal segments deep reddish brown to dark brown; other tarsi tawny. Wing with distal part of subcostal cell brown; marginal and submarginal cells with light yellowish brown suffusion, which sometimes extends over greater part of wing; squama light grey. Haltere fulvous with brown capitellum. Abdomen black with greenish reflections, sometimes partly reddish brown.

Head wider than thorax, its width about 1.3 of height; postfrons broad, especially so anteriorly, slightly pitted anterolaterally, with median hump or convexity in front of ocelli and a slight depression in front of this; vertex somewhat raised in centre, carinate but not very sharply so; parafacial broad, smooth; facial carina broad, flat, its convexly curved lateral margins very sharp, narrowest part, between antennal bases, almost as wide as antennal groove, surface with well-developed corrugations; height of cheek 0.44–0.54 of height of eye; fronto-orbital and ocellar bristles indistinguishable or almost so; cheek bristle distinct. Antenna slightly shorter than distance from its basal insertion to centre of epistomal margin in ♂, slightly shorter in ♀; segment 3 moderately slender; arista bare, slightly compressed. Prelabrum weak; palpus of moderate width.

Thorax. Scutellum with four or five pairs of marginal bristles, of which at least the basal pair is hair-like, the surface otherwise without hairs, almost smooth. Femora not especially thick; fore femur with black dorsal bristles near apex, and numerous dorsal and ventral rather long pale hairs; middle femur with a few black posterior bristles near apex; hind femur without black bristles but with some bristle-like pale hairs in a dorsal series not reaching apex. Wing with anterior crossvein much longer than fourth section of costa (between veins 3 and 4); vein 4 dipping into discal cell before anterior crossvein, converging with vein 3 on its entire distal section, curved forwards at apex; anal crossvein slightly curved.

Abdomen. Tergite 5 about as long as tergites 3 and 4 together in ♂, slightly shorter in ♀. ♂ postabdomen: aedeagus with stipe broadened, compressed, and strongly sclerotized; preglans well defined and sclerotized, rather short, cylindrical, with a membranous wing extending its full length; glans much longer, cylindrical, curved; bulb with pair of long membranous caeca; terminal filaments nearly twice as long as glans, not much tapered distally, slightly expanded at apices.

Dimensions: total length, ♂ 10.8–11.0 mm, ♀ 9.8–14.4 mm; length of thorax, ♂ 4.2–4.5 mm, ♀ 4.6–5.3 mm; length of wing, ♂ 8.9–9.3 mm, ♀ 9.7–10.5 mm; length of glans of aedeagus 1.37–1.40 mm.

Distribution: Lord Howe Island.

Holotype ♂: "Lord Howe Island", 30 xi 1955 (CSIRO), S.J.P. and Z.R.L.

Other material examined: Lord Howe Island, i 1922, and no date (paratypes, 2 ♀, AM), A.M., anon.; Blinky Beach, xii 1966 (paratype ♂, CSIRO), E.B.B.; near Johnson's Beach, xii 1966 (paratype ♀, CSIRO), E.B.B.; North Bay, ii 1957 (paratypes, 1 ♀, CSIRO, 1 ♀, BM), Z.R.L.

Comparative notes. Differs from the closely related species *D. obscura* and *D. thalassina* in the much broader reddish-brown lateral areas of the mesoscutum.

Duomyia maculipennis Hendel

Duomyia maculipennis Hendel, 1914a: 58 (nomen nudum); 1914b: 93–95 (described); Malloch, 1929: 511, fig. 2c.

Duomyia fidschiensis Enderlein, 1924: 112. New synonym.

♂ ♀. *Coloration.* Postfrons deep reddish brown to brown-black; parafacial reddish brown, becoming darker on anterior margin and upper extremity; face and cheeks reddish brown; upper part of facial carina often dark brown; orbital margins of postfrons and parafacial with dense silvery pruinescence; upper part of occiput mainly black with thin grey pruinescence on most of surface. Antenna reddish brown, third segment often darker; arista black beyond base. Prelabrum reddish brown to black; palpus dark brown to black. Mesoscutum black with reddish brown lateral margins, or, in specimens from northern Queensland, more extensively reddish brown, sometimes almost entirely so; scutellum reddish brown on margins, usually blackish or dark brown centrally; pleura, in southern specimens (e.g. from near Sydney), light reddish brown with lower part of sternopleuron extensively blackened, in specimens from southern Queensland pleura darker with extensive dark brown or blackish suffusions, in specimens from northern Queensland pleura entirely reddish brown. Femora reddish brown to black; tibiae reddish brown, often darker distally; fore tarsus reddish brown to dark brown, other tarsi tawny, variably darkened apically. Wing tinged with yellow and grey, always with a blackish cloud from just beyond end of vein 1 to apex; squama whitish. Haltere tawny with brown capitellum. Abdomen reddish brown to black.

Head. Vertex weakly and not sharply carinate; postfrons not pitted, with a rounded hump between its centre and anterior ocellus, a pair of less prominent anterolateral humps and a slight hump at middle of anterior margin; parafacial smooth, rather variable in width; facial carina elevated, moderately broad, with lateral margins narrowly raised but not very sharp, surface minutely rugose, but without vertical corrugations, slightly convex below middle; fronto-orbital and ocellar bristles absent; a black cheek bristle present. Antenna somewhat longer than distance from its basal insertion to centre of epistomal margin; third segment rather slender, obtuse; arista bare or with very minute hairs near base only. Prelabrum moderately developed, well sclerotized and slightly prominent; palpus rather narrow.

Thorax. Scutellum without hairs; humeral and prescutellar acrostichal bristles present. Femora rather stout; fore femur with series of black dorsal bristles and weak, pale, often hair-like posteroventral bristles; middle femur with some black posterior bristles distally; hind femur with some black dorsal bristles near middle. Wing with distal section of vein 4 strongly converging with vein 3 for its whole length, slightly curved forward apically to end a little in front of wing apex; anal crossvein almost straight; squama moderately large.

Abdomen. ♂: tergite 5 one and a half times to twice as long as tergite 4, the former relatively longer in smaller specimens; ♀: tergite 5 about one and a half times as long as tergite 4. ♂ postabdomen: aedeagus with stipe well sclerotized, not broadened or noticeably compressed; preglans short but well sclerotized, with broad membranous flange; glans simple, cylindrical, slightly curved; bulb membranous, somewhat elongate, with pair of elongate caeca from near base; filaments rigid, strongly sclerotized, short, curved, diverging from their common base, each about half as long as glans but length somewhat variable.

Dimensions: total length, ♂ 7.1–12.0 mm, ♀ 7.0–14.4 mm; length of thorax, ♂ 3.1–5.0 mm, ♀ 2.6–5.6 mm; length of wing, ♂ 6.9–9.8 mm, ♀ 6.6–10.8 mm; length of glans of aedeagus 0.80–1.03 mm.

Distribution: coastal eastern Australia from north Queensland to southern New South Wales; erroneously recorded from Fiji.

Type material examined: Sydney, 1900 (lectotype ♂, here designated, of *D. maculipennis* Hendel, WM), L. Biró; 1864 (1 ♂, labelled "paratype" but perhaps not a type, WM), Thorey; "Feejee Isl" or "Fidji Inseln" (in error), no date (lectotype ♀ here designated, paralectotype ♀, of *D. fidschiensis* Enderlein, ZMB), Dämel.

Other material examined. Queensland: Gap Creek, 6 miles N of Bloomfield R., xi 1965 (2 ♀, UQ), G.M.; Kuranda Range State Forest, near Kuranda, i 1967 (1 ♂, 1 ♀, AM), G.A.H. and D.K.M.; The Boulders, near Babinda, xii 1966 (1 ♂, 1 ♀, UQ), B. Cantrell; 2 miles E of Cardstone, Tully R. district, i 1967 (3 ♂, AM), G.A.H. and D.K.M.; Burpengary, no date (1 ♀, BM), T.L.B.; Woombye, near Nambour, x 1965 (1 ♂, 5 ♀, CSIRO), D.H.C.; Brisbane, iv x xi 1913–1957 (1 ♂, BM, 2 ♂, 2 ♀, UQ), various collectors; Sunnybank, near Brisbane, ix 1925 (1 ♂, 1 ♀, NMV), L. Pottenger; Stanthorpe, ii xii 1925–1930 (1 ♂, 2 ♀, UQ), anon.; Amiens, 11 miles NW of Stanthorpe, xii 1966 (5 ♂, 3 ♀, CSIRO), T.G.C.; Wyberba, near Stanthorpe, iii 1957 (1 ♀, CSIRO), E.F.R.; "Austra. sept." (northern Australia), 1864 (1 ♂, 1 ♀, WM), Thorey. New South Wales: Boonoo Boonoo Falls, near Tenterfield, i 1966 (2 ♂, 2 ♀, UQ), B. Cantrell and T. Weir; 1 mile W of Uralla, i 1967 (1 ♂, UQ), B. Cantrell; 50 miles S of Singleton, i 1956 (1 ♂, CSIRO), I.F.C.; Woodford, Blue Mountains, i 1928 (1 ♂, 1 ♀, AM), G.A.W.; Northmead, near Sydney, xii 1964 (1 ♂, AM), M. and V.G.; Como, near Sydney, xi 1922 (3 ♂, 1 ♀, AM), T.G.C.; Royal National Park, near Sydney, ii xi 1926–1966 (2 ♂, 1 ♀, CSIRO, 2 ♂, 1 ♀, AM), G. M. Goldfinch, J. Walsh, G.A.H., D.K.M.; Falls Creek, near Nowra, xii 1926 (1 ♂, AM), B. Bertram; Jervis Bay, xi 1956 (1 ♂, 1 ♀, CSIRO), E.F.R.; Clyde Mountain, near Braidwood, i 1960 (1 ♀, CSIRO), I.F.C. and M.S.U.

Habitat: taken in dry sclerophyll forest in the vicinity of Sydney; specimens from near Cardstone on tree-trunks in rain forest.

The locality Fiji given on the labels of the type series of *D. fidschiensis* Enderlein is clearly erroneous. Dämel also collected at Sydney and this is the probable locality of origin of these specimens.

Duomyia mithrax Hendel

Duomyia mithrax Hendel 1914a: 58 (nomen nudum); 1914b: 92–93 (description).

♂ ♀. Somewhat resembling *D. maculipennis* and differentiated principally as indicated below.

Coloration. Head much as in *D. maculipennis* but face, prelabrum and palpus bright fulvous. Thorax largely black with conspicuous blue-green reflections. Legs black to dark brown; middle and hind tarsi tawny, with two distal segments brown. Wing with distal dark cloud extending posteriorly over discal crossvein; squama creamy. Abdomen black with blue-green reflections.

Head. Vertex distinctly carinate, but not sharply produced as in *D. hebes;* postfrons with humps as in *D. maculipennis* but these less elevated and relatively inconspicuous; facial carina slightly concave in profile, with strong longitudinal corrugations towards sides; epistomal margin deeply sinuate, slightly prominent in profile. Antenna: arista subplumose on basal half, the longer hairs about three times as long as basal diameter of arista. Prelabrum well-developed, not prominent.

Thorax. Three pairs of almost equally strong scutellars. Fore femur without distinct posteroventral bristles. Wing with distal section of vein 4 gradually curving forwards through most of its length, more strongly curved apically.

Abdomen. ♂: tergite 5 about one and a half times as long as tergite 4; ♀ tergites 4 and 5 approximately equal in length.

Dimensions: total length, ♂ 9.2 mm, ♀ 9.5–10.7 mm; length of thorax, ♂ 4.0 mm, ♀ 4.1 mm; length of wing, ♂ 8.4 mm, ♀ 8.9 mm.

Distribution: Queensland—Cape York Peninsula.

Holotype ♀ (re-examined): "N.E. Queensland", no date (erroneously determined as ♂, BM), C.M.K.

Other material examined: Claudie R., Iron Range district, ii 1914 (1 ♀, NMV), W. D. K. Macgillivray; Coen R., no date (2 ♂, SAM), W. D. Dodd.

Duomyia glebosa n. sp.

♂. Somewhat similar to *D. maculipennis* and agreeing with description given for that species except as indicated below. ♀ unknown.

Coloration. Postfrons dark brown; face, parafacial and cheek brownish-tawny; orbital margins of postfrons and parafacial with silvery pruinescent mark on each side. Antenna tawny, third segment brown on dorsal side. Prelabrum and palpus tawny. Thorax black; upper margin of mesopleuron, propleuron, anterior part of upper margin of sternopleuron, posterior part of notopleuron, pleurotergite, and hypopleuron with greyish pubescence or pruinescence; pleural hairs all pale. Legs tawny; all femora with preapical brown blotch; fore and hind tibiae brown apically; tarsi with only the apical segment darkened. Wing with broad apical cloud which is less concentrated towards anterior margin than in *D. maculipennis*, not reaching discal crossvein. Haltere cream; base of capitellum brown. Abdomen shining black.

Head. Vertex a little more raised than in *D. maculipennis* but not very sharply carinate; postfrons with well developed humps as in *D. maculipennis;* parafacial narrower than third antennal segment, almost smooth; facial carina completely rounded off at sides, slightly concave in profile but without definite central depression, surface finely rugose; ocellar bristles very small but distinct, black. Third antennal segment less slender than in *D. maculipennis.* Prelabrum moderately developed, not prominent; palpus short and broad.

Thorax. Pleural hairs short. Femora not thickened; middle femur posterior bristles reduced to weak pale hairs; hind femur with some weak bristles beyond middle. Wing: distal section of vein 4 bent forward from discal crossvein and converging with vein 3, thence curving to become subparallel with vein 3, towards apex gradually converging with vein 3 again, but without distinct apical curvature; anal crossvein with slight sigmoid curvature.

Abdomen. Tergite 5 about two and a half times as long as tergite 4 and encroaching further on to pleural area at sides than preceding tergites; sternites 3 and 4 much reduced in size.

Dimensions: total length 9.0 mm; length of thorax 3.4 mm; length of wing 7.6 mm.

Distribution: New South Wales—North Coast.

Holotype ♂: 7 miles W of Rosebank, Lismore district, 1700 ft, 8 xi 1961 (CSIRO), I.F.C. and M.S.U.

Comparative notes. The absence of macrotrichia on the horizontal ridge which separates the posterior part of the pteropleuron from the subalar region distinguishes this species from all others having a non-pitted postfrons with median hump.

Duomyia loxocerina n. sp.

♂ ♀. *Coloration.* Postfrons reddish brown; parafacial, face, cheek, and lower half of occiput fulvous; a large black blotch within upper end of each antennal groove; orbital margin of parafacial with very narrow silvery pruinescent stripe. Antenna tawny; third segment brown beyond base, becoming blackish apically; arista pale fulvous for most of length, brown only at extreme apex. Prelabrum tawny; palpus tawny, usually with darker brown suffusion. Mesoscutum and humeral callus black, the former with tawny lateral margins behind suture; scutellum blackish dorsally, its margins broadly tawny; pleura tawny; lower part of sternopleuron black. Legs fulvous; all femora with dark brown ventral blotch near base; fore and hind tibia with variable brown blotch beyond middle; fore tarsus with three distal segments brown. Wing marked as in *D. glebosa*, but more strongly tinged with yellow. Haltere fulvous. Abdomen shining black; segments 1 and 2 tawny or reddish brown on lateral margins.

Head. Postfrons almost horizontal, not pitted; median hump well marked, anterior lateral humps somewhat less so; surface of postfrons slightly depressed between humps; parafacial as wide as antennal groove or almost so, smooth; facial carina narrow, strongly elevated above, where the margins are rather sharply raised, rounded off below, its surface finely rugose or almost smooth; height of cheek 0.30–0.32 of height of eye; ocellar and fronto-orbital bristles present but very weak. Antenna longer than distance from its basal insertion to centre of epistomal margin; third segment very attenuated, 7.2–8.7 times as long as width near middle, rounded at apex; arista with few very minute hairs towards base. Prelabrum moderately developed, not very prominent; palpus of moderate width.

Thorax. Scutellum minutely rugose; pleural hairs longer than in *D. glebosa;* humeral and prescutellar acrostichal bristles present; no distinct pteropleural. Fore and hind femora with dorsal bristles weaker than in *D. maculipennis*, sometimes mostly yellow; in ♂, hind coxa, trochanter, and ventral surface of femur with long fine yellow hairs, some of which are apically crisped; fore tarsus of ♂ widened, especially segments 2–4. Wing with distal section of vein 4 gradually curved and converging with vein 3 through most of its length, ending in wing apex; anal crossvein curved but less strongly so than in *D. glebosa.*

Abdomen. Tergite 5 one and a half times to twice as long as tergite 4. ♂: all preabdominal sternites well developed, with long fine apically crimped hairs; ♀: sternites without especially long hairs, sternites 3 and 4 much reduced. ♂ postabdomen: surstyli elongate; free distal section of outer surstylus curved forwards, transversely compressed; aedeagus with preglans about half as long as glans, without membranous wings, separated from stipe by a constriction; glans elongate ovoid, curved; bulb moderately developed; terminal filaments slightly over twice as long as glans, not much tapered distally, without distinct membranous margins; cercus unusually long.

Dimensions: total length, ♂ 7.7–11.2 mm, ♀ 8.1–9.4 mm; length of thorax, ♂ 2.9–4.1 mm, ♀ 3.1–3.5 mm; length of wing, ♂ 6.5–9.5 mm, ♀ 7.4–8.3 mm; length of glans of aedeagus 0.63–0.67 mm.

Distribution: New South Wales—coast to eastern edge of Tablelands.

Holotype ♂: McCarr's Creek, Ku-ring-gai Chase, near Sydney, 31 xii 1970 (AM), D.K.M.

Other material examined: Boonoo Boonoo Falls, Tenterfield district, i 1966 (paratypes, 1 ♂, 1 ♀, UQ), T. Weir and B. Cantrell; Kurrajong Heights, near Richmond, i 1935 (paratype ♀, CSIRO), D. F. Waterhouse; West Head, Ku-ring-gai Chase, i 1971 (paratype ♀, AM), D.K.M.; Towler's Bay, Pittwater, near Sydney, i 1971 (paratypes, 1 ♂, 1 ♀, in cop., AM), M. J. Fletcher.

Habitat: holotype taken in dry sclerophyll forest near stream, at mercury vapour lamp.

Comparative notes. The very elongate parallel-sided third antennal segment, reminiscent of the psilid genus *Loxocera*, is a distinctive character separating this from most allied forms. In *D. cancellata* this segment is as elongate, but the coloration is paler and the structure of the aedeagus is different.

Duomyia cancellata n. sp.

♂. Resembling *D. loxocerina* and agreeing with the description given for that species except as indicated below. ♀ unknown.

Coloration. Postfrons fulvous; no black blotch in upper end of antennal groove; a brown-black blotch near summit of parafacial. Third antennal segment tawny on inner surface except at apex, otherwise brown; arista tawny basally almost to middle, brown distally. Palpus pale fulvous. Thorax tawny except for a broad black median area on mesoscutum, broadest in front of suture, its lateral limits aligned with the dorsocentral bristles behind suture, not quite reaching scutellar suture, this area with broken, greenish reflections; scutellum with greenish reflections dorsally, its margins pale yellow. Legs fulvous; segments 3 and 4 of fore tarsus suffused with brown. Wing tinged with orange, with brown apical cloud which does not enter marginal cell. Abdomen tawny with some darker brown suffusions on tergites 2–4.

Head. Postfrons with humps not strongly elevated; facial carina strongly elevated and margined throughout, reaching to within a short distance of epistomal margin, its surface with vertical corrugations (six ridges in holotype) crossed by much finer horizontal rugae throughout; height of cheek 0.35 of height of eye; fronto-orbital bristles almost indistinguishable. Third antennal segment almost eight times as long as width near middle. Prelabrum rather weakly developed.

Thorax. Hairs on hind coxa, trochanter, and femur short; fore tarsus not strongly broadened or asymmetrical. Wing with distal section of vein 4 almost straight except for the apical curvature ending very slightly in front of wing apex; anal crossvein straight except at anterior extremity.

Abdomen. Tergite 5 about one and a half times as long as tergite 4; hairs on sternites not especially long. ♂ postabdomen: free distal section of outer surstylus curved forwards, less broadly compressed apically than in *D. loxocerina;* preglans about half as long as glans, with a rather narrow longitudinal membranous wing; glans subcylindrical, curved; filaments slightly shorter than glans, gradually tapered throughout.

Dimensions: total length 8.9–10.4 mm; length of thorax 3.5–3.8 mm; length of wing 7.4–7.8 mm; length of glans of aedeagus 0.82–0.85 mm.

Distribution: New South Wales—North Coast.

Holotype ♂: Iluka, Clarence R., 24 xi 1970 (AM), D.K.M.

Other material examined: Iluka, i 1971 (paratype ♂, AM), A. Hughes and D.K.M.; Shoal Bay, near Port Stephens, i 1971 (paratypes, 2 ♂, AM), D. Sands.

Habitat: burnt *Eucalyptus-Tristania* forest and rain forest, taken at light.

Comparative notes. This species appears closest to *D. loxocerina* and *D. scipio*, both of which have a similarly elongate third antennal segment. It differs from both these species in the absence of the blackish blotch in upper end of antennal groove and in facial structure. It further differs from *D. scipio* in the extensive black area on the mesoscutum and the absence of any dark colouring in apex of marginal cell, and from *D. loxocerina* in the lighter colouring and the structure of the aedeagus.

Duomyia nigricosta Malloch

Duomyia (*Duomyia*) *nigricosta* Malloch, 1929: 511.

♂ ♀. Somewhat resembling *D. maculipennis;* differing principally as indicated below.

Coloration. Postfrons dark brown; face and cheeks tawny. Prelabrum and palpus light tawny. Thorax black with blue or bluish green reflections. Fore femur black, other femora dark brown to black; fore tibiae black in specimens from southern Queensland and New South Wales, tawny with variable brown suffusions in specimens from north Queensland; other tibiae tawny with brown suffusions; fore tarsus black in southern specimens, tawny, becoming brownish distally, in specimens from north Queensland; other tarsi tawny. Wing with broad blackish costal band from distal part of subcosta to apex, scarcely extending behind vein 4. Abdomen shining black.

Head. Vertex sharply carinate; postfrons with two prominent median humps; face short and broad with epistomal margin sinuate; facial carina weakly margined immediately below antennae, otherwise ill defined, with slight transverse depression in middle.

Thorax. Three pairs of scutellar bristles.

Abdomen. Tergite 5 about one and a half times as long as tergite 4. ♂ postabdomen: not examined in detail.

Dimensions: total length, ♂ 7.2–8.1 mm, ♀ 6.5–8.3 mm; length of thorax, ♂ 2.6–3.0 mm, ♀ 2.5–3.3 mm; length of wing, ♂ 5.0–6.1 mm, ♀ 4.9–6.2 mm.

Distribution: Coastal eastern Queensland and New South Wales.

Holotype ♂: Cairns, no date (DEI), probably F.P.D., ex coll. Lichtwardt.

Other material examined. Queensland: Iron Range, iv 1964 (1 ♂, 2 ♀, CSIRO), I.F.C. and M.S.U.; Rocky R., near Coen, xii 1964 (1 ♂, CNIC, 1 ♀, UQ), G.M.; Ewan Road, 3–14 miles W of Paluma, i 1966 (1 ♀, CSIRO), J. G. Brooks; Camp Mountain, near Brisbane, xi 1951 (1 ♀, UQ), anon., Highvale, 14 miles NW of Brisbane, xii 1959 (2 ♂, 2 ♀, CSIRO), R.S.; Brookfield, near Brisbane, xii 1962 (1 ♂, UQ), G.M. New South Wales: Ourimbah State Forest, near Gosford, xi 1955 (1 ♀, CSIRO), T.G.C.; Galston Gorge, near Sydney, i xii 1963–1964 (2 ♀, AM), J.H.A.; Ku-ring-gai Chase, near Sydney, i 1964 (1 ♀, SPHTM), J.H.A.; Bulli, xii 1925 (1 ♂, CSIRO), I.M.M.

Duomyia hebes n. sp.

(Fig. 48)

♂ ♀. *Coloration.* Postfrons brown-black; parafacial brown; face, cheek, and lower occiput brownish tawny; orbital margins of face and frons with silvery pruinescence; a band of similar pruinescence within antennal groove which is much widened at upper end; upper part of occiput black. Antenna tawny basally; third segment brown beyond insertion of

arista; arista reddish brown basally, otherwise blackish. Prelabrum tawny with brown margin; palpus black. Thorax black; mesoscutum and scutellum with greenish reflections. Femora tawny with extensive brown sufusions to almost entirely black; tibiae tawny; tarsi fulvous, the three distal segments of fore tarsus slightly browned. Wing membrane with faint greyish yellow tinge; a broad blackish costal band from distal end of subcosta to apex, broader and more diffuse distally but not extending behind vein 4; squama white. Haltere brown. Abdomen shining black.

Head. Vertex strongly raised and compressed into a sharp carina; a small hump between ocelli and centre of postfrons; postfrons roughly pitted on most of surface except in vicinity of median hump and vertex; parafacial narrower than third antennal segment, smooth; face much shorter than postfrons; facial carina ill-defined and completely rounded off at sides, usually with transverse depression in centre and another just above the slightly prominent epistomal margin; ocellar and one or two pairs of fronto-orbital bristles small but distinct, black. Antenna about one and a third times as long as distance from its basal insertion to epistomal margin; third segment not attenuated, rounded apically; arista with numerous short hairs near base, which are not longer than basal diameter of arista. Prelabrum rather small but well sclerotized; palpus of moderate width.

Thorax. Scutellum without hairs, its surface minutely rugose; humeral and prescutellar acrostichal bristles present; three pairs of scutellars; pteropleuron with some black setulae. Fore femur moderately stout, other femora less so; fore femur with two rows of black dorsal bristles, posteroventral bristles reduced to fine hairs; middle femur with posterior bristles strong and black apically, becoming pale and hair-like towards middle; hind femur with well developed black dorsal bristles. Wing with distal section of vein 4 gradually converging with vein 3, very slightly and evenly curved throughout; anal crossvein almost straight; squama rather long.

Abdomen. Tergite 5, two to nearly three times as long as tergite 4. ♂ postabdomen: outer surstylus with basal section moderately long but rather stout; free distal section much shorter, narrowing to the obtuse apex, with a tubercle near middle of posterior side; distal section of inner surstylus shorter and much narrower with transversely flattened terminal tooth; aedeagus with stipe heavily sclerotized, broadened and compressed distally; preglans well differentiated, elongate, curved, with a membranous flange along its entire length, slightly longer than glans and separated from it by a broad membranous section; glans only slightly curved; membranous bulb short but distinct, with pair of very short membranous caeca, one of which is unequally bifid; filaments fused at extreme bases, rather slender beyond the thickened basal part, slightly expanded at apices, each about 4.7 times as long as glans.

Dimensions: total length, ♂ 8.2–10.3 mm, ♀ 9.0–10.1 mm; length of thorax, ♂ 3.7–4.0 mm, ♀ 3.6–4.3 mm; length of wing, ♂ 7.1–7.7 mm, ♀ 7.1–7.6 mm; length of glans of aedeagus 1.35–1.50 mm.

Distribution: Queensland—north-central coast.

Holotype ♂: Shute Harbour, near Proserpine, iii 1964 (CSIRO), I.F.C. and M.S.U.

Other material examined: Shute Harbour, iii iv 1964 (paratypes, 3 ♂, 4 ♀, CSIRO, 1 ♂, 1 ♀, AM, 1 ♂, 1 ♀, BM), I.F.C. and M.S.U.; Cannonvale, near Proserpine, vi 1958 (paratype ♀, CSIRO), T.G.C.

Comparative notes. Apart from the small differences in colour and in the development of the facial carina mentioned in the key, differentiation of this and the next two species rests principally in the structure of the aedeagus (see figs 47, 48, 49).

Duomyia brevifurca n. sp.

(Fig. 47)

♂ ♀. Very similar to *D. hebes* in most characters; agreeing with description given for that species except as indicated below.

Coloration. Face brownish above, fulvous below. Prelabrum brown. Femora black, narrowly tawny at each extremity; fore tibia black; other tibiae tawny to blackish brown; fore tarsus dark brown; other tarsi fulvous.

Head. Postfrons with whitish hairs much coarser and more conspicuous than in *D. hebes;* median hump rather weakly developed; parafacial as wide as third antennal segment or almost so, usually with weak horizontal grooves; face shorter in relation to antenna and postfrons than in *D. hebes*, concave in profile but otherwise without transverse depressions; ocellar bristle weak and pale; fronto-orbital absent.

♂ *postabdomen:* outer surstylus with posterior tubercle situated before middle of distal section; aedeagus with stipe not noticeably broadened and compressed distally; glans strongly curved; filaments very short, each 0.81 of length of glans.

Dimensions: total length, ♂ 8.2 mm, ♀ 7.0–7.9 mm; length of thorax, ♂ 3.3 mm, ♀ 3.0–3.2 mm; length of wing, ♂ 6.6–6.7 mm, ♀ 6.0–6.5 mm, length of glans of aedeagus 1.19–1.27 mm.

Distribution: Queensland—north–central.

Holotype ♂: Mingela, Charters Towers district, 21 iv 1955 (CSIRO), K.R.N.

Other material examined: same data as holotype (paratypes, 2 ♀, CSIRO, 1 ♂, AM, 1 ♀, BM).

Duomyia rudis n. sp.

(Fig. 49)

♂ ♀. Very similar to *D. hebes* in most characters; agreeing with the description given for that species except as indicated below.

Coloration. Fore femur almost entirely black.

Head. Postfrons with whitish hairs coarser than in *D. hebes*, more as in *D. brevifurca;* median hump in front of ocelli rather well developed; face concave in profile but without transverse depressions; facial carina margined laterally immediately below antennae, but not very strongly so, rounded off and ill defined below; ocellar bristle weak and pale; fronto-orbitals indistinguishable.

♂ *postabdomen.* Stipe not much dilated distally; preglans almost straight; glans strongly curved; filaments each 1.4 times as long as glans.

Dimensions: total length, ♂ 9.7–9.8 mm, ♀ 10.3 mm; length of thorax, ♂ 4.0 mm, ♀ 4.2 mm; length of wing, ♂ 8.1–8.2 mm, ♀ 8.2 mm; length of glans of aedeagus 0.96–0.98 mm.

Distribution: Queensland—south–central.

Holotype: ♂: 25 miles N of Gin Gin, W of Bundaberg, iii 1958 (CSIRO), I.F.C.

Other material examined: same data as holotype (paratype ♂, CSIRO); Burnett R., Eidsvold, i 1970 (paratype ♀, AM), G.A.H.

X. GENUS **EUPROSOPIA** MACQUART

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

Pachycephala Doleschall, 1858: 115–116 (pp. 43–44 in reprint), not Vigors, 1825 (Aves). Type species *P. Mohnikei* Doleschall (Enderlein, 1924).

Notopsila Osten Sacken, 1882: 209 (for *Pachycephala* Dol.).

Oncoscelia Enderlein, 1924: 136 (for *Pachycephala* Dol.).

Lepidocompsia Enderlein, 1924: 137. Type-species *Platystoma impingens* Walker.

Tetrachaetina Enderlein, 1924: 138. Type-species *T. Bürgersiana* Enderlein.

Neoestromyia Ôuchi, 1939: 249 (given as *Neogastrophyllus* on pl. 20). Type species *N. kienyangensis* Ôuchi.

Head of approximately normal proportions or vertically elongate; antennal grooves deep and well defined, separated by a broad, flat-topped, sharply defined facial carina; an almost vertical carina on cheek which is crossed by an impressed line on its lower extremity; prelabrum well developed; segment 2 of antenna very short and compact; segment 3 variably elongate; arista bare or haired only on basal half in Australian species; fronto-orbital bristles absent; inner vertical bristles present or absent; postvertical bristles minute or absent; a strongly developed posterior cheek bristle.

Thorax. Mesoscutum a little longer than wide, with the following bristles; usually 1 humeral (absent in females of some species), usually 1 + 1 notopleurals, anterior supra-alar, postalar, posterior intra-alar, one posterior dorsocentral, prescutellar acrostichal; scutellum haired or setulose, with a variable number of marginal bristles; pleura without any normally developed strong bristles; supra-squamal ridge with rather long, fine erect pale hairs or with shorter black setulae, sometimes with both.

Legs of normal proportions; femora without ventral spinose bristles, though normal bristles or other processes may be present.

Wings of normal proportions; radial vein with a number of setulae dorsally before level of humeral crossvein; second basal cell not enlarged; posterior distal angle of anal cell obtuse; squama large, rounded.

Abdomen ovoid, often broadly so, usually broadest across segment 2. ♂ postabdomen typical of the subfamily; inner and outer surstyli usually connected for more than half their length; filaments of aedeagus without connecting membrane.

Coloration. Thorax and abdomen usually dull brown, the surface almost entirely obscured by dense pruinescence; mesoscutum usually with irregular markings. Wings extensively spotted or heavily banded.

Type species: *E. tenuicornis* Macquart.

Malloch (1931) is the only author to attempt a division of *Euprosopia* into species-groups. He was, at the time, mainly concerned with species from the Philippines, China, and some other Asiatic countries. Later (Malloch, 1931a, 1940), when dealing with the species from New Guinea and the Solomon Islands he did not use or extend this system. Of Malloch's eight species-groups, only the *tenuicornis* and *separata* groups occur in Australia, the other six groups containing only Oriental species. Malloch included *E. tenuicornis* and *E. scatophaga* in

the *tenuicornis* group but I find it necessary to remove the latter species from the group, as *E. tenuicornis* and its allies are more closely related to the *separata* group than to *E. scatophaga* and its allies. I recognize nine species groups as occurring in Australia.

1. *miliaria* group. Small or very small species; scutellum with two pairs of bristles; distal half of wing usually with reticulate pattern, consisting of clear spots on a dark ground; inner vertical bristle usually present; arista with distinct hairs, at least on basal part; posterior notopleural bristle often duplicated or with strong adjacent setulae; abdomen without scales. Includes: *rete* n.sp., *acula* n.sp. (Australia), *miliaria* Hendel (Moluccas), *minuta* Malloch, *setinervis* Malloch, *dubitalis* Malloch (New Guinea), *minor* Malloch (Solomon Islands).

2. *ventralis* group. Size variable; scutellum with at least three pairs of bristles; wing pattern not reticulate, consisting of dark spots which often tend to coalesce into transverse stripes; head not distinctly higher than wide; inner vertical bristles well developed; arista always with distinct basal hairs; abdomen without scales. Includes: *ventralis* (Walker), *xanthops* n.sp. (both Australia and New Guinea), *punctifacies* Malloch, *lenticula* n.sp., *sericata* n.sp., sp. 1, *crassa* n.sp. sp. 2, sp. 3, *piperata* n.sp., *conferta* n.sp., *integra* n.sp., *kurandae* n.sp., sp. 4, *mica* n.sp. (Australia), *potens* (Walker) (Moluccas).

3. *remota* group. Somewhat similar to *ventralis* group, but pteropleural bristle present (absent in all other groups); head higher than wide; inner vertical bristle well developed; arista bare or almost so; abdomen without scales. Australia only. Includes: *E. remota* n.sp.

4. *megastigma* group. Head slightly higher than wide; inner vertical bristles absent; arista bare; face without pair of blackish marks joining inner margin of antennal groove to epistomal margin; scutellum pruinescent, rounded, without apical sulcus, wing with discal band complete but sometimes complex; abdominal tergites with scales in both sexes. Restricted to eastern Australia. Includes: *hollowayi* n.sp., *megastigma* n.sp., *crispa* n.sp.

5. *maculipennis* group. Very similar to the *megastigma* group except as follows: face with pair of distinct dark marks joining inner margin of antennal groove to epistomal margin; wing pattern almost completely broken up into dark spots. Temperate parts of Australia only. Includes: *albipila* n.sp., *maculipennis* (Guérin), sp. 5, *fimbripes* n.sp., *vitrea* n.sp., *alpina* n.sp., *celsa* n.sp.

6. *scatophaga* group. Similar to the *megastigma* group except as follows: face with pair of distinct dark marks connecting inner margin of antennal groove to epistomal margin; wing with discal band complete and joined to the sometimes slightly broken preapical band in the vicinity of vein 4 to form a V-shaped mark; apical mark enclosing a pale dot; scutellum entirely pruinescent, with a slight apical depression, the bristles of the apical pair more widely separated than usual. Restricted to eastern Australia. Includes: *hypostigma* n.sp., *subacuta* n.sp., *filicornis* n.sp., *scatophaga* Malloch, *ramosa* n.sp.

7. *macrotegularia* group. Head much higher than wide; inner vertical bristles absent; arista with distinct short hairs near base; face with pair of conspicuous black marks; tegula of ♀ very elongate, reaching to humeral callus; humeral bristle absent in both sexes; tarsi entirely black; normally two pairs of scutellar bristles, the apical ones widely separated; abdominal tergites with scales in both sexes; inner and outer surstyli of ♂ elongate and united only at extreme bases. Restricted to eastern Australia. Includes: *macrotegularia* Malloch, *subula* n.sp.

8. *tenuicornis* group. Head distinctly higher than wide; inner vertical bristles absent; arista bare or almost so; face with pair of conspicuous black marks; tegula of ♀, if enlarged, not reaching to humeral callus; humeral bristle well developed in ♂, absent or minute in ♀; wing with stigmatal, discal, and preapical bands well developed; apical mark not enclosing a pale dot; scutellum entirely pruinescent, apically rounded, with apical bristles rather close together; abdominal tergites of ♂ with surface scales, scaling in ♀ more or less reduced to fringes on posterior margins of tergites; ♂ with inner and outer surstylus joined for more than half their length. Apparently restricted to eastern Australia. Includes: *anostigma* n.n., *armipes* n.sp., *monodon* n.sp., *tenuicornis* Macquart.

9. *separata* group. Very similar to the *tenuicornis* group except as follows: humeral bristle of ♀ well developed in one species only; scutellum with margins dark and shining, more or less devoid of pruinescence, with apical depression or sulcus between the well separated apical bristles. Includes, *comes* n.sp., *separata* Hendel, *inermis* n.sp., *conjuncta* Hendel, *biarmata* Malloch (Australia), *connexa* Malloch (Solomon Islands).

Key to Australian Species of **Euprosopia**

1 Inner vertical bristles well-developed; abdominal tergites scaleless 2

——— Inner vertical bristles absent or minute; abdominal tergites scaled, at least in ♂ .. 26

2 (1) A distinct black pteropleural bristle (rarely two) among the white hairs; arista bare or almost so; tarsi dark brown to black, at most only paler at basal extremity of basal segment (*remota* group) ..... *remota* n. sp.

——— No pteropleural bristle; arista haired near base; basal segment of tarsi pale yellowish, darkened only at apex 3

3 (2) Wings dark brown with numerous clear spots; 2 pairs of scutellar bristles; two or more unequal posterior notopleurals (*miliaria* group) 4

——— Wings clear, with dark spots or bands; three pairs of scutellar bristles; one posterior notopleural (*ventralis* group) 5

4 (3) Apex of first posterior cell pale, almost clear; clear spots in discal cell mostly separate from one another; ♂: outer surstylus dilated distally, without spine; filaments of aedeagus each more than ten times as long as glans ..... *rete* n. sp.

——— Apex of first posterior cell dark brown; clear spots in discal cell tending to merge together; ♂: outer surstylus with long, slender recurved distal spine; filaments of aedeagus not more than four times as long as glans ..... *acula* n. sp.

5 (3) Scutellum without whitish apical hairs, but with numerous coarse mostly black ones on lateral margins; lower part of face with irregular brown reticulation or isolated streaks ..... *ventralis* (Walker)

——— Scutellum with whitish apical hairs, its lateral margins without hairs or setulae; facial markings, when present, variable 6

6 (5) Face unmarked; hind femur with some black setulae or hairs on ventral surface near base; basalar process usually undeveloped in ♂, forming a broadly rounded lobe in ♀; ♀: tergite 5 about half as long as tergite 4 ..... *xanthops* n. sp.

——— Face normally with numerous brown spots, reduced to a few irregular streaks in small specimens; hind femur without black ventral setulae or hairs near base; basalar process variable in both sexes, when well developed always narrowly pointed; ♀: tergite 5 almost as long as tergite 4 7

7 (6) Palpus broadened, about as wide as or wider than lateral part of prelabrum; lower lateral extremity of face somewhat broadened and rounded ventrally 8

——— Palpus not broadened, generally distinctly narrower than lateral part of prelabrum, in ♂ narrower than third antennal segment; lower lateral extremity of face tapering to a narrow angle (except in *E. kurandae*) 17

8 (7) ♂ ♂ (unknown in sp. 3) 9

——— ♀ ♀ (unknown in *E. punctifacies*, spp. 1 and 2) 14

9 (8) Middle and hind femora greyish brown, often darker distally; aedeagus with filaments about 1.5 times as long as glans, bent near bases ..... *crassa* n. sp.

——— Middle femur, and usually also hind femur, fulvous with dark distal marks; aedeagus variable 10

10 (9) Basalar process well developed, finely pointed; stipe of aedeagus slender .....sp. 2

——— Basalar process very short or almost obsolete; stipe of aedeagus usually broad....11

11 (10) Aedeagus with filaments not more than 1.5 times as long as glans; outer surstylus notably longer than inner 12

——— Aedeagus with filaments about twice as long as glans; outer surstylus variable ..13

12 (11) Hind femur fulvous with grey-brown distal marks; section of stigmatal band in marginal cell entire or almost so, but a separate rounded dark spot in this cell opposite end of vein 1; apex of outer surstylus somewhat narrowed and curved posteriorly; ejaculatory apodeme without strong dorsal prominence on posterior end of main piece ..... *lenticula* n. sp.

——— Hind femur entirely dark brown; section of stigmatal band in marginal cell broken by hyaline spots; apex of outer surstylus not much narrowed and curved; ejaculatory apodeme with strong dorsal prominence on posterior end of main piece ..... *punctifacies* Malloch

13 (11) Outer surstylus about as long as inner surstylus, its apex narrow and more or less curved backwards; glans longer, 0.31–0.35 mm in length; preglans well sclerotized, at least as long as wide ..... *sericata* n. sp.

——— Outer surstylus distinctly longer than inner surstylus, its apex not much narrowed, slightly incurved; glans shorter, about 0.23 mm long; preglans distinguishable as a narrowly sclerotized ring only .....sp. 1

14 (8) Spiracles of segment 5 very close together near median dorsal line, each separated from the other by scarcely more than its width; spiracles of segment 4 somewhat closer to median dorsal line than to posterolateral angle of tergite 4; velvety areas on tergite 5 extending broadly to its posterior margin .....sp. 3

——— Spiracles of segment 5 more widely separated; spiracles of segment 4 much closer to posterolateral angles of tergite 4; velvety areas of tergite 5 not reaching posterior margin of tergite 15

15 (14) Middle and hind femora greyish brown, often darker distally; tegula elevated and thickened anteriorly, with a depression on anterior surface which extends inwards ..... *crassa* n. sp.

——— Middle and hind femora fulvous with dark distal marks; tegula not thickened anteriorly 16

16 (15) Spiracles of segment 5 each situated midway between median dorsal line and lateral margin of tergite 5; abdominal pleural membrane with short inconspicuous whitish hairs in region of segment 4 ..... *lenticula* n. sp.

——— Spiracles of segment 5 each much closer to median line than to lateral margin of tergite 5; pleural membrane with rather long silky yellow hairs in region of segment 4 ..... *sericata* n. sp.

17 (7) ♂♂ (unknown in *E. mica* and sp. 3) 18

——— ♀♀ 21

18 (17) Outer surstylus reaching approximately to level of apex of cercus, slender, straight, and parallel-sided in profile; glans of aedeagus short, straight; discal and preapical bands of wing usually complete 19

——— Outer surstylus not nearly attaining to apex of cercus; aedeagus variable; discal and preapical bands of wing usually more irregular and dissected 20

19 (18) Sternopleuron blackish-brown, at least on lower half; wing with discal band entire on costal margin; section of preapical band in first posterior cell without spot divided off from inner posterior corner; filaments nearly as long as stipe and about four times as long as glans ..... *integra* n. sp.

——— Sternopleuron tawny, at most faintly suffused with brown; wing with discal band strongly incised on costal margin; section of preapical band contained in first posterior cell with spot more or less separated from its inner posterior corner; filaments much shorter than stipe, about three times as long as glans. *kurandae* n. sp.

20 (18) Filaments nearly as long as stipe; terminal tooth of inner surstylus conspicuously hooked forwards ..... *conferta* n. sp.

——— Filaments not nearly as long as stipe; terminal tooth of inner surstylus less strongly flexed forward ..... *piperata* n. sp.

21 (17) Tergite 5 with paired velvety areas small and situated near lateral margins 22

——— Tergite 5 with very large velvety areas which occupy the greater part of its surface..23

22 (21) Middle and hind femora fulvous with grey pruinescence, slightly browned distally; apical mark of wing not enclosing a hyaline spot; velvety areas moderately developed, each extending for most of length of lateral part of tergite 5; spiracles of segment 4 situated behind and slightly above posterior angle of tergite 4; spiracles of tergite 5 situated close to median dorsal line; size medium, wing usually over 6.0 mm long .....sp. 4

——— Middle and hind femora rather dark brown with grey pruinescence and narrowly fulvous apices; apical mark enclosing a hyaline spot; velvety areas of tergite 5 minute; spiracles of tergite 4 situated below and slightly in front of posterior angle of tergite; spiracles of segment 5 separated by almost full width of tergite 5; size small, wing usually under 5.0 mm long ..... *mica* n. sp.

23 (21) Pleural membrane of abdomen with numerous coarse blackish setulae in vicinity of segment 3; spiracles of segment 5 situated closer to lateral margins of tergite 5 than to median dorsal line 24

——— Pleural membrane without or with very few blackish setulae; spiracles of segment 5 situated closer to median dorsal line than to lateral margins of tergite 25

24 (23) Sternopleuron heavily suffused with blackish brown, at least on lower half; wing with discal band entire on costal margin; section of preapical band in first posterior cell without spot divided off from its inner posterior corner; abdomen with a conspicuous transverse brush of golden setulae behind sternite 3 .... *integra* n. sp.

——— Sternopleuron tawny, at most faintly suffused with deeper brown; wing with discal band strongly incised on costal margin; section of preapical band contained in first posterior cell with spot more or less separated from its proximal posterior corner; no such brush of golden setulae behind sternite 3 ..... *kurandae* n. sp.

25 (23) Spiracles of segment 5, very close together, each separated from median dorsal line by not more than its own diameter; spiracles of segment 4 situated just above posterolateral corners of tergite 4 ..... *conferta* n. sp.

——— Spiracles of segment 5 approximately equidistant from each other and from lateral margins of tergite 5; spiracles of segment 4 situated just below posterolateral corners of tergite 4 ..... *piperata* n. sp.

26 (1) Scutellum with median groove at apex separating a pair of blackish shining swellings (*separata* group) 27

——— Scutellum not shining at apex, with median groove indistinct or absent.....31

27 (26) Wing with apical mark separate from preapical stripe; a small transverse black streak between stigmatal band and discal band; ♂: hind trochanter with a ventral brush of dense, short black setulae 28

——— Apical mark connected to preapical band along costa; no streak between stigmatal and discal bands; ♂ (unknown in *E. inermis*): hind trochanter normally haired.. 29

28 (27) Dorsal surface of hind femur with some black setulae near base and numerous black setulae on distal part, the intermediate region with whitish hairs or setulae and usually only a few scattered black setulae, which form at most an irregular double row traversing this region; ♂: hind femur not narrowed or strongly curved towards base; ♀: spiracles of segment 5 approximated dorsally behind tergite 5, each situated closer to median dorsal line than to lateral margin of tergite. . *comes* n. sp.

——— Dorsal surface of hind femur usually with numerous black setulae for its entire length; ♂: hind femur narrowed and strongly curved towards base; ♀: spiracles of segment 5 usually more widely separated, each situated closer to lateral margin of tergite 5 than to median line ..... *separata* Hendel

29 (27) Scutellum polished only at extreme margin, the dorsal surface with fine rugosity extending almost to the apical bristles, the apical groove very shallow; dark area in first basal cell usually with one transverse hyaline mark and two hyaline dots; ♀: tegula reaching forward to level of anterior notopleural bristle; basalar process lanceolate, about one third the length of tegula ..... *biarmata* Malloch

——— Scutellum more extensively polished on distal part, the apical groove usually broader and deeper; dark area in first basal cell usually divided by two or three transverse hyaline bands, and with two hyaline dots; ♀: tegula not reaching to level of anterior notopleural bristle; basalar process very short or absent 30

30 (29) Fore femur with posteroventral bristles almost obsolete; ♀: tegula short, normal; basalar process absent ..... *inermis* n. sp.

——— Fore femur with posteroventral bristles well-developed distally; ♀: tegula produced anteriorly; basalar process present, very short, acute..... *conjuncta* Hendel

31 (26) Fore and middle tarsi entirely black; normally 4 scutellar bristles; humeral bristle absent or minute in both sexes; ♀: tegula very long, reaching to humeral callus (*macrotegularia* group) 32

——— Middle tarsus, and usually other tarsi, pale basally; normally 6 or more scutellar bristles in all species; humeral bristle present, at least in ♂; ♀: tegula not reaching to humeral callus 33

32 (31) Mesoscutum with pair of non-pruinescent spots immediately in front of dorsocentrals black and included within the broad black central area (partly obscured by pale pruinescence) which extends laterally as far as extremities of dorsal scutellar bridges; ♂: outer and inner surstyli subequal in length; ♀: tegula tapering beyond base, slender and subcylindrical anteriorly; spiracles of segment 5 close to lateral margins of tergite 5 and well in front of posterior extremity of latter.... ..... *subula* n. sp.

——— Non-pruinescent spots in front of dorsocentrals reddish brown, or if black, then they are situated at lateral limits of the comparatively narrow central black area of mesoscutum; ♂: outer surstylus notably longer than inner; ♀: tegula somewhat broadened anteriorly and strongly depressed on that surface which is uppermost when the wings are raised; spiracles of segment 5 removed from margins of tergite 5 and placed in a transverse line with its posterior extremity .... *macrotegularia* Malloch

33 (31) Face without pair of blackish marks connecting inner margins of antennal grooves with epistomal margin, sometimes the extreme sides of epistomal margin with small brown marks (*megastigma* group) 34

——— Face with pair of blackish marks connecting (or almost connecting) inner margin of each antennal groove with epistomal margin 36

34 (33) Wing markings consisting primarily of two very large irregular blotches which are joined posteriorly and produced into a number of irregular streaks on their margins, also a small apical spot and some basal markings ..... *hollowayi* n. sp.

——— Wing markings not as above, including a complete transverse discal band, an incomplete stigmatal band, and other smaller markings 35

35 (34) Wing with discal band straight, widened and somewhat dissected anteriorly; palpus narrow, almost parallel-sided; ♀: basalar process rudimentary, not curved forwards; abdominal segment 5 with numerous elongate scales on pleural membrane ..... *megastigma* n. sp.

——— Wing with discal band curved inwards anteriorly and not much widened; palpus dilated distally; ♀: basalar process small, slender, erect basally, much curved forwards distally; pleural membrane of abdomen without scales ..... *crispa* n. sp.

36 (33) Wing pattern broken into spots, without any complete transverse bands (except in some specimens of *E. maculipennis*, which has a ventral tubercle at base of hind femur) (*maculipennis* group) 37

——— Wing with at least the discal band well developed; hind femur without basal ventral tubercle 43

37 (36) Hind femur with rounded ventral tubercle near base; arista minutely spatulate in both sexes; ♀: tergite 5 reduced in size, largely concealed by the much larger tergite 4 ..... *maculipennis* (Guerin)

——— Hind femur without ventral tubercle; arista variable in ♂, filiform in ♀; ♀: tergite 5 more than half as long as tergite 4 38

38 (37) Wing with irregular stigmatal band from costa, to vein 4; central region of mesopleuron with predominantly white hairs ..... *albipila* n. sp.

——— Stigmatal band represented only by a black blotch in subcostal and marginal cells; hairs on central region of mesopleuron black 39

39 (38) Anterior carina of cheek transversely grooved at lower end; basal segment of fore tarsus reddish brown to black; ♂: arista with palette entirely grey or blackish, rather narrow 40

——— Anterior carina of cheek without transverse grooves; basal segment of fore tarsus pale fulvous, except at blackish distal end; arista variable 41

40 (39) Fore tibia usually less than 0.92 of length of fore tarsus; ♂: preglans strongly developed, about twice as long as its maximum diameter; filaments unequal, the shorter one not more than 2.5 times as long as glans ..... *celsa* n. sp.

——— Fore tibia almost as long as fore tarsus; ♂: preglans smaller, less than twice as long as its maximum diameter; filaments slightly unequal, about four times as long as glans ..... *alpina* n. sp.

41 (39) Fore femur with short weak hairs on posteroventral surface, or a few longer ones distally only; fore tibia usually with a light brownish area near middle which extends towards base dorsally; ♂: arista with apical palette broad, usually rounded, transparent in middle; filaments of aedeagus unequal, the shorter one at least three times as long as glans; ♀: abdominal spiracle 5 situated near posterior margin of tergite 5 above its posterior angle ..... *vitrea* n. sp.

——— Fore femur with posteroventral series of long white bristles for most of its length; fore tibia entirely black; ♂: arista of different conformation; filaments equal or subequal, up to about twice as long as glans; ♀ (unknown in sp. 5): abdominal spiracle 5 situated below lateral margin of tergite 5 42

42 (41) ♂: arista with lanceolate terminal palette at apex..... *fimbripes* n. sp.

——— ♂: arista finely filiform at apex ..... sp. 5

43 (36) Wing with apical mark enclosing a hyaline dot; preapical band connected posteriorly with discal band, though the former may be partly broken into spots; ♀: surface of tergites 3–5 scaly (*scatophaga* group) 44

——— Wing with apical mark not enclosing a pale dot; preapical band separate from discal band; ♀: tergites 3 and 5 without surface scales, but tergite 3 with marginal fringe of narrow scales (*tenuicornis* group) 48

44 (43) Postfrons dark brown; lower lateral angles of face entirely blackish; two posterior notopleurals ..... *ramosa* n. sp.

——— Postfrons light yellow-brown, often with darker median patch; face with comparatively small blackish mark only on each side; one posterior notopleural 45

45 (44) Vein 6 becoming unpigmented and desclerotized approximately half way between anal cell and wing margin, thereafter represented by a fold in wing membrane only; inhabiting sandy areas near coast of N.S.W. ..... *filicornis* n. sp.

——— Vein 6 well developed for much more than half the distance from anal cell to wing margin; inhabiting rain forest areas 46

46 (45) Preapical band entire in first posterior cell, forming a complete but sometimes irregular V with discal band; arista of ♂ spatulate, that of ♀ black on distal half ..... *scatophaga* Malloch

——— Preapical band broken in first posterior cell; arista not spatulate nor conspicuously darkened on distal half 47

47 (46) Basalare anteriorly rounded off, with minute tuft of pubescence only; ♀: abdominal spiracles 4 and 5 situated in pleural membrane near posterior corners of tergites ..... *hypostigma* n. sp.

——— Basalar process developed as a small subacute projection; ♀: spiracle 4 situated dorsally between tergites 4 and 5; spiracle 5 situated close behind tergite 5, rather close to median dorsal line ..... *subacuta* n. sp.

48 (43) Wing with apical mark broadly connected anteriorly to preapical band; ♀: tegula short, normal 49

——— Apical mark separate from preapical band; ♀: tegula produced forward beyond mesopleural suture 50

49 (48) Discal cell without transverse stripe between stigmatal and discal bands, sometimes one or two dark dots in this area; ♂: apical palette of arista black; fore tibia with dense black ventral bristles of basal part short, decumbent, and inconspicuous; ♀: humeral callus with fine hairs (macrotrichia) on almost entire surface, but becoming shorter posteriorly; abdomen with silky pleural hairs of segments 4–5 long and conspicuous ..... *anostigma* n.n.

——— Discal cell with narrow transverse stripe between stigmatal and discal bands (rarely broken into spots or absent); ♂: apical palette of arista transparent; fore tibia with dense black ventral bristles of basal part long, forming a conspicuous semi-erect brush; ♀: humeral callus devoid of hairs on posterior half; abdomen with silky pleural hairs shorter, restricted to region of segment 4 ..... *armipes* n. sp.

50 (48) Sternopleuron with extensive dark brown to blackish ventral area (its entire surface with overlying greyish pruinescence); basal section of first basal cell (up to base of discal cell) with three or four well-separated blackish spots; ♂: fore femur not toothed; hind trochanter with stout truncate ventral process; ♀: abdominal tergite 3 with median area of dense matted pubescence but devoid of setulae or longer hairs in this area; tergite 4 not noticeably longer than either tergite 3 or tergite 5, with few narrow marginal scales only ..... *tenuicornis* Macquart

——— Sternopleuron entirely tawny below the greyish covering of pruinescence; basal section of first basal cell with a large blackish area which is only incompletely divided by hyaline spots; ♂: fore femur with strong posteroventral tooth; hind trochanter without process; ♀: tergite 3 with rather long dense hairs in median area; tergite 4 longer than tergite 3 and about twice as long as the reduced tergite 5 on median line, with numerous scattered scales ..... *monodon* n. sp.

Euprosopia rete n. sp.

(Figs 51, 85, 87)

Euprosopia miliaria Hendel: Malloch, 1929: 512, misidentification.

♂ ♀. *Coloration.* Head dull ochraceous, with or without the following dark markings: a brown spot in front of each fronto-orbital plate, a dark brown spot in lower extremity of each antennal groove, a pair of regular spots on face touching epistomal margin, a few irregular brown marks on face; fronto-orbital plates broadly creamy-pruinescent; orbital margins of postfrons and parafacial with creamy pruinescence; occiput dark brown on upper part with dense greyish pruinescence. Antenna fulvous with segment 3 often somewhat brownish; arista black beyond the tawny base. Prelabrum and palpus fulvous to tawny. Mesoscutum and scutellum blackish with dense yellow-grey pruinescence and dark brown pruinescent markings; humeral callus tawny with yellowish pruinescence; pleura brown with grey pruinescence; propleuron paler; upper margin of mesopleuron with goldish pruinescence; a goldish pruinescent stripe running from anterior spiracle, across centre of mesopleuron on to sternopleuron; a goldish pruinescent mark on upper part of sternopleuron. Femora fulvous with very variable brown suffusion, sometimes fore femur largely grey-brown, sometimes all femora almost entirely fulvous; tibiae fulvous, broadly brown apically, often also a less conspicuous sub-basal brown mark; tarsi tawny brown, with basal segment of each creamy white except at its apex. Wing with brown spots of distal half merging to form a network enclosing compact clear spots, in basal part the brown spots mostly separate; apex pale, subhyaline in first posterior cell; squama pale brown. Haltere yellowish. Abdomen grey-brown with a pair of darker brown patches on each of tergites 2 to 5.

Head very slightly wider than high; height of cheek 0.15–0.21 of height of eye; inner vertical bristle well developed but a little shorter than outer vertical; ocellar and fronto-orbital absent; cheek bristle well developed. Antenna extending two thirds to three quarters of distance from its basal insertion to epistomal margin of face in ♂, a little shorter in ♀, arista with very short inconspicuous basal hairs only, that of ♂ with a short, broadly lanceolate preapical expansion, and with a shorter filiform apical section; arista of ♀ simple, filiform. Prelabrum moderately well developed; palpus of moderate width.

Thorax. Humeral callus with moderately fine pale hairs; scutellum rounded in outline, with a few hairs extending on to sides; basalare with short, blunt pubescent process; tegula not enlarged or modified; humeral bristle moderately developed; posterior notopleural callus with well developed notopleural bristle in addition to two or more somewhat shorter black bristles or strong setulae; prescutellar acrostichal present; two pairs of scutellars. Fore femur with well developed dorsal and posteroventral black bristles; hind femur with a few black dorsal bristles distally; tibiae and tarsi without special armature. Wing without setulae on vein 5.

Abdomen scaleless in both sexes; ♂: tergite 3 shorter than tergite 4; tergite 5 longer than tergite 4; sternite 5 with a group of black setulae on each side and shorter pale hairs medially; ♀: tergites 3 and 4 both shorter than tergite 5; sternite 5 without black setulae. ♂ postabdomen: outer surstylus rather elongate, the free distal section at first narrowed, then broadly dilated on outer side, without distal spine; inner surstylus shorter, with distal section bent outwards, with two small terminal teeth; aedeagus with preglans sclerotized but not very sharply differentiated; glans sybcylindrical, slightly curved; filaments each nearly twelve times as long as glans, slender distally, with a fine, bristle-like terminal process.

Dimensions: total length, ♂ 4.3–6.2 mm, ♀ 4.1–5.0 mm; length of thorax, ♂ 2.0–2.9 mm, ♀ 2.0–2.6 mm; length of wing, ♂ 4.1–5.4 mm, ♀ 4.2–5.0 mm; length of glans of aedeagus 0.47–0.57 mm.

Distribution: Queensland—north-east coast.

Holotype ♂: Kuranda, Queensland, 11 i 1967 (AM), G.A.H. and D.K.M.

Other material examined: Claudie R., Iron Range district, v vi 1966 (3 ♂, 16 ♀, AM, 2 ♀, BM), D.K.M.; Mulgrave R., 4 miles W of Gordonvale, i v xii 1961–1967 (paratypes, 2 ♂, 2 ♀, AM, 1 ♂, BM), R.L., G.A.H., and D.K.M.; 2 miles N of Tully R. bridge, E. of Cardstone, old Cardstone–Ravenshoe road, i 1967 (1 ♀, no head, AM), G.A.H. and D.K.M.; Clump Point, near Tully, iii 1964 (paratype ♀, CSIRO), I.F.C. and M.S.U.; 10 miles N of Ingham, iv 1955 (paratype ♀, CSIRO), K.R.N.

Notes. This appears to be the species recorded by Malloch (1929) from Queensland under the name *E. miliaria* Hendel, but the author is satisfied that the name applies to a different species only known from the Moluccas. Hendel's name was first introduced (Hendel 1914a (April): 149–150, 167) without description or figure, but with three references. The first reference is an incomplete one to Hendel's later work (1914b, not published till June, 1914); the other references are to the descriptions of *Platystoma pectoralis* Walker (1862) and *Euprosopia diminutiva* Walker, of de Meijere (1913). Hendel's second publication of *E. miliaria*, given as a new species in June of the same year (Hendel, 1914b: 353–354, pl. 2, fig. 41), includes the same references to the descriptions of Walker and de Meijere, but also includes a description based on two females from Deslacs Island near New Britain, without any type designation. Hendel (1914a: 167) indicates that *Platystoma pectoralis* Walker (1862) is a primary homonym of *P. pectorale* Loew (1852).

At the time of first publication of the name *E. miliaria* Hendel (1914a) it became available only by virtue of the references to the already published descriptions of Walker and de Meijere, and the material described by these authors therefore constitutes the type series (International Code, arts. 12, 72 (b)). The reference to the then unpublished description in Hendel (1914b) does not constitute an "indication" as defined in art. 16 of the International Code. As *E. miliaria* is not expressly a replacement name, the type specimen cannot be fixed under art. 72 (d) of the code. I therefore designate the holotype of *P. pectoralis* Walker as the lectotype of *E. miliaria* Hendel. This specimen (♂, Gilolo = Halmahera, Moluccas, A.R.W., BM) belongs to a distinct species from any other available material. It is possible that *E. miliaria* is confined to the Moluccas.

The specimens described by Hendel (2 ♀, Deslacs Island, Vitu or French Islands, New Britain District, 1901, L. Biró, MNM) are more like the Australian *E. rete* than any other named form, but their identity will only be clarified when better material, including males, is available from the locality. Despite the fact that they bear Hendel's determination labels as the types of *E. miliaria*, they are not true types.

E. miliaria is distinguished from *E. rete* by having segments 3 and 4 of fore tarsus much broadened in ♂; clear spots in marginal and submarginal cells large, complex and merging in places, instead of separate and in a single simple series in each of these cells as in *E. rete*, spots elsewhere on wing more numerous and complex; posterior notopleural callus with rather

numerous short additional bristles; no groups of strong black setulae on sternite 5 of ♂; size larger than in *E. rete.*

Euprosopia diminutiva (Walker) (holotype ♀, BM) differs from *E. rete* as follows: posterior notopleural callus with short, weak black hairs only in addition to the single strong bristle; arista loosely plumose; markings on apical part of wing different, there being a brown field divided into broad discal, preapical, and apical bands by means of two narrow clear broken stripes.

Euprosopia acula n. sp.

(Figs 86, 88)

♂ ♀. Very similar to *E. rete* in most characters and agreeing with the description given for that species except as indicated below.

Coloration. Head golden-ochraceous with pruinescent markings as in *E. rete;* postfrons tawny-brown posteriorly; face with an ill defined brown mark on each side connecting inner side of each antennal groove to epistomal margin. Femora grey-brown with fulvous apices. Wing with extreme apical part of first posterior cell brown; discal cell with clear spots tending to fuse into irregular clear areas.

Head. Height of cheek 0.19–0.24 of height of eye; inner vertical bristle as long as outer.

Abdomen. ♂: sternite 5 with some of the black setulae on each side longer and stronger than in *E. rete,* the pale median hairs almost absent. ♀: abdomen too shrivelled for description. ♂ postabdomen: outer surstylus with distal expansion narrower and more angular than in *E. rete* and with a long slender recurved spine; inner surstylus with a single compressed terminal tooth; aedeagus with glans more slender than in *E. rete;* filaments each about 3.5 times as long as glans, not much tapered distally, with terminal process stouter than in *E. rete.*

Dimensions: total length, ♂ 5.8–7.4 mm, ♀ 4.4 mm; length of thorax, ♂ 2.5–3.3 mm, ♀ 2.3 mm; length of wing, ♂ 5.6–6.9 mm, ♀ 5.0 mm; length of glans of aedeagus 0.57 mm (holotype).

Distribution: North Queensland—mountainous areas.

Holotype ♂: Barron R., at the Crater (or Mount Hypipamee), near Herberton, 3,100 ft, 16 xii 1961 (AM), R.L.

Other material examined: same data as holotype (paratype ♂, AM); Mount Lewis, near Julatten, Mossman district, xii 1966 (paratype ♀, UQ), B. Cantrell.

Habitat: rain forest.

Comparative notes: The most useful character for distinguishing both sexes of this species from *E. rete* is the absence of the apical wing spot in the first posterior cell.

Euprosopia ventralis (Walker)

Lamprogaster ventralis Walker, 1859: 131.

Euprosopia ventralis: Hendel, 1914b: 343; not *E. ventralis:* Malloch, 1939a: 150–151, pl. 5, fig. 39, misidentification of undetermined species.

♂ ♀. Somewhat similar to *E. xanthops* and differing from the description given for that species mainly as indicated below.

Coloration. Face with very variable brown markings which may take the form of a few inconspicuous dots (specimens from Key Islands) or extensive irregular reticulation (most Australian specimens), also a large brown blotch of varying intensity on upper part of facial carina in Australian specimens. Thorax darker than in *E. xanthops* with heavy deep greyish pruinescence, the dark markings rather indistinct except for two pairs of small black spots on posterior part of mesoscutum. Femora deep reddish-brown to tawny, often darker apically; tibiae tawny, at least the hind one darkened apically; tarsi dark brown, the basal segment yellowish basally, becoming light to rather dark brown distally. Wing with rather sparse spots basally, where it is variably stained with yellow (strongly so in specimens from Key). Abdomen pruinescent, grey with irregular blackish clouding on tergites.

Head. Palpus rather broad.

Thorax. Basalar process minute or absent in both sexes; tegula not enlarged or modified; scutellum with coarse predominantly black setulae on lateral surfaces and no whitish apical hairs. Fore tibia without thickened ventral setulae.

Abdomen. ♂: tergites 3 and 4 together almost as long as tergite 5; posterior margin of tergite 5 polished and devoid of pruinescence; sternite 5 with very long fine hairs; ♀: tergites 3–5 subequal in length or tergite 5 very slightly longer; tergite 5 with an area on each side near lateral margin which is shining and devoid of pruinescence, probably through abrasion. ♂ postabdomen: outer surstylus with basal section somewhat elongate, nearly as long as cercus; distal section narrowly elongate beyond base, almost straight, with numerous low setiferous tubercles; inner surstylus with some weak setiferous tubercles on anterior surface, free distal section very short with only a single, subacute terminal tooth with no fine point; aedeagus with glans rather short, more so in Queensland specimens than in lectotype (Key Islands); filaments very long, approximately equal in length, about eight times as long as glans in paralectotype, about 18 times as long as glans in Queensland specimens.

Dimensions: (type material, Key Islands) total length, ♂ 10.9 mm, ♀ 10.7 mm; length of thorax, ♂ 5.8 mm, ♀ 5.9 mm; length of wing, ♂ 10.1 mm, ♀ 9.9 mm; length of glans of aedeagus 0.53 mm; (material from Queensland) total length, ♂ 7.3–9.5 mm; ♀ 5.4–9.2 mm; length of thorax, ♂ 3.8–4.9 mm, ♀ 3.1–5.1 mm; length of wing, ♂ 7.1–8.4 mm, ♀ 6.1–8.9 mm; length of glans of aedeagus (2 ♂ of different size, wing length 7.4 and 8.4 mm respectively), 0.37 mm; (material from Papua) total length, ♂ 7.6 mm, ♀ 8.3 mm; length of thorax, ♂ 3.8 mm, ♀ 4.0 mm; length of wing, ♂ 6.8 mm, ♀ 7.4 mm; length of glans of aedeagus, 0.37 mm.

Distribution: Key Islands (type series); Northeast New Guinea; Papua; Queensland, as far south as Palm Island.

Type material examined: Key Islands: "Ké I," no date (lectotype ♀, here designated, paralectotype ♂, BM), A.R.W.

Other material examined. Northeast New Guinea; Seleo, Berlinhafen (= (?) Selo Island, c. 10 miles E of Aitape, near the former settlement of Berlinhafen, Sepik District), 1896 (1 ♂, 2 ♀, MNM), L. Biró. Papua: Gaile Forest, 28 miles SE of Port Moresby, v 1965 (1 ♂, 1 ♀, BM), R. W. Crosskey. Queensland: Claudie R., near Mount Lamond, Iron Range district, v vi 1966 (3 ♂, 2 ♀, AM), D.K.M.; Mulgrave R., 4 miles W of Gordonvale, i 1959–1967 (1 ♂, 1 ♀, AM), G.A.H. and D.K.M.; Babinda, i 1949 (1 ♂, UQ), B. Hitchcock; Palm Island, no date (1 ♀, CSIRO), T.L.B.

Habitat (in Queensland): lowland rain forest and gallery forest.

The specimen here designated as lectotype has been figured previously as "*Euprosopia ventralis* (Walker) type" (Malloch, 1939a: pl. 5, fig. 38). This is not considered to be a valid type designation for the following reasons. Malloch, working in America, did not see any of Walker's type material in the British Museum (Natural History) but acknowledges (p. 97) receiving photographs of the wings of types in that institution. The determination of this

specimen as type is therefore not due to Malloch but to the supplier of the photograph who probably assumed the specimen conspicuously labelled "type" to be Walker's type. It is possible that liaison with the British Museum was through F. H. Taylor who communicated Malloch's paper to the Linnean Society of New South Wales for publication and made the photographs of those specimens lodged in Australian collections. In this case the authorship of the captions to the illustrations may be due to Taylor instead of Malloch. Malloch does not refer to a type specimen in his text.

Malloch's specimen (1939a: fig. 39, Cyclops Mountains, L. E. Cheesman, BM) is not referable to *E. ventralis* but to an undetermined species, perhaps undescribed.

Euprosopia xanthops n. sp.

(Figs 89, 93)

Euprosopia potens Walker: Hendel, 1914b: 341–343 (part); Malloch, 1939a: 150, pl. 5, fig. 37. Misidentifications.

♂ ♀. *Coloration.* Head light fulvous; postfrons tawny; fronto-orbital plates yellowish pruinescent, the pruinescence extending in a narrow line along orbit to parafacial; a diffuse brown spot in front of each fronto-orbital plate; face with a small brown mark on each side near lower lateral angle but with no other markings; occiput tawny-brown above, covered with greyish white pruinescence; antenna light yellowish brown, arista black beyond base; prelabrum and palpus fulvous. Mesoscutum with blackish ground colour becoming brown at lateral margins, covered with yellowish grey pruinescence and dark grey pruinescent markings; scutellum tawny brown, with yellowish and brown pruinescence, the hairs on its dorsal surface brown or blackish, those at apex whitish; pleura reddish brown with light grey pruinescence; mesopleuron with black, brown, and yellowish hairs. Femora dull fulvous, the fore one a little darker, middle and hind femora often slightly darkened apically; fore tibia brownish fulvous, broadly blackish at apex, the blackish area extending towards base on anteroventral surface; middle and hind tibiae dull fulvous, narrowly dark brown at apices; tarsi black to dark brown, basal segment of each pale fulvous with brown apex. Wing with pattern of basal half consisting of more or less separate dark brown spots, there being no stigmatal band; discal band more or less complete but irregular, with a tendency to break into spots anteriorly; preapical band usually complete; apical spot not enclosing a distinct pale area, except in immature specimens; squama grey, creamy on posterior margin. Haltere creamy; distal part of pedicel dark brown. Abdomen tawny, with greyish brown suffusions on tergites.

Head. Slightly wider than high; height of cheek 0.31–0.36 of height of eye; eye 1.6–1.8 times as high as long; only the following cephalic bristles well-developed: inner and outer verticals, which are subequal, and cheek bristle. Antenna extending slightly more than half the distance from its basal insertion to epistomal margin in ♂, extending half or slightly less than half that distance in ♀; segment 3 elongate; arista filiform in both sexes, with conspicuous hairs on basal half, the longer ones a little more than half as long as width of segment 3 of antenna. Prelabrum moderately developed, finely sulcate; palpi rather narrow.

Thorax. Humeral callus with long yellowish hairs on most of surface, often also a smaller number of short blackish hairs on upper part; scutellum rounded, without hairs or setulae on lateral surfaces; basalar process in ♂ little developed, obtuse, in ♀ short, compressed, broadly rounded at apex; tegula unmodified; the following bristles present: prescutellar acrostichal; dorsocentral; humeral; 1 + 1 notopleurals; supra-alar; postalar; posterior intra-alar; three pairs of scutellars. Fore femur with series of black posteroventral bristles which is only well differentiated on distal half of femur in ♂ but extends to near base in ♀; fore tibia with numerous thickened black setulae on ventral to anteroventral surface which are largest on distal quarter of tibia and better developed in ♂ than in ♀; hind trochanter

with some black hairs among the paler ones which are more numerous in ♂ than in ♀; hind femur with some black setulae on ventral surface, especially towards base, which are more numerous and stronger in ♂ than in ♀; hind femur with some black setulae on ventral surface, especially towards base, which are more numerous and stronger in ♂ than in ♀; hind tibia rather strongly curved in ♂ so as to leave a gap when folded against the femur, less strongly curved in ♀ and enclosing no such gap.

Abdomen. Tergites scaleless in both sexes; ♂: tergites 3 and 4 subequal in length and each only slightly shorter than tergite 5; ♀: tergite 4 somewhat longer than tergite 3; tergite 5 not more than half as long as tergite 4; spiracles of segments 4 and 5 situated in pleural membrane below lateral margins of tergites. ♂ postabdomen: base of outer surstylus swollen, distal section rather short, straight, compressed apically; inner surstylus slightly shorter, its terminal tooth only slightly projecting posteriorly; aedeagus with long stipe; glans subcylindrical with very slight curvature; filaments equal, moderately slender, each about 1½ to 1¾ times as long as glans.

Dimensions: total length, ♂ 8.2–8.7 mm, ♀ 7.6–10.4 mm; length of thorax, ♂ 4.1–4.4 mm, ♀ 4.2–4.9 mm; length of wing, ♂ 7.7–7.9 mm, ♀ 8.2–9.0 mm; length of glans of aedeagus 0.58–0.61 mm.

Distribution: Queensland—north-east coast; New Guinea.

Holotype ♂: 2 miles E of Cardstone, Tully River, Queensland, 14 i 1967 (AM), G.A.H. and D.K.M.

Other material examined. Queensland: Mulgrave R., 4 miles W of Gordonvale, i 1967 (paratype ♂, AM), G.A.H. and D.K.M.; 2 miles N of Tully R. bridge, E of Cardstone, old Cardstone–Ravenshoe road, i 1967 (paratypes, 5 ♀, AM, 1 ♀, USNM), G.A.H. and D.K.M.; 9 miles E of El Arish, Tully district, iii 1964 (paratype ♀, CSIRO), I.F.C. and M.S.U. West New Guinea: Cyclops Mountains, Sabron, 930 ft, vi 1936 (2 ♂, 2 ♀, BM), L. E. Cheesman. Northeast New Guinea: Wewak, no date (1 ♂, SPHTM, 1 ♂, 1 ♀, AM), F. H. Taylor; Friedrich Wilhelm Hafen (= Madang), 1896 (1 ♂, MNM), L. Biró; Stephansort, Astrolabe Bay, 1898–1900 (1 ♂, 1 ♀), L. Biró. Papua: Aroana Estate, Aroa R., xi xii 1963 (3 ♀, AM), D.K.M.; Kanosia Estate, Aroa R., xii 1963 (1 ♀, AM), L. Delange; Brown R., near Port Moresby, x 1963 (1 ♂, 1 ♀, AM), D.K.M.; Paga Hill, Port Moresby, i 1966 (1 ♂, UQ), E. Mann.

Notes. This species has been confused with *E. potens* (Walker) but that species differs from *E. xanthops* in having a median brown stripe on face; apical half of wing with more definite transverse bands; lateral surfaces of scutellum with pale setulae; ♀ with small, slender, acute basalar process. *E. potens* is possibly confined to the Moluccas.

Euprosopia punctifacies Malloch

Euprosopia punctifacies Malloch, 1928a: 346–347, fig. 2; 1929: 512, latter probably misidentification of other species.

This species has not been examined by the author but Mr G. C. Steyskal has sent much detailed information on the holotype. From this, and from Malloch's description it seems highly probable that the species is distinct from any other dealt with here.

♂. Apparently rather similar to *E. lenticula* and *E. sericata*, but differing as indicated below and in key. ♀ unknown.

Coloration. Middle femur dark brown only on apex and adjacent distoventral part; hind femur entirely dark brown. Wing pattern (Malloch, 1928a: fig. 2): stigmatal band enclosing two clear spots in marginal cell; preapical band completely crossing first posterior cell, though very irregular; apical mark enclosing a small clear spot.

Postabdomen: outer surstylus rounded and not narrowed at apex, which is not posteriorly flexed; aedeagus with glans and filaments of somewhat similar dimensions to those of *E. lenticula;* ejaculatory apodeme of sperm pump with a strong dorsal prominence just before posterior end of main piece, projecting from beneath sclerotized cap.

Dimensions: total length 8 mm (Malloch); length of glans of aedeagus 0.27 mm (Steyskal).

Distribution: North Queensland.

Holotype ♂ (not seen by author): Magnetic Island, near Townsville (USNM), anon.

Euprosopia lenticula n. sp.

(Figs 90, 92)

♂ ♀. Very similar to *E. sericata,* and agreeing with the description given for that species except as indicated below.

Coloration as described for *E. sericata.*

Head. Height of cheek 0.23–0.26 of height of eye; eye 1.9–2.1 times as high as long. Antenna extending about two thirds the distance from its basal insertion to epistomal margin in ♂, slightly shorter in ♀.

Thorax as described for *E. sericata.*

Abdomen. ♀: spiracles of segment 5 a little closer to lateral margin of tergite 5 than to median dorsal line; pleural membrane with some short fine whitish hairs, best developed in region of segment 3. ♂ postabdomen: free distal section of outer surstylus not, as in *E. sericata,* abruptly contracted, but more gradually narrowed, a little longer than inner surstylus, its apex strongly curved posteriorly beyond apex of inner surstylus; aedeagus with glans a little shorter than in *E. sericata,* filaments rather robust, strongly curved near bases, not more than 1.5 times as long as glans.

Dimensions: total length, ♂ 6.5–7.6 mm, ♀ 6.6–8.3 mm; length of thorax, ♂ 3.4–3.8 mm, ♀ 3.5–4.1 mm; length of wing, ♂ 6.4–6.8 mm, ♀ 6.7–7.6 mm; length of glans of aedeagus, 0.81–0.87 mm.

Distribution: North Queensland—high islands near coast.

Holotype ♂: Palm Island, near Ingham, 20 xii to 6 i 1930–31 (CSIRO), I.M.M.

Other material examined: Palm Island, near Ingham, i xii 1930–1931, one without date (paratypes, 2 ♂, 2 ♀, CSIRO, 1 ♂, AM), I.M.M., T.L.B.

Comparative notes. This species is similar to *E. punctifacies* in many features including its island habitat. It apparently differs in the features noted under that species.

Euprosopia sericata n. sp.

(Fig. 76)

♂ ♀. *Coloration.* Head fulvous; postfrons with a tawny-brown blotch on each side immediately in front of the whitish pruinescent fronto-orbital plates, and another such blotch surrounding ocelli; face with rather numerous brown spots of variable shape (tending to disappear in specimens which have not been dried immediately after death); upper part of occiput blackish, covered with thick light grey pruinescence; antenna tawny, arista black

beyond base; prelabrum fulvous; palpus fulvous often with slight darker suffusion. Mesoscutum with dark brown ground colour and overlying grey pruinescence with comparatively few and not very heavy dark markings; scutellum yellowish grey pruinescent with three brown dorsal blotches, its apical hairs whitish; pleura brown, lower part of propleuron, posterior part of mesopleuron, and upper part of sternopleuron tawny, the whole with overlying grey pruinescence. Femora fulvous, marked with brown distally, the fore one also suffused with grey dorsally; tibiae fulvous, broadly brown distally; tarsi blackish, each with basal segment cream except at apex. Wing with all transverse bands either broken into spots or with a distinct tendency to become so, sometimes either discal or preapical band more or less complete; apical mark enclosing an irregular hyaline spot; squama very pale brownish. Haltere cream. Preabdominal tergites grey with a pair of transversely elongate brown blotches on tergites 2–4.

Head a little wider than high; height of cheek 0.24–0.27 of height of eye; eye 1.7–2.0 times as high as long; lower lateral extremity of face distinctly expanded and rounded on ventral margins; only the following cephalic bristles well developed: inner and outer verticals of approximately equal size; one cheek bristle. Antenna extending a little more than half the distance from its basal insertion to epistomal margin in both sexes; arista filiform, with short basal hairs the longest of which are nearly three times as long as basal diameter of arista; prelabrum broad; palpus strongly broadened.

Thorax. Humeral callus with rather long pale hairs; scutellum rounded, convex dorsally, without hairs on lateral surface; basalar process of ♂ almost obsolete or represented by a broadly angular prominence on basalare, that of ♀ well-developed, elongate, erect, the apex slightly curved forward; tegula not enlarged or modified in either sex; the following bristles present; prescutellar acrostichal; dorsocentral; humeral; 1 + 1 notopleurals; supra-alar; postalar; posterior intra-alar; three pairs of scutellars. Fore femur with well developed black posteroventral bristles, absent on approximately basal quarter or third of femur; fore tibia without enlarged ventral setulae or zones devoid of setulae; hind trochanter with pale hairs only; hind femur without any black central setulae, very slightly curved upward so that when tibia is fully flexed its apex does not nearly touch base of femur (contrast *E. conferta*). Wing with distal section of vein 4 with slight sigmoid curve, the forward curvature of its apical part being often more noticeable than the basal curvature.

Abdomen without scales on tergites. ♂: tergites 3 and 4 subequal in length, tergite 5 a little longer; ♀: tergites 3 and 4 subequal in length, tergite 5 slightly shorter and much narrower, with a pair of large velvety areas separated from posterior margin of tergite by a pruinescent marginal strip; spiracle of segment 4 situated between tergites 4 and 5, a little above posterior angle of former; spiracles of segment 5 situated close to posterior margin of tergite 5 and closer to each other than to lateral margin of tergite; pleural membrane with long silky yellow hairs in region of segment 4 and much shorter ones in regions of segments 3 and 5. ♂ postabdomen: outer surstylus not nearly attaining to apex of cercus, quite broad as far as the extremity of its basal section, the free distal section abruptly contracted, rather short, its slender apex curved backwards; free distal section of inner surstylus almost as long as that of outer surstylus, its terminal tooth flexed backwards; stipe of aedeagus broad, slightly tapered distally, without hairs or pubescence; preglans short and rather slender, sclerotized; glans large, curved, sausage-shaped; filaments about twice as long as glans or a little less, slender distally, nearly straight towards bases.

Dimensions: total length, ♂ 6.2–8.1 mm, ♀ 5.8–7.8 mm; length of thorax, ♂ 2.9–3.8 mm, ♀ 3.4–4.1 mm; length of wing, ♂ 6.3–7.4 mm, ♀ 7.0–8.1 mm; length of glans of aedeagus 0.93–1.05 mm.

Distribution: Eastern Queensland, as far north as the Mackay-Eungella district; New South Wales, northeastern border district only.

Holotype: 2 miles NW of Mount Mowbullan, Bunya Mountains, Queensland, 3,300 ft, 7 i 1970 (holotype ♀, AM), G.A.H.

Other material examined. Queensland: Broken River, Eungella, xii 1961 (2 ♂, 1 ♀, AM), R.L. and D.K.M.; Finch Hatton Gorge, xii 1961 (1 ♀, AM, 1 ♀, BM), R.L. and D.K.M.; Mary's Creek, near Gympie, ii 1961 (paratype ♂, AM), D.K.M.; Maleny, v 1936 (paratype ♀, UQ), anon.; 2–3 miles NW of Mount Mowbullan, Bunya Mountains, i 1970 (paratypes, 9 ♂, 3 ♀, AM, 1 ♂, BM, 1 ♂, USNM), G.A.H.; Harlin, upper Brisbane River, ii 1936 (paratype ♀, UQ), F.A.P.; Highvale, 14 miles NW of Brisbane, i xii 1959–1960 (paratypes, 1 ♀, AM, 5 ♂, 5 ♀, CSIRO), R.S.; Moggill, near Brisbane, i 1960 (paratype ♀, UQ), K. Korboot; Tamborine Mountain, ii xii 1925–1960 (paratypes, 1 ♂, AM, 1 ♂, UQ), A. M. and G. P. Whitley, F.A.P.; Lamington National Park, ii 1961 (paratype ♀, UQ), I.C.Y.; Nerang River, near Springbrook Forest, 13 miles from Nerang, xii 1966 (paratypes, 2 ♂, 2 ♀, CSIRO, 1 ♀, USNM), T.G.C. New South Wales: Legume, near Woodenbong, iv 1925 (paratype ♀, UQ), anon.

Habitat: rain forest and forest remnants near streams. Taken on foliage of trees and on faeces of cow.

Comparative notes. The genitalia characters given in the key serve to distinguish the male, while the silky yellow hairs on the abdominal pleural membrane and the position of the fifth pair of spiracles will help to distinguish the female from related species with broad palpus.

Euprosopia sp. 1

♂. The available specimens agree generally with the description given for *E. sericata* except in genitalia. ♀ unknown.

Postabdomen. Outer surstylus with free distal section gradually narrowing from its origin to about middle, its apex broadly rounded and slightly incurved; inner surstylus distinctly shorter, its terminal tooth posteriorly flexed; stipe of aedeagus moderately slender, with line of short pubescence along anterior surface; preglans sclerotized only at distal extremity; glans slightly curved, shorter than in *E. sericata;* filaments nearly straight near bases, twice as long or slightly more than twice as long as glans.

Dimensions: total length 6.9–7.5 mm; length of thorax 3.4 mm; length of wing 6.5–6.6 mm; length of glans of aedeagus 0.69 mm.

Distribution: New South Wales—North Coast; Queensland—South Coast.

Material examined. Queensland: Mount Beerwah, via Glasshouse, 1,800 ft, xii 1965 (1 ♂, UQ), B. Cantrell. New South Wales: Iluka, Clarence R., xi 1964 (1 ♂, AM), D.K.M.

Habitat: specimen from Iluka taken in rain forest not far from sea.

Euprosopia crassa n. sp.

(Figs 64, 77)

♂ ♀. Generally similar to *E. sericata* and *E. lenticula;* agreeing with the description given for the former species except as indicated below.

Coloration as given for *E. sericata* except that of legs. Femora deep greyish brown, heavily pruinescent, the fore femur with some tawny patches; fore tibia brown, blackish distally, fulvous at extreme base; middle and hind tibiae tawny, broadly blackish distally and often brownish basally; tarsi as in *E. sericata.*

Head. Height of cheek 0.23–0.28 of height of eye; eye 1.7–2.0 times as high as long.

Thorax. Basalar process developed as a slight angular prominence in ♂, in ♀ similar to that of *E. sericata* except that the apex is usually slightly curved forward or almost straight; tegula of ♂ almost normal, with slight groove towards inner edge, that of ♀ thickened and elevated anteriorly, with a depression on anterior surface which runs inwards as a groove.

Abdomen. ♀: tergite 5 with velvety areas slightly larger than in *E. sericata*, more nearly approximated medially and only narrowly separated from posterior margin of tergite; spiracles of segment 5 widely separated, much closer to lateral margins of tergite 5 than to median dorsal line. ♂ postabdomen: outer surstylus curved in basal section, with a darkly pigmented anterior basal area, its free distal section gradually narrowing and curving forwards to the narrowly obtuse apex; inner surstylus shorter with posteriorly directed terminal tooth; stipe of aedeagus rather broad, with line of minute pubescence on anterior surface; preglans about as long as broad, not swollen; glans stout, slightly curved, shorter than in *E. sericata;* filaments robust, curved for a short distance just beyond bases, about 1.5–1.7 times as long as glans.

Dimensions: total length, ♂ 5.6–7.8 mm, ♀ 5.6–7.2 mm; length of thorax, ♂ 2.7–3.8 mm, ♀ 2.8–3.5 mm; length of wing, ♂ 5.4–7.2 mm, ♀ 5.6–6.9 mm; length of glans of aedeagus, 0.60–0.66 mm.

Distribution: Southeastern Queensland, from the Burnett River district to the southern border district.

Holotype ♀: Nerang River, near Springbrook Forest, 13 miles S of Nerang, 11 xii 1966 (CSIRO), T.G.C.

Other material examined: Nerang River, near Springbrook Forest, 13 miles S of Nerang, xii 1966 (paratypes, 2 ♂, CSIRO, 1 ♂, 1 ♀, AM), T.G.C.; Eidsvold, no date (except one, x 1929–iv 1930) (6 ♂, 2 ♀, CSIRO), T.L.B.; Gayndah, i 1935 (1 ♀, BM), anon; Gatton, iv 1955 (paratype ♂, UQ), D. Nunn; Highvale, 14 miles NW of Brisbane, xii 1959 (paratype ♀, CSIRO), R.S.; Brisbane, i 1931 (paratype, UQ), F.A.P.; Tamborine Mountain, ii 1960 (paratype ♂, UQ), F.A.P.; Cunningham's Gap, near Maryvale, iv 1961 (paratype ♂, UQ), M. A. Tesch.

Comparative notes. The general greyish brown colour of the femora, together with the short glans of the male and the thickened tegula of the female are useful recognition points.

Euprosopia sp. 2

♂. The only available specimen agrees generally with the description given for *E. sericata* except as indicated below. ♀ unknown.

Coloration. Thoracic pleura tawny-brown, with pale grey and yellowish pruinescence. Fore tibia predominantly brown, blackish distally. Wing with discal band more or less complete, divided by a hyaline streak in submarginal and first posterior cells; apical mark not enclosing a hyaline spot.

Head. Height of cheek 0.24 of height of eye; eye 1.9 times as high as long. Prelabrum moderately developed; palpus moderately broadened.

Thorax. Basalar process rather well developed, somewhat elongate, acute, the tegula reaching almost to its base. Hind femur almost straight.

♂ *postabdomen.* Stipe of aedeagus long and slender; preglans sclerotized, slightly swollen; glans slender, straight, shorter than in *E. sericata;* filaments about 1.4 times as long as glans, not strongly curved near bases.

Dimensions: total length 9.0 mm; length of thorax 4.5 mm; length of wing 8.1 mm; length of glans of aedeagus 0.70 mm.

Distribution: North Queensland—Daintree River district.

Material examined: Hutchinson Creek, E of Thornton Range, mercury vapour lamp, i 1967 (1 ♂, AM), G.A.H. and D.K.M.

Habitat: rain forest.

It seems probable that this form is specifically distinct from the others dealt with here. However I prefer to wait till more specimens, particularly females, become available before naming it.

Euprosopia sp. 3

♀. Agreeing with description given for *E. sericata* except as indicated below. ♂ unknown.

Coloration. Fore femur greyish brown, darker distally, tawny centrally on ventral surface; middle and hind femora tawny with rather dense grey pruinescence.

Head. Height of cheek 0.24 of height of eye; eye 1.9 times as high as long; palpus moderately broad.

Thorax. Basalar process rather elongate and slender, its apex slightly curved forwards and outwards; tegula very slightly enlarged, not quite reaching basalar process. Fore femur with well developed black posteroventral bristles confined to distal half, those near middle weaker and whitish.

Abdomen. Tergite 5 with pair of very extensive velvety areas, narrowly separated posteriorly and reaching to posterior margin of tergite on their full width; spiracles of segment 4 situated high up between tergites 4 and 5, closer to median dorsal line than to lateral margins of tergite 5; spiracles of segment 5 situated very close together near median dorsal line, each separated from the other by a distance equal to its own width; pleural membrane with short, scattered whitish hairs; numerous black setulae mixed with paler hairs in region of segment 3.

Dimensions: total length 5.6 mm; length of thorax 2.8 mm; length of wing 5.7 mm.

Distribution: North Queensland.

Material examined: Kuranda, no date (1 ♀, BM), F.P.D.

Though probably a distinct species, I prefer to wait till more material is available before naming this form.

Euprosopia piperata n. sp.

(Fig. 75)

♂ ♀. Agreeing with the description given for *E. conferta* in most characters but differing as indicated below.

Coloration. Facial spots well developed, variable in shape and number. Mesoscutum usually with dark markings less heavy than in *E. conferta.* Fore femur tawny-brown, darker distally, with grey pruinescence, especially on dorsal surface; middle and hind femora dull fulvous, becoming brown distally; tibiae dull fulvous, darkened distally, the fore one also somewhat darkened basally; tarsi as in *E. conferta.*

Head. Height of cheek 0.24–0.31 of height of eye; eye 1.7–1.9 times as high as long. Palpus usually slightly spatulate distally but not as wide as in *E. sericata* and *crassa*, narrower than lateral part of prelabrum.

Thorax. Basalar process very short but acute in both sexes.

Abdomen. ♀: spiracles of segment 4 situated immediately below posterior angle of tergite 4; spiracles of segment 5 approximately equidistant from one another and from lateral margins of tergite 5; pleural membrane with short scattered mostly whitish hairs, best developed in region of segment 3. ♂ postabdomen: outer surstylus rather short, gibbous at base posteriorly, broadened near middle and commencing to narrow well before separating from inner surstylus, its free distal section short with apex very obtuse and curved inwards and backwards; free distal section of inner surstylus very short, the terminal tooth flattened on end and not strongly flexed posteriorly; aedeagus with stipe of moderate length and thickness; preglans little differentiated from stipe; rather slender.

Dimensions: total length, ♂ 3.5–6.5 mm, ♀ 3.5–6.5 mm; length of thorax, ♂ 1.8–3.0 mm, ♀ 1.7–3.3 mm; length of wing, ♂ 3.8–6.0 mm, ♀ 3.9–6.4 mm; length of glans of aedeagus, 0.61–0.72 mm (Broken River, two specimens measured), 0.82 mm (Tooloom, one specimen), 0.84–0.89 mm (Upper Allyn, five specimens).

Distribution: Queensland—as far north as Mackay–Eungella district; New South Wales, as far south as Hunter River district.

Holotype ♂: Upper Allyn, near Eccleston, New South Wales, 10 iii 1970 (AM), G.A.H. and D.K.M.

Other material examined: Queensland: Broken River, Eungella, xii 1961 (2 ♂, 2 ♀, AM), R.L. and D.K.M.; Finch Hatton Gorge, xii 1961 (5 ♀, AM, 1 ♀, BM, 1 ♀, CSIRO), R.L. and D.K.M.; Mary's Creek, near Gympie, ii 1961 (1 ♀, AM), D.K.M.; Imbil, i 1936 (1 ♂, UQ), F.A.P.; Upper Cedar Creek, via Samford, xii 1962 (1 ♂, UQ), G.M.; Mount Coot-tha, near Brisbane, i 1965 (1 ♂, CSIRO), D.E.H.; Brisbane, i 1931 (1 ♀, UQ), F.A.P.; Tamborine Mountain, ii 1960 (1 ♀, UQ), P.R.W. New South Wales: Tooloom, near Kyogle, i 1926 (1 ♂, UQ), anon.; Huonbrook, near Mullumbimby, iii 1965 (1 ♀, AM), R.L. and D.K.M.; Upper Allyn, near Eccleston, ii iii 1967–1970 (paratypes 3 ♂, 13 ♀, AM, 1 ♂, BM, 1 ♀, CSIRO), D.K.M. and G.A.H.

Geographical variation. The size of the glans of the aedeagus appears to increase from north to south, being smallest in the two males from Broken River and greatest in those from Upper Allyn. However the males from Broken River are exceptionally small, by comparison with females from the same locality, and with most specimens from other localities. On the basis of the available material it is difficult to interpret the significance of this variation.

Comparative notes. The male may be distinguished from *E. conferta* by the genitalia characters given in the key and the female by the position of the fifth pair of abdominal spiracles.

Euprosopia conferta n. sp.

(Figs 2, 74, 95–100)

♂ ♀. *Coloration.* Head dull fulvous; postfrons tawny, darker posteriorly, the short fronto-orbital plates with greyish yellow pruinescence; face with rather numerous scattered brown spots of very irregular shape and size, often a few of the lower ones coalescing to form complex marks, in one preserved specimen the spots obsolete, evidently from imperfect drying; occiput with a large blackish area on each side of upper half which is almost completely obscured by thick pale grey pruinescence; antenna tawny, segment 3 suffused with brown,

arista black beyond base; prelabrum and palpus fulvous or tawny. Mesoscutum with blackish brown ground colour, covered with yellow-grey pruinescence and heavy blackish brown markings; scutellum brown with yellowish pruinescence and three darker pruinescent patches of varying intensity, most of hairs on dorsal surface black, the apical hairs whitish; pleura brown with greyish pruinescence. Fore femur blackish brown with grey pruinescence; middle and hind femora brown or tawny, with grey pruinescence, the latter often somewhat darker distally; fore tibia black distally, gradually becoming tawny or yellowish brown towards base; middle and hind tibiae fulvous with dark brown apices; tarsi black, basal segment of each pale cream with black apex. Wing spotted on basal half, the spots with slight tendency to coalesce into a very incomplete stigmatal band; discal band complete but irregular and incised; preapical band usually complete or with a short break in first posterior cell, one or two spots or a narrow stripe between it and discal band; apical mark enclosing a distinct hyaline dot; squama pale brownish. Haltere cream. Abdomen dark brown with grey markings on tergites.

Head slightly wider than high; height of cheek 0.30–0.40 of height of eye; eye 1.4–1.7 times as high as long; lower lateral extremity of face scarcely expanded ventrally, forming a narrow angle; only the following cephalic bristles well-developed: inner and outer verticals, the former slightly smaller; cheek bristle. Antenna extending about half the distance from its basal insertion to epistomal margin in ♀, slightly longer in ♂; segment 3 of variable width; arista filiform in both sexes, with short basal hairs the longest of which are about twice as long as basal diameter of arista. Prelabrum rather broadly developed, especially at sides; palpus elongate and rather narrow, distinctly narrower than third antennal segment in ♂, narrower than prelabrum in ♀.

Thorax. Humeral callus with rather long mostly pale hairs; scutellum rounded, without hairs or setulae on lateral surface; basalar process very short, obtuse in ♂, slightly longer and erect in ♀; tegula normal in ♂, slightly enlarged and extending as far forward as basalar process in ♀; the following bristles present; prescutellar acrostichal; dorsocentral; humeral; 1 + 1 notopleurals; supra-alar; postalar; posterior intra-alar; three pairs of scutellars. Fore femur with well developed series of black posteroventral bristles usually extending for about the distal two thirds of femur; fore tibia without enlarged setulae on ventral surface nor with differentiated zones except that setulae on an anteroventral strip are especially fine and crowded; hind trochanter with fine pale hairs only; hind femur without black setulae on ventral surface, almost straight, so that apex of hind tibia touches or almost touches its base when fully flexed. Wing with distal section of vein 4 slightly converging with vein 3 for most of its length, gradually curving forwards apically.

Abdomen. Tergites scaleless in both sexes; ♂: tergites 3 and 4 subequal in length; tergite 5 slightly longer than tergite 4; ♀: tergites 3 and 4 subequal, tergite 5 almost as long as tergite 4, with two very large velvety areas occupying all of surface except a median strip which widens anteriorly; spiracle of segment 4 situated behind and just above posterior angle of tergite 4; spiracles of segment 5 approximated dorsally; pleural membrane with rather conspicuous yellowish hairs on upper part in region of segment 3, and shorter but more numerous and widely distributed hairs in region of segment 4. ♂ postabdomen: outer surstylus of moderate length, not nearly attaining to apex of cercus, slightly gibbous anteriorly near base, free distal part short, at first rather broad but narrowed towards the obtuse slightly incurved apex, with an external subapical gibbosity; free distal section of inner surstylus a little shorter than that of outer surstylus with terminal tooth strongly flexed backwards; stipe of aedeagus rather slender, without hairs or pubescence; preglans not widened, slightly longer than wide, sclerotized but not very sharply distinguished from rest of stipe; glans rather slender, of moderate length; filaments equal, about as long as stipe and 4 times as long as glans, each bent where it enters the very short tunic.

Dimensions: total length, ♂ 6.1–8.9 mm, ♀ 6.0–8.5 mm; length of thorax, ♂ 3.0–4.1 mm, ♀ 2.9–4.4 mm; length of wing, ♂ 6.5–8.6 mm, ♀ 6.5–8.6 mm; length of glans of aedeagus 0.59–0.65 mm.

Distribution: North Queensland—Paluma Range (northwest of Townsville) and higher parts of Atherton Tableland.

Holotype ♀: Birthday Creek Falls, near Paluma, 17 i 1967 (AM), G.A.H. and D.K.M.

Other material examined: Birthday Creek Falls, near Paluma, i 1967 (paratypes 5 ♂, 10 ♀, AM, 1 ♂, 1 ♀, BM, 2 ♀, UQ, 1 ♂, 1 ♀, USNM), G.A.H. and D.K.M.; Birthday Creek (near bridge), i 1967 (paratypes, 2 ♀, AM), G.A.H. and D.K.M.; Paluma, i 1970 (paratypes 6 ♂, 14 ♀, AM, 1 ♂, 1 ♀, MNM, 2 ♀, PM), G.A.H.; 2 miles W of Paluma, i 1970 (paratypes, 1 ♂, 2 ♀, AM), G.A.H.; Mount Spec, near Paluma, 2,600–2,900 ft, iii iv 1955–1964 (paratypes, 1 ♂, 2 ♀, CSIRO), K.R.N., I.F.C., and M.S.U.; The Crater, near Herberton, i 1967 (1 ♂, 1 ♀, AM), G.A.H. and D.K.M.

Habitat: rain forest, resting on tree-trunks.

Comparative notes. From other species with narrow palpus, the male is most readily distinguished on the genitalia characters given in the key; the female is distinguishable by the approximated spiracles of the fifth pair.

Euprosopia integra n. sp.

(Figs 52, 78)

♂ ♀. Agreeing with the description given for *E. conferta* in most characters, but differing as indicated below.

Coloration. Facial spots distinct but rather small, especially in ♂. Thoracic pleura blackish brown, reddish brown on lower part of propleuron, lower posterior corner of mesopleuron, and on central upper part of sternopleuron. Wing with narrow irregular stigmatal band extending from costa to vein 4; discal band rather broad, almost regular, not or only slightly incised on costal margin; preapical band usually complete, without any partially separated spots on proximal side; apical mark usually with an enclosed hyaline spot.

Head. Height of cheek 0.32–0.35 of height of eye; eye 1.7–1.8 times as high as long. Antenna almost two thirds as long as the distance from its basal insertion to epistomal margin in ♂, scarcely more than half that distance in ♀.

Thorax. Basalar process of ♂ almost obsolete, that of ♀ rather short acute; tegula of ♀ very slightly enlarged, not reaching to basalar process. Fore femur with usually four or more long black posteroventral bristles on distal half to two thirds of femur; hind femur very slightly curved upwards; apex of hind tibia not quite touching base of femur when tibia is fully flexed.

Abdomen. ♀: spiracles of segment 5 distinctly closer to lateral margins of tergite 5 than to median dorsal line; pleural membrane coarsely setulose in region of segment 3, those setulae near centre being black, the more dorsal and more ventral ones predominantly yellow, a brush of yellow hairs or setulae behind sternite 3. ♂ postabdomen generally similar to that of *E. kurandae;* outer surstylus with free distal section short, strongly swollen before apex; stipe of moderate length, the filaments almost as long and approximately four times as long as glans.

Dimensions: total length, ♂ 6.1–7.7 mm, ♀ 7.1–7.3 mm; length of thorax, ♂ 3.4–4.0 mm, ♀ 3.9–4.0 mm; length of wing, ♂ 7.3–8.2 mm, ♀ 8.0–8.4 mm; length of glans of aedeagus, 0.50–0.57 mm.

Distribution: North Queensland—Atherton Tableland.

Holotype ♀: The Crater (or Mount Hypipamee), near Herberton, 3,100 ft, 5 i 1967 (AM), G.A.H. and D.K.M.

Other material examined: The Crater near Herberton, 3,100 ft, i 1967 (paratypes, 3 ♂, AM, 1 ♂, BM), G.A.H. and D.K.M.; Millaa Millaa Falls, xii 1966 (paratype ♀, UQ), B. Cantrell; Atherton, i 1959 (paratype ♂, AM), D.K.M.; Mount Edith, 18 miles NE of Atherton, 3,400 ft, iii 1964 (paratype ♂, CSIRO), I.F.C. and M.S.U.

Habitat: rain forest.

Comparative notes. This species is nearest to *E. kurandae* from which it may be distinguished by the darkened ventral part of the sternopleuron and details of wing markings.

Euprosopia kurandae n. sp.

(Fig. 53)

♂ ♀. Agreeing with the description given for *E. conferta* in most characters but differing as indicated below.

Coloration. Postfrons fulvous, brownish posteriorly just in front of each fronto-orbital plate and around ocelli; facial spots distinct but often sparse, of irregular shape, sometimes fading after prolonged preservation; antenna fulvous, segment 3 sometimes partly brownish. Mesoscutum with dark brown ground colour, and a variable amount of tawny coloration on the humeral, posterior notopleural, and postalar calli; pleura tawny with light yellowish grey pruinescence. Fore femur tawny-brown to dark brown with grey pruinescence; middle and hind femora fulvous or tawny, variably darkened distally; fore tibia tawny with distal third blackish brown; legs otherwise coloured as in *E. conferta*. Wing with discal band strongly incised on costal margin; preapical band with a spot more or less divided off from its proximal side in posterior part of first posterior cell; apical mark not enclosing a distinct hyaline spot. Abdomen tawny to yellowish brown with grey markings.

Head. Height of cheek 0.20–0.24 of height of eye; eye 1.7–2.0 times as high as long; lower lateral angle of face slightly expanded and ventrally rounded. Antenna extending about three quarters of distance from its basal insertion to epistomal margin in ♂, about two thirds that distance in ♀.

Thorax. Basalar process short or very short and angular, sometimes reduced to a slight prominence in ♂, variable in both sexes. Fore femur usually with only two long, strong well spaced posteroventral bristles, both in distal half, and a number of much shorter ones, occasionally one other bristle rivalling these two in length; hind femur very slightly curved upwards so that when tibia is flexed against femur the apex of tibia does not meet base of femur.

Abdomen. ♀: spiracles of segment 4 situated close behind posteroventral angles of tergite 4; spiracles of segment 5 situated somewhat closer to lateral margins of tergite 5 than to median dorsal line; pleural membrane with numerous coarse dark brown to black setulae on lower part of region of segment 3, some shorter ones extending on to region of segment 4, some finer pale setulae on upper part of region of segment 3. ♂ postabdomen: outer surstylus long, almost attaining to apex of cercus, its basal section elongate, almost straight, slightly gibbous at base, free distal section slightly gibbous, its chisel-like apex slightly bent inwards; free distal section of inner surstylus shorter than that of outer surstylus, its terminal tooth horizontally flexed; stipe of aedeagus slender, apparently bare, rather long; preglans lightly sclerotized; glans rather small, almost straight; filaments about three times as long as glans, not much curved basally.

Dimensions: total length, ♂ 4.8–7.1 mm, ♀ 5.8–6.8 mm; length of thorax, ♂ 2.7–4.0 mm, ♀ 2.9–3.6 mm; length of wing, ♂ 5.2–7.6 mm, ♀ 5.9–7.4 mm; length of glans of aedeagus 0.47 0.51 mm.

Distribution: North Queensland—only known from the immediate vicinity of Kuranda (Cairns district).

Holotype ♀: Kuranda, 11 i 1967 (AM), G.A.H. and D.K.M.

Other material examined: Kuranda, i 1967 (paratypes, 3 ♂, AM), G.A.H. and D.K.M.; xii 1959 (paratype ♂, AM), E.J.H.; iii 1964 (paratype ♂, CSIRO), I.F.C. and M.S.U.; 1910 (paratypes, 2 ♂, 8 ♀, BM) anon. but probably F.P.D., ex coll. E. A. Brunetti.

Comparative notes. See under *E. integra* for comparison with that species. The wing markings are similar to those of "sp. 4" but the female is readily distinguished from that species by the much larger velvety areas on tergite 5 and the more laterally placed spiracles of the fifth pair.

Euprosopia sp. 4

♀. Most resembling *E. kurandae* and *E. mica* but much larger than the latter species. ♂ unknown.

Coloration. Middle and hind femora fulvous, slightly browned apically. Wing pattern much as in *E. kurandae*, but stigmatal section of subcostal cell more extensively darkened, stigmatal band not divided by clear spots in marginal cell, except for the separation of a dark spot opposite apex of subcostal cell.

Head. Height of cheek 0.23–0.26 of height of eye.

Thorax. Basalar process distinct but short, acute. Fore femur with usually five moderately long black posteroventral bristles distributed on approximately the distal two-fifths of femur, and sometimes other shorter bristles.

Abdomen. Paired velvety areas of tergite 5 reduced in size and confined to lateral parts of tergite, separated from one another by a distance equal to about twice the width of each; spiracles of segment 4 situated behind and slightly above posterior angle of tergite 4; spiracles of segment 5 situated rather close to median dorsal line, separated from one another by about twice the width of each.

Dimensions: total length 6.3 mm; length of thorax 3.2–3.3 mm; length of wing 6.6–6.8 mm.

Distribution: Queensland—exact locality not stated. If, as seems probable, the specimens were collected by F. P. Dodd, they probably came from the tropical zone of Queensland where he did most of his collecting. From the notes offered by Musgrave (1932: 69) it would appear that Dodd resided at Townsville in the year 1901. However, he may well have visited other localities for collecting.

Material examined: "Queensland", vii 1901 (2 ♀, BM), ? F.P.D.

Although the status of this form and the specific characters of the female are reasonably clear, it would be undesirable to provide a name for it without having exact locality data.

Euprosopia mica n. sp.

(Fig. 73)

♀. Similar to *E. conferta* and agreeing with the description given for that species except as indicated below.

Coloration. Face with very few brown spots of very irregular and variable shape and distribution. Dark markings on mesoscutum not as broad and heavy as in *E. conferta;* scutellum with most hairs pale, except for a variable number of black ones near centre of dorsal surface. Fore femur dark brown with greyish pruinescence; middle and hind femora greyish brown, darker distally; tibiae dull fulvous, blackish distally; tarsi brown, the basal segment of each, except at distal extremity, cream.

Head. Lower lateral angle of face little developed and narrowed by comparison with *E. conferta* and other related species; height of cheek 0.35–0.40 of height of eye; eye 1.5–1.7 times as high as long. Antenna extending 0.60–0.63 of the distance from its basal insertion to epistomal margin. Palpus narrow throughout.

Thorax. Basalar process vestigial; tegula not enlarged. Hind femur almost straight.

Abdomen. Tergite 5 with paired velvety areas distinct but greatly reduced in size, and situated close to lateral margins of tergite; spiracles of segment 5 separated from one another by most of width of tergite 5 and situated near its posterior angles; pleura with few very weak scattered pale setulae.

Dimensions: total length 3.5–4.4 mm; length of thorax 1.8–2.0 mm; length of wing 4.2–4.4 mm.

Distribution: North Queensland—Atherton Tableland.

Holotype ♀: The Crater (or Mount Hypipamee), near Herberton, 3,100 ft, 5 i 1967 (AM), G.A.H. and D.K.M.

Other material examined: same data as holotype (paratypes, 1 ♀, AM, 1 ♀, BM).

It is just possible that the male of this species is represented by a shrivelled specimen from Mount Lewis, via Julatten, Mossman district, 3,500 ft, xii 1966 (UQ), B. Cantrell. This specimen has very large antenna, extending 0.81 of distance from its basal insertion to epistomal margin; palpus slightly spatulate; aedeagus with very short glans, 0.33 mm long; filaments long and fine, about five times as long as glans, bent near bases. It will be necessary for the sexes to be taken together in order to associate them with certainty.

Comparative notes. The female is distinguished from related species, except "sp. 4", by the very small velvety areas of tergite 5, and from that species by the more laterally placed spiracles of the fifth pair. The small size and greyish brown coloration of the femora are also distinctive.

Euprosopia remota n. sp.

♂ ♀. *Coloration.* Head pale ochraceous; orbital margins of postfrons and parafacial thickly white-pruinescent; an irregular yellowish brown suffusion on centre of postfrons; a dark brown mark on each side of face which connects antennal groove to epistomal margin; often a light brown suffusion on cheek immediately below lower extremity of eye; occiput with thick whitish grey pruinescence. Antenna tawny, in ♂ segment 3 partly suffused with brown; arista black beyond the tawny base. Prelabrum and palpus tawny. Thorax with

black ground colour, thickly covered with yellowish grey pruinescence except for the following dark markings: two pairs of black spots between dorsocentral bristles and centre of mesoscutum, a dark median stripe in front of suture, a black spot on each side immediately behind upper termination of transverse suture, a black spot mesad of postalar, posterior intra-alar bristle situated in a small black spot which runs to scutellar bridge (the above markings appear in certain lights to be merely the darkest areas on a series of seven longitudinal stripes); scutellum with blackish spot in centre of basal margin; mesopleuron with two blackish spots, one above the other. Femora tawny basally, dark brown distally, the fore femur and sometimes also hind femur, more extensively darkened, their surface almost entirely covered with thick grey pruinescence; fore tibia black, at most paler only at extreme base; other tibiae tawny, broadly blackened distally; tarsi black or dark brown at most tawny only at basal extremity of basal segment. Wing clear, with dark brown markings very similar to those of *E. kurandae* (see fig. 53) but spots on basal part of wing more numerous; stigmatal band more or less completely broken into spots behind vein 2; discal band generally divided by one or two clear spots in marginal and submarginal cells; preapical band often divided by clear areas in submarginal and first posterior cells; apical mark not enclosing a clear spot; squama greyish cream. Haltere cream. Abdomen yellowish grey; tergites 3 and 4 with a diffuse brown mark posteriorly on each side.

Head distinctly higher than wide; height of cheek 0.24–0.29 of height of eye; inner vertical bristles fully as long as outer; ocellar and one or two pairs of fronto-orbital bristles very small but usually distinguishable; cheek bristle well developed. Antenna of ♂ extending about two-thirds of the distance from basal insertion to centre of epistomal margin, that of ♀ extending about half that distance; arista almost bare, sometimes with one or few minute basal hairs. Prelabrum well developed; palpus of moderate width.

Thorax. Humeral callus with moderately long hairs; scutellum rounded in outline, dorsally convex, with a number of whitish hairs on lateral surface; posterior notopleural callus with a number of black setulae; basalar process very small but distinct in ♂, in ♀ larger, somewhat projecting laterally, and compressed from front to rear; tegula slightly enlarged in ♀, broadly pyriform, not extending beyond basalar process; that of ♂ unmodified; humeral bristle present; posterior notopleural directed forwards in ♀, outwards and backwards in ♂; three pairs of scutellar bristles; a distinct black pteropleural bristle among the white hairs. Fore femur with a single series of strong black dorsal bristles and a series of weaker posteroventral bristles which are yellow except for a few black ones towards apex; hind femur with a few weak black and yellow dorsal bristles distally. Wing with vein 6 discontinued at a short distance from wing margin.

Abdomen without scales on tergites; ♂: tergites 3 and 4 subequal in length, tergite 5 slightly longer; ♀: tergites 3 and 4 subequal, tergite 5 shorter and much narrower, spiracles of segment 4 situated immediately behind posterolateral angles of tergite 4, those of segment 5 situated a short distance behind posterolateral angles of tergite 5. ♂ postabdomen: surstyli with rather long basal section; free distal section of outer surstylus short, only slightly exceeding that of inner surstylus, broad to the apex; aedeagus with preglans stoutly ovoid and separated from stipe by a constriction; glans of aedeagus elongate ovoid, with a pair of rounded membranous lobes at distal end of anterior surface; terminal filaments with a conspicuous brush of long dense hairs at bases, each filament somewhat over three times as long as glans, very slightly thickened distally and truncate at apex.

Dimensions: total length, ♂ 6.7 mm, ♀ 5.6–7.8 mm; length of thorax, ♂ 3.3 mm, ♀ 2.4–3.6 mm; length of wing, ♂ 6.5 mm, ♀ 5.3–7.4 mm; length of glans of aedeagus 0.51 mm.

Distribution: New South Wales—North Coast.

Holotype ♂: Tucker's Rock, Pine Creek State Forest, near Repton, 17 i 1971 (AM), A. Hughes and D.K.M.

Other material examined: same data as holotype (paratypes 7 ♀, AM, 1 ♀, BM, 1 ♀, USNM); Shoal Bay, near Port Stephens, i 1971 (paratype ♀, AM), D. Sands.

Habitat: specimens from Tucker's Rock taken in small forest pocket at foot of cliff near ocean beach.

Comparative notes. This differs from all other species of the genus known to me in the presence of a pteropleural bristle. Otherwise it resembles species of the *ventralis* group in wing pattern, presence of inner vertical bristles, and number of scutellar bristles, but again differs from all these in the bare or almost bare arista, paired brown marks on face, and almost entirely dark tarsi.

Euprosopia hollowayi n. sp.

(Fig. 54)

♂ ♀. Somewhat resembling *E. megastigma* except in wing pattern; agreeing with the description given for that species except as indicated below.

Coloration. Prelabrum and palpus tawny. Hairs of mesopleuron mostly yellow. Femora tawny to rather dark brown. Wing with stigmatal band not filling apex of subcostal cell, broadly extending from vein 1 to vein 5, dilated and somewhat dissected behind vein 5; discal and preapical bands quite broad on costal margin, joining immediately behind vein 3 to form a very broad dark field in distomedian part of wing, extending to posterior margin around end of vein 5 and connecting with stigmatal band behind vein 5, an additional dark stripe from end of vein 1 to dark discal field; apical mark contained mainly within first posterior cell, not enclosing a distinct pale spot, but becoming paler near wing margin.

Head distinctly higher than wide. Antenna extending not more than half distance from its basal insertion to epistomal margin.

Thorax. Basalare and tegula much as in *E. megastigma.* Fore femur with black posteroventral bristles well developed on distal half; middle coxa with one or two lateral black setulae only.

Abdomen with scales on tergites more numerous than in *E. megastigma.* ♂: tergite 5 approximately as long as tergites 3 and 4 together; spiracle of segment 5 enlarged, but less so than in *E. megastigma;* ♀: tergite 5 fully as long as tergite 4; spiracles of segments 4 and 5 situated below middle of lateral margins of tergites; pleural membrane finely haired, without scales.

♂ postabdomen: not examined.

Dimensions: total length, ♂ 4.4–7.6 mm, ♀ 6.5–7.3 mm; length of thorax, ♂ 2.2–3.5 mm, ♀ 3.3–3.7 mm; length of wing, ♂ 4.6–7.5 mm, ♀ 6.7–7.8 mm.

Distribution: Queensland—south-east; New South Wales—North Coast.

Holotype ♂: 2 miles W of Mount Mowbullan, Bunya Mountains, Queensland, 7 i 1970 (AM), G.A.H.

Other material examined. Queensland: 2 miles NW of Mount Mowbullan, i 1970 (paratypes, 2 ♂, 2 ♀, AM, 1 ♂, BM), G.A.H.; 3 miles NW of Mount Mowbullan, i 1970 (paratype ♂, AM) G.A.H.; Imbil State Forest, S of Gympie, xi 1957 (paratype ♂, UQ). T. E. Woodward. New South Wales: Grafton, 1926 (1 ♀, CSIRO), W.W.F.

Euprosopia megastigma n. sp.

(Figs 55, 79)

♂ ♀. *Coloration.* Head buff; postfrons yellowish brown centrally; face without dark markings except for a small brown mark near each lower lateral angle; occiput blackish on much of upper half, with overlying pale grey pruinescence except near vertex; antenna tawny to light brown; arista tawny at base, blackish beyond; prelabrum fulvous, brown or blackish at sides above; palpus brown with grey pruinescence, fulvous basally. Ground colour of mesoscutum broadly blackish medially, reddish brown laterally, the whole with extensive yellowish grey markings; scutellum yellowish grey or tawny, with brown markings; pleura reddish-brown, an extensive dark brown area on lower part of sternopleuron and smaller ones on pteropleuron, pleurotergite, and hypopleuron; hairs of mesopleuron, except near its margins, mostly black. Fore femur blackish brown with grey pruinescence; other femora tawny-brown with grey pruinescence; tibiae tawny, often darker at distal extremities, the fore one with additional brown basal and ventral markings; tarsi blackish, each with basal segment, except at distal extremity, creamy. Wing with stigmatal band broad, terminating posteriorly on vein 5, enclosing a few hyaline spots in submarginal and first posterior cells; discal band broad, especially towards anterior end, straight, with some pale incisions on costal margin, often enclosing a few hyaline spots or streaks; preapical band usually broken into spots behind vein 3; apical mark enclosing a pale or distinctly hyaline spot; squama light brown with paler margins. Haltere creamy. Preabdominal tergites brown to greyish brown; basal part of tergite 2 and median or submedian marks towards anterior margins of tergites 3 and 4 grey.

Head approximately as high as wide; height of cheek 0.34–0.43 of height of eye; anterior ridge of cheek prominent, smooth; eye 1.5–1.8 times as high as long; outer vertical and cheek bristles well developed, sometimes one or two rudimentary, hair-like fronto-orbitals. Antenna extending more than half the distance from its basal insertion to epistomal margin, but variable in length; arista of moderate length, filiform in both sexes, with minute basal hairs, their length up to about half maximum diameter of arista. Prelabrum moderately developed, densely sulcate; palpus moderately narrow.

Thorax. Humeral callus with moderately long fine hairs on most of surface; scutellum convex, rounded, but with apical part of margin almost straight and transverse; basalar process rudimentary, barely discernible in both sexes; tegula unmodified, slightly larger in ♀ than in ♂; the following bristles present: prescutellar acrostichal, dorsocentral, humeral, 1 + 1 notopleurals, supra-alar, postalar, posterior intra-alar, three pairs of scutellars. Fore femur with well developed series of postero-ventral bristles, those on basal half rather short and weak, those on distal half mostly longer and stronger, those at apical extremity black, the remainder whitish; fore tibia and tarsus without obvious modifications; middle coxa with fringe on ventral margin including rather numerous coarse black setulae which are particularly congested towards its inner angle; hind trochanter with rather long pale hairs on ventral surface. Wing with distal section of vein 4 subparallel to or slightly converging with vein 3, very slightly curved forward at apex.

Abdomen. Tergite 2 with posterior marginal fringe of narrow scales only; tergites 3–5 with scattered surface scales; ♂ preabdomen with tergite 4 slightly longer than tergite 3, tergite 5 slightly longer than tergite 4; spiracle of segment 5 conspicuously enlarged, that of segment 4 somewhat less so; ♀ preabdomen: tergite 5 well developed, but shorter than tergite 4: spiracles of segments 4 and 5 somewhat enlarged but the latter less so than in ♂, each situated immediately behind the lower posterior angle of its respective tergite; pleural membrane in vicinity of segments 4 and 5 with rather numerous narrow scales. ♂ postabdomen: inner and outer surstyli united for most of the length of inner one; outer surstylus slightly sigmoidally curved, free distal part incurved, apex broadly rounded; inner surstylus considerably shorter, with the terminal and subterminal black teeth well separated, a slight angular projection

between them on posterior surface; stipe of aedeagus of moderate thickness; preglans well developed, longer than maximum diameter; glans rather large and elongate; filaments fairly stout, equal in length, slightly over twice as long as glans.

Dimensions: total length, ♂ 4.8–8.4 mm, ♀ 5.8–8.6 mm; length of thorax, ♂ 2.6–4.0 mm, ♀ 2.9–4.5 mm; length of wing, ♂ 5.8–8.0 mm, ♀ 6.4–8.8 mm.

Distribution: New South Wales—coast districts to eastern scarp of Tablelands; Queensland—extreme south-east.

Holotype ♂: Otford, Illawarra District, New South Wales, 29 ii 1964 (AM), D.K.M.

Other material examined. New South Wales: Otford, i ii 1958–1964 (paratypes, 19 ♂, 7 ♀, AM, 2 ♂, 1 ♀, BM, 2 ♂, USNM), D.K.M.; Barrington House, via Salisbury, Barrington Tops district, xii 1963–1965 (paratypes, 2 ♂, 1 ♀, UQ), D. F. O'Sullivan, T. Weir; Upper Allyn, via Eccleston, ii iii 1967–1970 (paratypes, 6 ♂, 20 ♀, AM, 2 ♀, MNM, 2 ♀, PM, 1 ♀, USNM), G.A.H. and D.K.M.; Deep Creek, Narrabeen, near Sydney, i 1964 (paratype ♀, CSIRO), D.H.C.; Killara, near Sydney, i 1936 (paratype ♀, CSIRO), M.F.D.; Roseville, near Sydney, emerged 29 xi 1957 (paratype ♂, reared, AM), K.E.; Royal National Park, S of Sydney, ii 1957 (paratype ♂, CSIRO), W.W.W.; Palm Creek, Royal National Park, xii 1960 (paratype ♀, CSIRO), D.H.C.; Colo Vale, near Mittagong, i iii iv 1954–1957 (paratypes, 2 ♂, 5 ♀, CSIRO, 1 ♀, USNM), A.L.D., W.W.W.; Cabbage Tree Creek, Clyde Mountain, near Nelligen, ii 1965 (paratypes, 2 ♂, 1 ♀, CSIRO), Z.R.L.; Durras Lake, near Bateman's Bay, ii 1965 (paratypes, 1 ♂, 2 ♀, CSIRO), D.H.C.; Merimbula, i 1965 (1 ♂, 4 ♀, CSIRO), K.R.N. Queensland: Ladybrook, ii 1932 (1 ♀, UQ), "D.J.T."; Tamborine Mountain, xii 1925 (1 ♀, AM), A.M.

Habitat: rain forest and wet sclerophyll forest.

Comparative notes. The absence of well-defined facial markings, and the complete, broad discal band of the wing are distinctive characters. For comparison with *E. crispa* see under that species.

Euprosopia crispa n. sp.

(Fig. 66)

♂ ♀. Generally resembling *E. megastigma* and agreeing with the description given for that species except as indicated below.

Coloration. Prelabrum fulvous centrally, black at sides. Ground colour of mesoscutum almost entirely blackish, only a variable part of lateral margins reddish brown; pleura usually darker than *E. megastigma*, often largely dark brown. Fore femur blackish brown; middle and hind femora deep reddish brown to blackish brown with sparse grey pruinescence; fore tibia dark brown; middle and hind tibiae tawny centrally, dark brown at each extremity. Wing with stigmatal band not extending behind vein 2, except as more or less separate spots; discal band less widened anteriorly than in *E. megastigma*, and curved towards base at anterior end; preapical band very irregular and broken; apical mark with or without a pale spot in centre.

Head. Height of cheek 0.32–0.40 of height of eye; eye 1.5–1.8 times as high as long. Arista of ♂ very narrowly spatulate, that of ♀ filiform. Palpus broadened distally.

Thorax. Scutellum almost uniformly rounded; ♀: basalar process well developed, slender erect basally, strongly curved forwards distally. Fore femur with posteroventral bristles obsolete on basal third, the remaining ones nearly all black; middle coxa with black setulae on ventral margin not particularly numerous or dense. Wing with distal section of vein 4 somewhat converging with vein 3 distally, very slightly curved forward at apex.

Abdomen. ♂: tergites 3 and 4 subequal in length; tergite 5 nearly as long as tergites 3 and 4 together; spiracles of segment 4 and 5 not notably enlarged; ♀: spiracles of segments 4 and 5 not enlarged, that of segment 4 situated in pleural membrane near middle of lateral margin of tergite 4, that of segment 5 situated as in *E. megastigma;* pleural membrane without scales. ♂ postabdomen: aedeagus with preglans stouter than glans; glans shortly fusiform; filaments more than 3 times as long as glans.

Dimensions: total length, ♂ 6.1–7.6 mm, ♀ 5.3–7.4 mm; length of thorax, ♂ 3.1-3.3 mm ♀ 2.7–3.4 mm; length of wing, ♂ 6.5–6.7 mm, ♀ 5.8–7.2 mm; length of glans of aedeagus 0.55–0.56 mm.

Distribution: New South Wales—coast and tablelands districts.

Holotype ♂: Newport, near Sydney, 25 xii 1970 (AM), D. Sands.

Other material examined: Newport, xii 1970 (paratypes, 2 ♂, 2 ♀, AM), D. Sands; West Head, Ku-ring-gai Chase, near Sydney, xii 1970 (paratype ♀, AM), D.K.M.; Ku-ring-gai Chase, ii xii 1963–1964 (paratypes, 1 ♂, 1 ♀, AM, 3 ♂, 1 ♀, CSIRO, 1 ♂, 1 ♀, SPHTM), J.H.A., D.E.H.; Broken Bay, near Sydney, xii 1923 (paratypes, 3 ♀, CSIRO, 1 ♀, BM), I.M.M.; Katoomba, xii 1960 (paratype ♂, AM), G.H.H.; river crossing, 1 mile W of Uralla, i 1967 (paratype ♀, UQ), B. Cantrell; Metz Gorge, near Armidale, xii 1965 (paratype ♀, UQ), B. Cantrell.

Habitat: dry sclerophyll forest and partly wooded residential areas.

Comparative notes. Closest to *E. megastigma* in most characters, this species is distinguished by the colour and extent of the posteroventral bristles of the fore femur, the shape of the discal wing band, and by a number of secondary sexual characters of the female as described above.

Euprosopia albipila n. sp.

(Fig. 56)

♂ ♀. Somewhat similar to *E. maculipennis* and *E. vitrea*, and differing from the description of the latter species mainly as indicated below.

Coloration. Mesopleuron with white hairs on anterior and central parts and some black hairs towards posterior margin, the longer bristle-like hairs at posterior margin all white. Femora rather variable in colour, in specimens from the vicinity of Canberra and northwards predominantly tawny, brown on distal parts, in specimens from Victoria and Tasmania fore femur predominantly blackish, tawny on ventral surface and at extreme base, other femora brown, becoming darker brown or blackish distally; fore tibia blackish-brown becoming lighter brown at base in specimens from the north, entirely black in specimens from Victoria and Tasmania; middle and hind tibiae pale tawny, slightly browned distally, in northern specimens, much darker in southern specimens. Wing with an irregular blackish stigmatal band extending posteriorly to vein 4 or a little beyond often narrowed or fenestrated in submarginal cell; pattern otherwise consisting of more or less separate spots.

Head. Height of cheek 0.35–0.40 of height of eye; eye 1.6–1.9 times as high as long. Antenna extending at least three quarters the distance from its basal insertion to epistomal margin in ♂, slightly over half that distance in ♀; arista a little shorter than distance from its basal insertion to lowest extremity of cheek, filiform apically in both sexes.

Thorax. Fore femur with numerous moderately developed posteroventral bristles which are nearly all white; hind trochanter with normal loose hairing in both sexes; hind tibia with apical dorsal excavated area almost obsolete.

Abdomen. ♀: spiracles of segments 4 and 5 situated very close to posterolateral angles of their respective tergites. ♂ postabdomen: free distal section of outer surstylus rather slender, rounded apically; inner surstylus with terminal tooth small, not much projecting backwards; aedeagus with stipe of moderate length; preglans well sclerotized, nearly as long as broad; glans short and compact; filaments equal in length and 2.2–2.5 times as long as glans, slightly dilated apically.

Dimensions: total length, ♂ 5.6–8.2 mm, ♀ 6.1–7.5 mm; length of thorax, ♂ 2.7–3.9 mm, ♀ 3.0–3.6 mm; length of wing, ♂ 6.4–8.4 mm, ♀ 7.1–8.4 mm; length of glans of aedeagus 0.43–0.53 mm.

Distribution: New South Wales—Tablelands districts; Victoria—mountainous areas; Tasmania.

Holotype ♂: Katoomba, New South Wales, 30 xii 1960 (AM), G.H.H.

Other material examined: New South Wales and Australian Capital Territory: Katoomba, i xii 1950–1960 (paratypes, 4 ♂, 2 ♀, AM, 1 ♂, BM), G.H.H.; New England National Park, near Ebor, i 1966 (1 ♂, UQ), T. Weir; Barrington Tops, ii 1965 (paratype ♀, UQ), G.M.; Mount Gingera, near Canberra, iii 1962 (paratype ♂, CSIRO), H. M. Cane; Batlow, iii 1957 (paratype ♂, CSIRO), F. J. Gay; 3 miles E of Pilot Hill, Bago Forest, near Batlow, iii 1957 (paratypes 2 ♀, CSIRO, 1 ♀, USNM), T.G.C.; Brown Mountain, near Nimmitabel, iii 1963 (paratype ♂, CSIRO), Z.R.L.; Rennix Gap, Snowy Mountains, 5,200 ft, iii 1962 (paratype ♂, AM), F.E.; Perisher Valley, Snowy Mountains, iii 1962 (paratype ♀, AM), F.E.; Kosciusko, 5,000 ft, iii 1965 (paratype ♂, CSIRO), D.E.H. Victoria: Mount Stirling, near Mount Buller, Mansfield District, iii 1963 (1 ♀, NMV), A.N. Tasmania: Lake Leake, 2,000 ft, ii 1963 (1 ♀, CSIRO), I.F.C. and M.S.U.; Hobart, ii 1949 (1 ♂, NMV), C. Oke; Mount Wellington, ii 1963 (1 ♀, CSIRO), D.H.C.; Penstock Lagoon, near Waddamana, ii 1967 (1 ♂, NMV), A.N.

Comparative notes. The better developed stigmatal band, preponderance of white hair on the mesopleuron, and absence of a basal tubercle on the hind femur distinguish this from other species of the *maculipennis* group.

Euprosopia maculipennis (Guérin)

Platistoma maculipennis (sic) Guérin-Méneville, 1831: pl. 21, fig. 8.

Platystoma maculipennis, Macquart, 1835: 444; Guérin-Méneville, 1838: 299.

Platystoma australis Macquart, 1846: 205, pl. 18, fig. 5.

Euprosopia maculipennis, Hendel, 1914a: 149; 1914b: 358–359, pl. 2, fig. 42.

♂ ♀. Somewhat similar to *E. vitrea* and differing from that species principally as stated below.

Coloration. Agreeing in most details with *E. vitrea.* Palette of arista black. Hairs of mesopleuron white and black, the white ones principally on anterior part except for the long thickened white ones on posterior margin. Femora almost entirely blackish with grey pruinescence; fore tibia black with reddish brown dorsal area; other tibiae tawny, marked with brown distally. Wing markings usually much as in *E. vitrea*, except that spot on anterior crossvein is darker and more conspicuous; sometimes spots merging to form an indistinct, broken discal band.

Head. Height of cheek 0.42–0.50 of height of eye. Arista somewhat shorter than in *E. vitrea*, with apical palette opaque, small, especially so in ♀.

Thorax. Scutellum with three, four, or sometimes five pairs of bristles. Hind trochanter without dense pilosity; hind femur with rounded tubercle at base on ventral surface, which has a small patch of fine dense pilosity; hind tibia with very weak excavation only at apex on dorsal side.

Abdomen. Tergites 2 and 3 with posterior marginal scales only; tergites 4 and 5 with scattered surface scales; ♂: tergites 3, 4, and 5 subequal in length; ♀: tergite 5 not more than half as long as tergite 4 and partly concealed by it; spiracle of segment 4 situated immediately behind posterior angle of tergite; spiracle of segment 5 close to posterior margin of tergite, a short distance inwards from its posterior angle. ♂ postabdomen: outer surstylus not strongly gibbous basally; stipe of aedeagus rather slender; glans elongate ovoid; filaments equal in length, less than twice as long as glans.

Dimensions: total length, ♂ 5.7–10.2 mm, ♀ 5.4–10.4 mm; length of thorax, ♂ 2.7–5.0 mm, ♀ 2.6–5.8 mm; length of wing, ♂ 6.3–10.2 mm, ♀ 6.3–11.6 mm; length of glans of aedeagus 0.60–0.62 mm.

Distribution: Queensland—highlands of far southeast only; New South Wales—principally Tablelands above 2,000 ft; Victoria; Tasmania.

Type material examined: Port Jackson (= Sydney), no date (holotype ♀ of *Platystoma maculipennis* Guérin, PM), anon.; "Tasmanie", probably 1843 (lectotype ♀, here designated, paralectotypes, 2 ♂, of *Platystoma australis* Macquart, PM), J.P.V.

Other material examined. Queensland: Toowoomba, i 1964 (1 ♀, UQ), J. C. Cardale; Tamborine Mountain, xii 1961 (1 ♂, UQ), B. F. Stone; Lamington National Park, McPherson Range, ii xii 1923–1961 (4 ♂, 1 ♀, UQ), H.H., F.A.P., I.C.Y. New South Wales and Australian Capital Territory: Brooklana, East Dorrigo district, 1929 (1 ♀, AM), W. Heron; Armidale, ii 1955 (3 ♂, 18 ♀, CSIRO), E. J. Waterhouse; Barrington Tops, iv 1964 (2 ♂, CSIRO), S.J.P.; Broken Bay, xii 1923 (4 ♂, 2 ♀, CSIRO), I.M.M.; Mount Wilson, Blue Mountains, ii 1936 (3 ♂, CSIRO), M.F.D., D. F. Waterhouse; Hampton, near Blue Mountains, ii 1964 (1 ♂, 1 ♀, AM), C.E.C.; Casula, near Liverpool, xi 1958 (1 ♂, NMV), M. R. Nikitin; Colo Vale, near Mittagong, ii iii 1957–1958 (2 ♂, 1 ♀, CSIRO), A.L.D., R. Lewis; near Braidwood, ii iii iv 1953–1959 (9 ♂, 4 ♀, CSIRO, 1 ♂, 1 ♀, AM), Z.R.L., S.J.P.; Monga, near Braidwood, ii 1966 (1 ♀, CSIRO), E.F.R.; Blundell's, near Canberra, i ii iii iv 1934–1954 (20 ♂, 10 ♀, CSIRO), M.F., S.J.P., T.G.C.; Black Mountain, near Canberra, i 1934 (4 ♂, CSIRO), W. L. Rait; Bendora, near Canberra, ii 1959 (1 ♂, 1 ♀, CSIRO), S.J.P.; Royalla, S of Queanbeyan, iii 1961 (3 ♂, 3 ♀, CSIRO), S.J.P., D.H.C.; 9 miles W of Adaminaby, iii 1962 (1 ♂, 3 ♀), Z.R.L.; Cooma, ii 1963 (1 ♂, 2 ♀, CSIRO), D.H.C.; Nimmitabel, i 1961 (3 ♂, 2 ♀, CSIRO), D.H.C.; 4 miles E of Nimmitabel, iii 1963 (1 ♂, 2 ♀, CSIRO), D.H.C.; Brown Mountain, near Nimmitabel, ii iii 1963–1965 (3 ♂, CSIRO), S.J.P., Z.R.L.; Sawpit Creek, Snowy Mountains, iii 1962 (1 ♀, AM), F.E.; Moonbah, near Jindabyne, 3,000–3,500 ft, iii 1889 (1 ♂, AM), R.H. Victoria: Timbertop, near Mount Buller, Mansfield district, ii 1958 (3 ♂, 1 ♀, NMV), anon.; Warragul, i 1960 (1 ♂, NMV), F.E.W.; Narracan, near Moe, ii iii 1897–1920 (1 ♂, 4 ♀, NMV), J. Hill; Gunyah, near Foster, iii 1962 (1 ♀, CSIRO), G. Bornemissza; Lower Tarwin, iii 1925 (1 ♂, NMV, 3 ♂, 2 ♀, SAM), G. F. Hill; Nar-nar-goon, iii 1963 (1 ♀, NMV), F.E.W.; Launching Place, Yarra River, i 1913 (3 ♂, 1 ♀, NMV), F. P. Spry; Melbourne, no date (1 ♂, BM), C. French; Blackburn, near Melbourne, iii 1958 (1 ♂, NMV), McEvey; Frankston, near Melbourne, no date (1 ♀, NMV), anon; Woodend, i 1896 (1 ♀, NMV), anon.; Colac, i 1927 (1 ♂, CSIRO), F.E.W. Tasmania: Wynyard, i 1916 (1 ♀, AM), G.H.H.; Launceston, iv 1916 (1 ♀, SAM), F. M. Littler; Mangalore, no date (1 ♂, BM), A. White; Hobart, no date (1 ♂, SAM), A. M. Lea.

Euprosopia sp. 5

♂. Two specimens agree very closely with *E. fimbripes*, except that the arista is finely filiform to the apex. This kind of character has proved to be of specific value elsewhere in the genus and family, but in this case it will be necessary to examine a larger number of specimens before the status of the form can be decided. The aedeagus is very similar to that of *E. fimbripes*.

Dimensions: total length 7.3 mm; length of thorax 3.0–3.1 mm; length of wing 6.6–6.7 mm; length of glans of aedeagus 0.66–0.70 mm.

Distribution: southern New South Wales; Victoria.

Material examined. New South Wales: Queanbeyan R., near Jerangle, i 1938 (1 ♂, CSIRO), I.M.M. Victoria: Tooronga Falls, 6½ miles E of Noojee, iii 1965 (1 ♂, AM), G.L.B.

Euprosopia fimbripes n. sp.

♂ ♀. Very similar to *E. vitrea* in most characters and agreeing with description given for that species except as indicated below.

Coloration. Palette of ♂ arista blackish, paler apically. Fore tibia almost entirely blackish brown.

Head. Height of cheek 0.36–0.45 of height of eye. ♂: arista not as long as in *E. vitrea*, with apical palette narrowly lanceolate, acute.

Thorax. Fore femur with series of well-developed whitish posteroventral bristles extending for most of its length, the longer bristles longer than half diameter of femur.

Abdomen. ♂: tergite 4 a little longer than tergite 3; tergite 5 approximately equal in length to tergites 3 and 4 together. ♀: tergite 5 at least as long as tergite 4, appearing slightly longer in some specimens; spiracle of segment 4 situated below middle of lateral margin of tergite 4; spiracle of segment 5 situated in pleural membrane, below and somewhat in front of posterior angle of tergite. ♂ postabdomen: surstyli not examined in detail; aedeagus with glans larger and more elongate than in *E. vitrea;* filaments with rounded, slightly dilated apices, slightly unequal in length, the longer approximately twice as long as glans.

Dimensions: total length, ♂ 4.9–7.3 mm, ♀ 5.8–7.1 mm; length of thorax, ♂ 2.4–3.4 mm, ♀ 3.0–3.5 mm; length of wing, ♂ 5.5–6.7 mm, ♀ 6.3–7.1 mm; length of glans of aedeagus 0.62–0.66 mm.

Distribution: Australian Capital Territory—Canberra district; Victoria—near Melbourne.

Holotype ♂: Seaford, near Melbourne, 10 v 1921 (NMV), W. F. Hill.

Other material examined: Victoria: Seaford, v 1921 (paratypes, 2 ♀, NMV), W. F. Hill. Australian Capital Territory: Paddy's River, near Canberra, i 1959 (1 ♂, 2 ♀, CSIRO), K.R.N.

Comparative notes. The combination of mainly black hairs on the centre of the mesopleuron, well developed pale posteroventral bristles on the fore femur, and absence of a tubercle at the base of the hind femur distinguish this from other species of the *maculipennis* group.

Euprosopia vitrea n. sp.

(Figs 57, 91, 94)

♂ ♀. *Coloration.* Head tawny; postfrons darker than face; postfrons, parafacial, and cheek with whitish orbital margins; face with pair of blackish marks from inner edge of each antennal groove almost to epistomal margin; occiput blackish on each side of upper half, covered with whitish pruinescence except in upper median part; antenna yellowish brown, segment 3 darker except at base; arista tawny at base, black beyond, palette of ♂ transparent in centre, often blackish at margins, occasionally entirely black; prelabrum fulvous, blackish at sides; palpus tawny-brown basally, blackish brown distally with grey pruinescence. Mesoscutum blackish, narrowly reddish brown on lateral margins, the whole patterned with yellow-grey pruinescent markings; scutellum tawny, deeper reddish brown in centre, with greyish pruinescent markings, pleura reddish brown, lower part of sternopleuron blackish, the whole covered with grey and brown pruinescence; hairs of mesopleuron almost all black, except at extreme margins. Fore femur blackish with thin grey pruinescence, the extreme base and apex narrowly yellowish brown; middle and hind femora reddish brown, darker distally, with grey pruinescence; tibiae tawny with blackish distal extremities, fore tibia somewhat darker with blackish colouring often extending to base on ventral surface; tarsi blackish brown, basal three-quarters of basal segment of each creamy yellow. Wing markings almost completely broken into separate small spots, there being no transverse bands; a prominent dark stigmatal blotch confined to subcostal and marginal cells; spot on anterior crossvein not especially prominent, not situated directly behind stigmatal blotch but slightly beyond it; apical mark rather diffuse, enclosing, or almost enclosing, a hyaline spot; squama light brown or yellowish with whitish margin. Haltere creamy to fulvous. Preabdominal tergites greyish brown, a large part of tergite 2 grey.

Head approximately as high as wide; height of cheek 0.40–0.50 of height of eye; anterior ridge of cheek without transverse grooves; eye 1.5–1.8 times as high as long; outer vertical and cheek bristles well developed; other bristles undeveloped. Antenna extending to epistomal margin or slightly more; arista longer than distance from its basal insertion to lowest extremity of cheek, bare, in ♂ with rather large broadly rounded apical palette, transparent at least in centre, and usually blackish on margins, in ♀ arista quite filiform apically. Prelabrum moderately well developed, densely sulcate; palpus rather narrow.

Thorax. Humeral callus with long hairs on entire surface; scutellum rounded, dorsally convex; basalar process undeveloped; tegula not enlarged or modified in either sex; the following bristles present; prescutellar acrostichal, dorsocentral, humeral strongly developed in both sexes, 1 + 1 notopleurals, supra-alar, postalar, posterior intra-alar, three pairs of scutellars. Fore femur with series of well developed black dorsal bristles and series of short, weak posteroventral bristles on distal third, the more distal ones black, the others whitish; hind trochanter densely pilose on posteroventral prominence in ♂, more loosely haired in ♀; hind femur without basal ventral tubercle; hind tibia with distinct excavated shining area dorsally at apex, having the shape of a segment of a circle equal to or greater than a semicircle. Wing with veins 3 and 4 slightly converging distally, the latter very slightly curved forwards at apex.

Abdomen. Tergite 2 with posterior marginal fringe of scales; tergite 3 with sparse surface scales and posterior marginal fringe; tergites 4 and 5 with numerous scales; spiracles of segments 4 and 5 not greatly enlarged in either sex; ♂: tergites 3 and 4 subequal in length and each somewhat shorter than tergite 5; ♀: tergites 3 and 5 each a little shorter than tergite 4; spiracle of segment 4 situated in pleural membrane very close to posterior angle of tergite 4, that of segment 5 situated close behind tergite 5, closer to posterior lateral angle of tergite than to median line. ♂ postabdomen: outer surstylus strongly gibbous at base anteriorly, its free apical part exceeding inner surstylus by quite a short distance, slightly curved inwards and backwards; inner surstylus slender apically, the terminal tooth flattened,

projecting backwards; stipe of aedeagus rather broad, glabrous; preglans very short; glans rather short, ovoid; filaments unequal, the shorter one approximately four times as long as glans.

Dimensions: total length, ♂ 7.0–9.6 mm, ♀ 5.7–8.1 mm; length of thorax, ♂ 3.0–4.3 mm, ♀ 2.7–4.5 mm; length of wing, ♂ 6.6–8.5 mm, ♀ 6.0–9.0 mm; length of glans of aedeagus 0.40–0.44 mm.

Distribution: New South Wales—principally tablelands districts; Queensland—south-eastern border district; Victoria.

Holotype ♂: Mount Boyce, near Blackheath, Blue Mountains, New South Wales, 13 ii 1964 (AM), D.K.M.

Other material examined. New South Wales and Australian Capital Territory: Mount Boyce, i ii iv 1964–1970 (paratypes, 6 ♂, 21 ♀, AM, 2 ♂, 2 ♀, BM, 1 ♂, 2 ♀, DEI, 1 ♂, 1 ♀, MNM, 2 ♀, SAM), D.K.M.; 2 miles NW of Katoomba, iii 1963 (paratypes, 6 ♂, 3 ♀, AM), D.K.M.; Katoomba, i xii 1957–1960 (paratypes, 2 ♂, 1 ♀, AM), G.H.H.; Jenolan, ii 1932 (paratype ♀, AM), J. C. Wiburd; Boyd R. crossing, Kanangra Road, Oberon district, 4,100 ft, ii 1956 (paratypes, 1 ♂, 1 ♀, AM), L. S. Willan; Colo Vale, near Mittagong, iii 1957 (paratype ♀, CSIRO), A.L.D., 10 miles SE of Braidwood, xii 1951 (paratype ♂, CSIRO), T.G.C.; Clyde Mountain, near Braidwood, 2,400 ft, iii 1961 (paratype ♂, CSIRO), I.F.C. and M.S.U.; Bateman's Bay, xi 1949 (paratype ♂, CSIRO), Wylie; Bendora, A.C.T., ii iv 1952–1953 (paratypes, 3 ♂, 5 ♀, CSIRO), I.F.C., S.J.P.; Blundells, A.C.T., i ii iii 1934–1951 (paratypes, 3 ♂, 1 ♀, CSIRO), W. Rafferty, M.F., S.J.P., H. M. Cane; Mount Gingera, A.C.T., ii 1959 (paratype ♀, CSIRO), S.J.P.; Lee's Springs, A.C.T., i ii iii 1938–1952 (paratypes, 25 ♂, 3 ♀, CSIRO), T.G.C., Z.R.L., K.R.N., S.J.P.; 2 miles E of Mount Tidbinbilla, A.C.T., c. 3,580 ft, iii 1951 (paratypes, 2 ♀, CSIRO), K.H.K.; Five Fords (or Condor Creek), near Canberra, iii 1934 (paratypes, 1 ♂, 1 ♀, CSIRO), M.F.; Wee Jasper, near Burrinjuck Reservoir, i 1933 (paratype ♀, CSIRO), M.F.; Pilot Hill, Bago Forest, near Batlow, iii 1957 (paratypes, 2 ♂, 2 ♀, CSIRO), T.G.C.; Alpine Creek, near Kiandra, xi 1938 (1 ♂, 2 ♀, CSIRO), A.L.T.; 9 miles W of Adaminaby, iii 1962 (9 ♂, 11 ♀, CSIRO), Z.R.L.; Eucumbene, near Adaminaby, ii 1959 (1 ♀, CSIRO), E.F.R.; Wee Jasper, i 1933 (1 ♀, CSIRO), M.F.; Sawpit Creek, Snowy Mountains, ii 1963 (1 ♀, AM), D.K.M.; Mount Kosciusko, 1893 (1 ♀, USNM), anon.; Mount Kosciusko, 4,000 ft and 4,500 ft, iii 1965 (1 ♂, 3 ♀, CSIRO), D. E. Havenstein; Mount Kosciusko Hotel, ii 1946 (1 ♀, CSIRO), E.F.R.; 4 miles E of Nimmitabel, iii 1963 (1 ♀, CSIRO), Z.R.L.; Brown Mountain, Bega district, ii iii 1961–1965 (17 ♂, 21 ♀, CSIRO), Z.R.L., S.J.P.; Moonbar near Jindabyne, iii 1889 (1 ♂, AM), R.H.; Ebor, i 1932 (3 ♀, CSIRO), M.F.; Merimbula, i 1965 (1 ♀, CSIRO), K.R.N.; New England National Park, near Ebor, i 1966 (1 ♀, CSIRO), B. Cantrell; Upper Manning R., near Barrington Tops, 4,100 ft, i 1948 (paratype ♂, AM), A.M.; Tubrabucca, near Barrington Tops, 4,300 ft, i 1948 (paratype ♂, AM), A.M.; Berowra, near Sydney, xii 1956 (paratype ♀, AM), D.K.M. Queensland: Lamington National Park, xi 1961 (1 ♂, UQ), I.C.Y. Victoria: Mount Pinnibar, Mitta Mitta R. district, 3,500–4,000 ft, iii 1967 (3 ♀, CSIRO), K.R.N.; Snowy R. Valley, 5 miles S of Tulloch Ard, no date (1 ♀, NMV), anon.; Tawonga Gap, near Mount Bogong, i 1957 (3 ♂, NMV), A.N.; Timbertop, near Mount Buller, Mansfield district, ii 1958 (1 ♂, NMV), "I.E."; Millgrove, near Warburton, ii 1929 (1 ♀, UQ), F.E.W.; Tallarook, near Seymour, i 1950 (1 ♀, CSIRO), A. Floyd; Mount Buangor, near Beaufort, 1,400 ft, ii 1956 (1 ♂, CSIRO), I.F.C.

Habitat: Principally sclerophyll forest. The specimen from Millgrove is labelled "on wombat dung".

Comparative notes. This species is distinguished from other members of the *maculipennis* group having black hairs on the centre of the mesopleuron and no strong posteroventral bristles on the fore femur, by the absence of grooving on the anterior ridge of the cheek and the predominantly cream-coloured basal segment of the fore tarsus.

Euprosopia alpina n. sp.

♂ ♀. Generally resembling *E. vitrea*, and agreeing with the description given for that species except as indicated below.

Coloration. Head as in *E. vitrea* but somewhat darker; antenna rather dark brown; palette of ♂ arista brownish grey. Fore femur black, other femora dark reddish brown to blackish brown; fore tibia black; fore tarsus blackish, with basal two thirds of basal segment reddish brown on posterior surface; other tarsi with basal segment yellowish brown to fulvous basally. Preabdominal tergites dark brown, often tinged with grey; basal part of tergite 2 grey.

Head. Height of cheek 0.37–0.47 of height of eye; anterior ridge of cheek with one or more (usually two or three) transverse grooves near lower end; eye 1.6–1.9 times as high as long. Arista long, especially so in ♂ which has a minute rounded terminal palette, narrower than thickened base of arista.

Thorax. Posteroventral bristles of fore femur rather short and weak, those on distal third usually mixed black and white, those on basal half not differentiated from hairs; ratio length of fore tibia/length of fore tarsus = 0.96–1.00 in ♂, 0.90–0.98 in ♀; hind trochanter with numerous short hairs, not forming a dense pile.

Abdomen. ♂ preabdomen: spiracles of segments 4 and 5 much enlarged, especially the latter which has a diameter approximately twice that of spiracle of segment 3; ♀ preabdomen: spiracles enlarged to a lesser extent that in ♂, each situated in pleural membrane near posterior angle of its tergite. ♂ postabdomen: surstyli similar to those of *E. vitrea* but more slender; aedeagus with stipe long, slender, glabrous; preglans rather short, less than twice as long as wide; glans rather short; filaments very slender, slightly unequal, at least four times as long as glans.

Dimensions: total length, ♂ 7.6–9.0 mm, ♀ 6.3–8.6 mm; length of thorax, ♂ 3.7–3.9 mm, ♀ 3.5–3.7 mm; length of wing, ♂ 7.6–8.3 mm, ♀ 7.5–8.4 mm.

Distribution: New South Wales—Southern Tablelands District (including Australian Capital Territory), principally above 3,000 ft and extending to the highest altitudes; Victoria.

Holotype ♂: Lee's Springs, Australian Capital Territory, 25 i 1952 (CSIRO), K.R.N.

Other material examined. New South Wales and Australian Capital Territory: Lee's Springs, ii iii 1950–1952 (paratypes, 3 ♂, 2 ♀, CSIRO, 1 ♂, AM), Z.R.L., S.J.P.; Mount Gingera, A.C.T., i ii iii xi 1950–1955 (paratypes, 3 ♂, 4 ♀, CSIRO, 1 ♀, BM), I.F.C., M.F.D., Z.R.L., K.R.N., S.J.P.; Bendora, A.C.T., ii 1952 (paratype ♀, CSIRO), Z.R.L.; Hall, A.C.T., iii 1952 (paratype ♀, CSIRO), K.R.N.; Alpine Creek, near Kiandra, i 1938 (paratype ♂, CSIRO), I.M.M.; Moonbar, near Jindabyne, 3,000–3,500 ft, iii 1889 (paratypes, 5 ♀, AM), R.H.; Kosciusko district, 4,000 ft, iii 1920 (paratype ♂, CSIRO), anon.; Mount Kosciusko, 7,300 ft, i 1951 (paratype ♂, damaged, CSIRO), H. M. Cane; Mount Kosciusko, 1893 (paratypes, 2 ♀, USNM), anon.; Wilson's Valley, near Mount Kosciusko, iii 1962 (paratype ♀, AM), F.E. Victoria: Woodend, i 1896 (1 ♂, 1 ♀, BM), anon.

Habitat: not recorded, but the label data "Mount Kosciusko 7,300 ft" indicate that the species can occur in alpine vegetation well above the tree line.

Comparative notes. Differs from *E. vitrea* in the darker fore tarsus and grooving of the anterior cheek ridge, and from *E. celsa* in the somewhat paler fore tarsus, length of the filaments of the aedeagus, and length of the fore tarsus of the female.

Euprosopia celsa n. sp.

♂ ♀. Very similar to *E. alpina*, distinguishable by the characters given below.

Coloration. Palette of ♂ arista blackish. Posteroventral bristles on distal part of fore femur all or nearly all black; fore tarsus often entirely or almost entirely black (dark brown in old preserved specimens).

Head. Height of cheek 0.33–0.42 of height of eye; eye 1.6–1.9 times as high as long. Arista of ♂ with rounded terminal palette which is distinctly wider than thickened base of arista.

Thorax. Ratio length of fore tibia/length of fore tarsus = 0.85–0.92 in ♂, 0.82–0.92 in ♀.

Abdomen. ♂ postabdomen: preglans strongly developed, fully twice as long as its maximum diameter; glans rather large, elongate; filaments not attenuated, unequal in length, the shorter one not more than 2.5 times as long as glans.

Dimensions: total length, ♂ 9.3 mm, ♀ 7.3–9.1 mm; length of thorax, ♂ 4.0–4.3 mm, ♀ 3.7–4.1 mm; length of wing, ♂ 8.3–8.5 mm, ♀ 8.1–8.7 mm.

Distribution: New South Wales—Northern Tablelands District at higher altitudes.

Holotype ♂: Point Lookout, New England National Park, near Ebor, New South Wales, 4 i 1966 (AM), C.N.S.

Other material examined: Point Lookout, i 1966 (paratypes, 1 ♂, 2 ♀, AM), C.N.S.; Barrington Tops, i ii 1925–1965 (paratypes, 2 ♀, UQ, 1 ♂, 1 ♀, CNC), Sydney University Zoology Expedition, G.M.

Euprosopia hypostigma n. sp.

(Figs 58, 84)

Very similar in most characters to *E. filicornis*, and agreeing with the description of that species except as indicated below. ♂ unknown.

♀ *Coloration.* Face with a rather broad blackish mark between each antennal groove and epistomal margin; second antennal segment dark brown except for the paler distal margins; palpus brown, slightly paler apically, pale fulvous at base. Ground colour of an extensive area on lower part of sternopleuron and of much of meropleurite dark brown. Femora brown, the fore femur darkest, all somewhat darker distally. Wing with basal part of marginal cell containing a single large blackish spot situated at fork of veins 2 and 3; preapical band broken in first posterior cell, its posterior part connected to discal band and to the large blotch in middle of second posterior cell. Abdomen with tergite 1 tawny-grey, dark brown medially; tergite 2 grey, becoming tawny at lateral extremities, broadly margined with dark brown posteriorly; tergites 3–5 predominantly deep brown, with median grey pruinescent central marks on tergites 4 and 5.

Head. Height of cheek 0.40 of height of eye; eye 1.6 times as high as long.

Thorax. Hairs on humeral callus long and numerous, not notably shortened posteriorly; tegula not, as in ♀ of *E. filicornis*, extending over anterior corner of basalare. Wing with vein 6 well developed to within a short distance of margin.

Abdomen. Tergite 5 almost three-quarters as long as tergite 4, its posterior margin entire; spiracles of segments 4 and 5 situated laterally in pleural membrane behind posterior corners of their respective tergites.

Dimensions: total length 6.4–7.3 mm; length of thorax 3.4–4.1 mm; length of wing 7.1–8.7 mm.

Distribution: New South Wales—Hunter River district.

Holotype ♀: Upper Allyn, near Eccleston, 16 ii 1967 (AM), D.K.M.

Other material examined: Upper Allyn, iii 1970 (paratype ♀, AM), G.A.H. and D.K.M.

Habitat: rain forest.

Comparative notes: ♀ readily distinguished from other species of the *scatophaga* species group by the position of the fourth and fifth abdominal spiracles. Further differentiating characters may be found in ♂ when discovered.

Euprosopia subacuta n. sp.

(Fig. 81)

♂ ♀. Very similar in most characters to *E. filicornis* and *E. hypostigma*, and agreeing with the description of the former except as indicated below.

Coloration. Head fulvous; postfrons with tawny suffusions. Lower parts of sternopleuron and meropleurite dark brown, their upper parts tawny to reddish brown like the greater part of thoracic pleura. Fore femur dark brown; leg coloration otherwise as given for *E. filicornis*. Wing pattern as described for *E. hypostigma*. Abdominal coloration as described for *E. hypostigma*.

Head. Height of cheek 0.37–0.39 of height of eye; eye 1.6–1.7 times as high as long.

Thorax. Hairs on humeral callus of ♀ only slightly shortened posteriorly; scutellum with slight but distinct apical depression; basalare with short broadly angular process fringed with pubescence in both sexes; tegula of ♀ only very slightly larger than that of ♂, not modified. Wing with vein 6 normal, pigmented and sclerotized to within a short distance of margin.

Abdomen. ♂: tergites 3 and 4 short, tergite 5 large, about half as long as the whole preabdomen; ♀: tergite 5 with posterior margin straight, entire; spiracles of segments 4 and 5 dorsal, but not quite as close to median line as in *E. filicornis*. ♂ postabdomen not examined.

Dimensions: total length, ♂ 8.1 mm, ♀ 7.5–7.8 mm; length of thorax, ♂ 3.6 mm, ♀ 3.7–3.8 mm; length of wing, ♂ 8.0 mm, ♀ 8.1–8.6 mm.

Distribution: Queensland—McPherson Range.

Holotype ♀: Lamington National Park, 11–17 ii 1963 (QM), A. Macqueen.

Other material examined: Lamington National Park, ii 1963 (paratype ♂, UQ), G.M.; Picnic Rock, West Canungra Creek, Lamington National Park, ii 1958 (paratype ♀, AM), H. G. Greening.

Habitat: probably rain forest, as this is the predominant vegetation in the given localities.

Comparative notes: most readily distinguished from other species of the *scatophaga* species group by the very short but distinct, subacute basalar process of both sexes.

Euprosopia filicornis n. sp.

(Fig. 82)

♂ ♀. *Coloration.* Head buff; postfrons with yellow-brown central area which tends to become broken into blotches in some specimens; postfrons and parafacial with narrow whitish-pruinescent orbital margins; face with a rather narrow dark brown mark between each antennal groove and epistomal margin, also a small brown mark near lower lateral angle of face; occiput with some dark markings in upper part, densely whitish pruinescent except near vertex; antenna yellow-brown; arista yellow-brown at base, blackish beyond; prelabrum yellowish, blackish brown on upper lateral part; palpus brown in centre, fulvous at base, apex and ventral margin. Mesonotum with reddish brown ground colour, the scutum with extensive blackish grey markings, the whole with markings of light grey to yellowish pruinescence; pleura with reddish brown ground colour, largely covered with pale greyish yellow pruinescence. Femora tawny with approximately their distal thirds brown, fore femur darkest and with additional basal anterior dark brown blotch; fore tibia brown; middle and hind tibiae fulvous, broadly browned distally and the latter slightly browned basally; tarsi dark brown to black, basal segment, except at apex, creamy white. Wing: base of marginal cell with two or three separate blackish spots before stigmatal band; narrow broken stripe on anterior part of wing between stigmatal and discal bands separate from stigmatal band except sometimes for a linear connection along vein 3; preapical band interrupted in first posterior cell, fusing with discal band in region of posterior crossvein; apical mark large, enclosing a distinct hyaline dot; squama very pale brown with creamy margin. Haltere yellowish. Abdominal tergites 1 and 2 tawny with brown markings; tergites 3–5 brown with few grey or yellowish pruinescent markings.

Head, slightly higher than wide; facial carina irregularly rugose; height of cheek 0.31–0.36 of height of eye, its anterior ridge well developed, smooth; eye 1.7–2.0 times as high as long; outer vertical and cheek bristles present, sometimes a minute upper fronto-orbital; other head bristles absent. Antenna extending about half way from its basal insertion to epistomal margin; arista simple, filiform, with a few minute hairs near base. Prelabrum well developed, densely sulcate; palpus narrow.

Thorax. Hairs on posterior part of humeral callus shortened in ♀, scarcely so in ♂; scutellum with outline at apex transverse, almost straight or very slightly sinuate medially; basalare with minute process anteriorly, consisting of little more than a raised tuft of pubescence; tegula not obviously modified in either sex but extending slightly further over basalare in ♀ than in ♂; the following thoracic bristles present: prescutellar acrostichal, dorsocentral, humeral (in both sexes), 1 + 1 notopleurals, supra-alar, postalar, intra-alar, usually three pairs of scutellars, the apical ones rather widely separated from each other. Fore femur with complete series of posteroventral bristles, basal ones weak, hair-like, those on distal quarter black, the remainder white. Wing with distal section of vein 4 subparallel with vein 3 for most of its length; vein 6 abbreviated, extending approximately half-way from anal cell to wing margin, thereafter connected to margin by an unpigmented fold.

Abdomen with numerous scales on tergites 3–5, tergite 2 with fringe of scales on posterior margin; ♂: tergite 5 much longer than tergite 4, but not as long as tergites 3 and 4 combined; ♀: tergite 5 nearly as broad as but little more than half as long as tergite 4, deeply incised on posterior margin; tergite 6 much reduced and generally concealed in dried specimens; spiracles of segment 4 situated dorsally between tergites 4 and 5; spiracles of segment 5 situated very close together within a median dorsal incision of tergite 5. ♂ postabdomen: outer and inner surstyli united for the greater part of their length; free part of outer surstylus only slightly narrowed, apically thickened, rounded and slightly incurved; free part of inner surstylus short with the usual two black teeth, of which the apical one has a posteriorly directed point; aedeagus very slender; stipe moderately long, preglans and glans slender; filaments exceptionally long, slightly shorter than stipe; cercus with rather long hairs and with a single longer and thicker bristle.

Dimensions: total length, ♂ 6.6–7.5 mm, ♀ 6.1–8.2 mm; length of thorax, ♂ 3.2–3.6 mm, ♀ 2.8–3.8 mm; length of wing, ♂ 6.6–7.0 mm, ♀ 6.2–7.4 mm.

Distribution: New South Wales—principally sea coast.

Holotype ♂: Kurnell, near Sydney, 3 ii 1964 (AM), D.K.M.

Other material examined: Kurnell, i ii 1963–1964 (paratypes, 8 ♂, 5 ♀, AM, 1 ♂, 1 ♀, BM, 1 ♂, 1 ♀, USNM), D.K.M.; Coogee, near Sydney, xii 1922 (paratypes, 2 ♂, 2 ♀, AM), F. A. McNeill; Bronte, near Sydney, i 1966 (paratype ♀, AM), D.K.M.; Centennial Park, near Sydney, xii 1969 (paratype ♀, AM), D.K.M.; Shoal Bay, near Port Stevens, x 1962 (paratype ♀, AM), K.E.

Habitat: sandy areas, series from Kurnell taken on lower branches of *Cupaniopsis anacardioides;* specimen from Centennial Park on lower branch of *Eucalyptus* sp.

Comparative notes: most readily distinguished from other species of the *scatophaga* group by the abbreviated vein 6, which does not extend more than about half way from the anal cell to margin.

Euprosopia scatophaga Malloch

(Fig. 83)

Euprosopia scatophaga Malloch, 1930a: 431–432.

♂ ♀. Generally similar to *E. filicornis* and agreeing with the description of that species except as indicated below.

Coloration. Face with strong blackish-brown mark between each antennal groove and epistomal margin. Fore femur dark brown to blackish brown; other femora deep reddish brown to dark brown, usually darker distally. Wing with preapical band not interrupted, forming, with discal band a conspicuous V-shaped mark.

Head. Antenna extending slightly over half-way from its basal insertion to epistomal margin; arista well developed preapical lanceolate expansion in ♂, faintly thickened beyond middle in ♀.

Thorax. Wing with distal section of vein 4 sub-parallel to or slightly converging distally with vein 3, curved forwards at extreme apex; vein 6 not much abbreviated, pigmented and somewhat sclerotized for considerably more than half-way from anal cell to margin.

Abdomen. ♀: spiracles of segments 4 and 5 situated dorsally, but not quite so close to median line as in *E. filicornis.* ♂ postabdomen generally as described for *E. filicornis;* filaments of aedeagus unequal, one being considerably more slender distally than the other.

Dimensions: total length, ♂ 4.9–6.8 mm, ♀ 6.0–8.9 mm; length of thorax, ♂ 2.6–3.3 mm, ♀ 3.1–4.6 mm; length of wing, ♂ 5.1–6.9 mm, ♀ 6.4–8.7 mm.

Distribution: Queensland—north-central districts; New South Wales—Hunter R. district.

Type material: Eungella, W of Mackay, iii 1929 (holotype ♀, paratypes, 4 ♀, SPHTM, these examined by author, also 2 paratypes USNM according to Lee, Crust, and Sabrosky, 1956), F. H. Taylor.

Other material examined: Queensland: Eungella and vicinity, xii 1961 (1 ♂, 1 ♀, AM), D.K.M.; xii 1965 (1 ♂, 1 ♀, UQ), G.M.; Finch Hatton Gorge, Mackay district, xii 1961 (1 ♂, 1 ♀, AM), D.K.M.; Little Crystal Creek, Mount Spec, near Paluma, xii 1954 (3 ♀, UQ), anon. New South Wales: Upper Allyn, near Eccleston, ii iii 1968–1970 (1 ♀, CSIRO, 7 ♀, AM, 1 ♀, BM), D.H.C., G.A.H. and D.K.M.

Habitat: forest and partly cleared areas, some specimens on faeces of horse and cow.

Comparative notes: distinguished from other species of the *scatophaga* species group by the complete, regular preapical band which forms a V-shaped mark with the discal band; the preapical expansion of the arista in ♂ is quite distinctive.

The female specimens listed above from Upper Allyn may prove to belong to a distinct species. They differ in having the preapical band of the wing irregularly incised and the spiracles of segment 5 exceedingly close together, the form of tergite 5 and the position of spiracles 4 and 5 more closely resembling that of *E. filicornis* than typical *E. scatophaga.* The distal part of the arista is blackened and slightly compressed as in females of *E. scatophaga,* with which the specimens otherwise agree. Males of this form and the related sympatric *E. hypostigma* have not yet been found at Upper Allyn.

Euprosopia ramosa n. sp.

(Figs 59, 80)

♀. *Coloration.* Postfrons dark brown, reddish brown from centre to vicinity of ocelli; postfrons and parafacial with whitish pruinescent orbital margins, widest at the junction of the two; parafacial dark brown; facial carina, lower median part of face, and upper part of ocellar groove pale buff; entire lower lateral angle of face to inner margin of antennal groove and almost to centre of epistomal margin dark brown to black; cheek brown anteriorly, paler posteriorly, where it is densely whitish pruinescent; occiput yellowish buff below, brown above, entirely whitish pruinescent; antenna reddish brown, segment 2 dark brown; arista deep reddish brown at base, black beyond; prelabrum black, dark brown in centre; palpus dark brown, slightly paler basally. Mesoscutum with blackish ground colour becoming reddish-brown laterally, with yellowish grey pruinescent markings; scutellum dark brown, paler laterally, with thin grey pruinescence; pleura reddish brown with yellowish and greyish pruinescence, lower part of sternopleuron suffused with dark brown. Fore leg black, extreme apices of trochanter, femur, and tibia yellow-brown; all tarsi black with basal segment creamy except at apex; middle and hind femora dark brown; middle and hind tibiae reddish brown, broadly blackened distally. Wing pattern as in fig. 59; stigmatal band complex, divided into two in front of vein 3 through the incorporation of an additional stripe corresponding to the broken stripe between stigmatal and discal bands of *E. filicornis;* discal and preapical bands broad, not incised, fused into a Y-shaped band and separate only in front of vein 3, separate from the large blotch in centre of second posterior cell; apical mark large, diffuse posteriorly, enclosing a diffuse pale spot in first posterior cell; squama, including margins, brown. Haltere tawny. Preabdominal tergites dark brown, with some light brown suffusions on tergite 1 and sides of tergite 2.

Head approximately as high as wide; upper part of postfrons slightly depressed; facial carina very weakly rugose; height of cheek 0.32 of height of eye; anterior cheek redge well-developed, smooth; eye 1.6 times as high as long; chaetotaxy of head as given for *E. filicornis.* Antenna extending half way from its basal insertion to epistomal margin; arista filiform, almost bare, with a few basal hairs whose length is not more than $\frac{1}{4}$ of maximum diameter of arista. Prelabrum strongly developed, almost smooth; palpus moderately narrow.

Thorax. Humeral callus with long pale hairs anteriorly, those near posterior extremity somewhat shorter and black; scutellum with outline between the apical bristles transverse and slightly concave; basalar process elongate, finely pointed at apex, almost erect at base, thence curving forwards and slightly downwards; tegula only very slightly enlarged and not otherwise modified; the following thoracic bristles present: prescutellar acrostichal, dorsocentral, a long but rather weak humeral, 1 + 2 notopleurals, supra-alar, postalar, posterior intra-alar three pairs of scutellars, the apical ones rather widely separated from each other. Fore femur with moderately developed series of black posteroventral bristles which

are almost obsolete basally. Wing with distal section of vein 4 almost parallel with vein 3, only slightly curved; vein 6 well developed, reduced to a fold near margin.

Abdomen. Tergites 2 and 3 with sparse fringe of narrow scales on posterior margins; tergites 4 and 5 with mucronate surface scales; tergite 4 somewhat longer than either tergite 3 or tergite 5; pleural membrane with some fine, pale, silky hairs in vicinity of segment 5; spiracles of segment 4 not visible in type, presumably concealed between tergites 4 and 5; spiracles of segment 5 situated dorsally but well separated from one another and situated in shallow separate impressions in posterior margin of tergite 5.

Dimensions: total length 9.4 mm; length of thorax 5.2 mm; length of wing 10.2 mm.

Distribution: Queensland—Atherton Tableland.

Holotype ♀: The Crater (or Mount Hypipamee), near Herberton, 3,100 ft, i 1967 (AM), D.K.M.

Habitat: rain forest.

Comparative notes. The unique type clearly represents a very distinct species of the *scatophaga* species group. Even if the duplicated posterior notopleural bristle proves to be inconsistent, the dark colouring of the head, the wing pattern, and the curiously developed basalar process of the female, somewhat similar to that of *E. crispa*, will serve to distinguish it.

Euprosopia macrotegularia Malloch

(Figs 62, 72)

Euprosopia macrotegularia Malloch, 1928a: 345–346, fig. 1; 1929: 512; 1930a: 430.

♂ ♀. Similar to *E. subula* in most characters, and differing in the characters given below.

Coloration. Mesoscutum with median black band (partly obscured by pruinescence) narrowed or discontinuous near scutellum, so that the pair of non-pruinescent prescutellar spots is entirely brown, not black. Fore femur often rather extensively reddish brown basally. Wing with preapical band usually complete, or only narrowly broken in first posterior cell. Abdominal tergite 2 usually with extensive yellowish or tawny areas.

Thorax. ♀: tegula as long as in *E. subula*, somewhat broadened anteriorly, depressed on that surface which is uppermost when the wings are raised; supra-alar bristle well differentiated from the bristles in front of it, which are usually much shorter.

Abdomen. Preabdomen of ♀: tergite 5 broader than in *E. subula;* spiracles of segment 5 somewhat removed from margin of tergite 5 and situated approximately level with its posterior extremity. ♂ postabdomen: generally very similar to that of *E. subula;* outer surstylus distinctly longer than inner.

Dimensions: total length, ♂ 4.0–10.9 mm, ♀ 6.4–10.4 mm; length of thorax, ♂ 2.2–4.9 mm, ♀ 2.9–5.0 mm; length of wing, ♂ 4.9–9.4 mm, ♀ 6.6–10.0 mm.

Distribution: north-eastern Queensland, as far south as Tully River.

Type material (not seen): Kuranda (holotype, sex not stated, USNM), F.P.D.; Cairns (allotype, sex not stated, 3 paratypes, USNM), anon.

Material examined: Coen, xi 1947 (1 ♀, UQ), H. Pottenger; Daintree R., 6 miles NW of Daintree, xii 1958 (1 ♂, AM), D.K.M.; Daintree, xii 1958 (1 ♂, 4 ♀, AM), D.K.M.; Kuranda, v 1958 (3 ♂, 2 ♀, AM), D.K.M., x 1910 (3 ♀, BM), F.P.D.; Mulgrave R., 4 miles W of Gordonvale, i xii 1958–1967 (13 ♂, 20 ♀, AM, 1 ♂, 1 ♀, CSIRO), R.L., G.A.H., and

D.K.M.; Little Mulgrave R., Gordonvale district, xii 1961 (1 ♂, 6 ♀, AM), D.K.M.; 2 miles N of Tully R. bridge, E of Cardstone, Cardstone–Ravenshoe road, i 1967 (1 ♀, AM), G.A.H. and D.K.M.

Habitat: gallery forest and rain forest near streams, usually seen resting on tree trunks.

Euprosopia subula n. sp.

(Frontispiece; figs 3, 61, 71)

♂ ♀. *Coloration.* Head buff; frons with a large brown central area, which is expanded posteriorly to reach eyes; face with a blackish brown stripe on each side which extends from inner side of lower extremity of antennal groove almost to epistomal margin; cheek with a large brown area in front of middle; occiput largely brown with whitish pruinescence; antenna yellowish brown, arista, beyond the basal part, blackish; prelabrum shining black, yellow in centre; palpus blackish with grey pruinescence, yellowish at base; proboscis dark brown. Thoracic colouring generally typical of the genus; mesoscutum with central area of black ground colour broad, reaching to outer ends of scutellar bridges posteriorly and of almost uniform width in postsutural section, largely obscured by greyish yellow pruinescence but showing through as a pattern of symmetrical blackish markings. Fore legs black, the femur usually with a very small amount of reddish brown colouring at base; middle and hind femora varying shades of brown, darker distally; middle and hind tibiae dull fulvous, blackish on distal third, often variably brownish basally; middle tarsus black; hind tarsus with two basal segments deep brown, the three distal segments black. Wing with blackish markings, those on distal part of wing slightly variable; preapical band usually broken into spots; squama buff with light brown central area. Haltere pale yellowish. Preabdominal tergites dark brown with variable creamy median markings and grey lateral markings.

Head slightly elongate in a vertical direction, about 1.2 times as high as wide; postfrons almost horizontal for most of its length, gibbous anteriorly and dropping away abruptly to ptilinal suture; facial carina with numerous closely placed horizontal grooves, impressed on each side below where the facial marks encroach on its margins; height of cheek 0.40–0.50 of height of eye, the anterior ridge weakly developed; eye 1.6–1.9 times as high as long; outer vertical bristles present; no inner vertical, postvertical, fronto-orbitals or ocellar; cheek bristle weak or not differentiated. Antenna short, extending for not more than half the distance from basal insertion to epistomal margin; arista filiform in both sexes, with some basal hairs which are not or only slightly longer than its basal diameter. Prelabrum broad; palpus slightly broadened in ♂.

Thorax. Humeral callus haired, the hairs shorter in ♀ than in ♂; scutellum somewhat truncate at apex, with short decumbent hairs on dorsal surface but none on sides; basalare without process; tegula normal in ♂, in ♀ very long, extending to humeral callus, its free section slender, cylindrical, slightly tapering; the following thoracic bristles present: prescutellar acrostichal, posterior dorsocentral, no humeral, a weak anterior notopleural sometimes absent in ♀, a posterior notopleural present in ♂ only, supra-alar often short in ♂, in ♀ well developed with a group of bristles in front, some of which may rival the supra-alar in size, a group of rather long setulae just in front of transverse suture on either side, postalar, intra-alar, two pairs of scutellars, the apical ones widely separated. Fore femur with numerous short posteroventral bristles distally, and a very long fine spatulate one just beyond middle in ♂, which is normally absent or little developed and not spatulate in ♀; fore tibia with a strong dorsal longitudinal ridge and thickened setulae, especially on dorsal surface. Wing with veins 3 and 4 subparallel distally.

Abdomen with tergites 2–5 scaly, more profusely so in ♂; tergite 5 of ♀ rounded-ovate with spiracles situated a little behind middle of lateral margin; sternite 3 obsolete, sternite 4 reduced; sternite 5 broad and well developed in ♂, much reduced in ♀. ♂ postabdomen: outer and inner surstyli elongate, slender, almost straight, free for most of their length, united

only at their broadened bases, subequal in length, the outer exceeding the inner one by only a minute distance; outer surstylus nearly smooth, with few minute setulae; inner surstylus more slender, with roughened surface, especially on distal part, a rounded black tooth on inner surface near base and a terminal black tooth; aedeagus with rather slender, bare stipe; preglans sclerotized, not as long as wide; glans short and stout; filaments about one and a half times as long as glans.

Dimensions: total length, ♂ 5.8–8.5 mm, ♀ 5.7–8.7 mm; length of thorax, ♂ 2.7–4.4 mm, ♀ 2.4–4.7 mm; length of wing, ♂ 5.6–8.5 mm, ♀ 4.9–9.0 mm.

Distribution: New South Wales and Queensland—coast districts as far north as Mackay; also vicinity of Canberra, Australian Capital Territory.

Holotype ♀: vicinity of Frew's Creek, Port Hacking River, Royal National Park, near Sydney, 20 iii 1965 (AM), D.K.M.

Other material examined. New South Wales and Australian Capital Territory: vicinity of Waterfall Creek to Frew's Creek, Port Hacking R., Royal National Park, i iii xii 1958–1969 (paratypes, 10 ♂, 14 ♀, AM, 1 ♂, 2 ♀, BM, 1 ♂, MNM, 1 ♀, PM), D.K.M.; Ourimbah, near Gosford, iii 1959 (paratype ♂, AM), K.E.; Nepean R. (southern tributary of Hawkesbury R.), iii 1933 (paratype ♀, AM), A.M.; Otford, Illawarra District, xii 1957–1962 (paratypes, 4 ♂, 6 ♀, AM, 1 ♂, 1 ♀, USNM), K.E., D.K.M.; Cabbage Tree Creek, foot of Clyde Mountain, near Nelligen, i ii 1955–1956 (paratypes, 1 ♂, 5 ♀, CSIRO), E.B.B., D.H.C., Z.R.L.; Paddy's R., Canberra i iv 1952–1959 (paratypes, 2 ♂, CSIRO), D. L. McIntosh, K.R.N. Queensland: Finch Hatton Gorge, Mackay district, xii 1961 (1 ♂, 3 ♀, AM), R.L. and D.K.M.; Mackay, vi 1960 (1 ♀, UQ), R. Jones; D'Aguilar, 47 miles N of Brisbane, i 1961 (1 ♂, UQ), M. Ludlow; Highvale, 14 miles NW of Brisbane, i 1960 (4 ♂, 2 ♀, CSIRO), R.S., 1960 (1 ♀, UQ), J. Bryan; Brisbane, xii 1913 (1 ♂, BM), H.H.; Lawes, near Gatton, xii 1950 (1 ♀, UQ), J. B. Ritson; Nindooinbah, near Beaudesert, ii v 1954 (2 ♀, CSIRO), K.R.N.; Boonah, x 1958 (1 ♀, UQ), Haseler.

Habitat: stream margins in forested country. Specimens taken along the Port Hacking River at Otford and Royal National Park were resting on rocks on the bank and in mid-stream. Those from Finch Hatton Gorge were taken on tree-trunks.

Comparative notes. The only closely related species is *E. macrotegularia.* In addition to the characters given in the key, this species may usually be distinguished from *E. macrotegularia* by the almost entirely dark brown ground colour of abdominal tergite 2 (which has generally extensive yellowish areas in *E. macrotegularia*), and the break in the preapical wing band where it crosses the first posterior cell (this band usually entire in *E. macrotegularia*).

Euprosopia anostigma n. n.

(Figs 65, 104, 105, 109, 110)

Platystoma australis Walker, 1849: 1061, primary and secondary junior homonym of *P. australis* Macquart, 1846 (see under *E. maculipennis* (Guérin)).

Euprosopia australis: Hendel, 1914a: 149; 1914b: 363.

Euprosopia tenuicornis Macquart: Hendel, 1914a: pl. 13, fig. 253, pl. 14, fig. 252; 1914b: 336–337, pl. 2, fig. 40; Malloch, 1928b: 612. Misidentifications.

♂ ♀. *Coloration.* Head buff; postfrons largely suffused with brown; postfrons and parafacial with whitish-pruinescent orbital margins; face with the usual blackish mark between each antennal groove and epistomal margin, the lower lateral angle of face tawny brown; cheek with inconspicuous brownish suffusion below eye; occiput darkened above,

but its entire surface obscured by whitish pruinescence; antenna light yellow-brown, arista fulvous basally, otherwise black including palette of ♂; prelabrum broadly yellowish in centre, brown or blackish at sides; palpus deep brown, yellowish at base and apex, with greyish-pruinescence. Thorax varying shades of brown with grey pruinescent and blackish markings. Femora and fore tibia tawny-brown to dark brown; middle and hind tibiae orange-tawny; fore and middle tarsi with basal segment whitish, brown at apex, the other segments dark brown; hind tarsus with basal segment creamy, yellow-brown at apex, second segment reddish brown, other segments darker brown. Wing with narrow stripe between stigmatal and discal bands not represented in discal cell; except sometimes for one or two isolated dots; apical mark continued broadly along costa to unite with preapical band; squama buff with pale brown central area. Haltere creamy white, the scabellum tawny or fulvous. Pre-abdominal tergites dark brown with grey markings.

Head very slightly higher than wide; postfrons slightly depressed in middle; frontal lunule with a median tubercle and forming a raised rim above antennal socket on each side; facial carina finely irregularly granulose and rugose; height of cheek 0.40–0.42 times as high as eye, the anterior ridge distinct, smooth; eye about twice as high as long; outer vertical and cheek bristles present but no other distinct bristles on head. Antenna usually extending slightly more than half way from its basal insertion to epistomal margin; arista simple in ♀, strongly spatulate at apex in ♂, the basal part with very minute pubescence. Prelabrum moderately developed; palpus not broadened.

Thorax. Humeral callus in ♂ with long hairs on entire surface, in ♀ with long hairs on anterior part but with hairs somewhat shortened posteriorly; scutellum evenly rounded; basalare without process; tegula not obviously enlarged or produced in either sex but extending slightly further over anterior margin of basalare in ♀ than in ♂; thorax with the following bristles: prescutellar acrostichal, dorsocentral, humeral present in ♂ only, two well-developed notopleurals, supra-alar, postalar, intra-alar, three pairs of scutellars, the apical ones not much further from each other than from the intermediate ones. Fore femur flattened on ventral surface, without posteroventral bristles; fore tibia normal in ♀, with the following modifications in ♂: ventral surface except towards base broadly desclerotized, thrown into transverse folds, and devoid of setulae, a dense group of short black more or less decumbent bristles situated on basal part of ventral and posteroventral surfaces; basal segment of fore tarsus in ♂ only with two curved bristles at apex posteriorly, which are flattened and slightly expanded distally, second segment sometimes with one or two bristles which are similar but short and straight. Wing with veins 3 and 4 subparallel distally, the latter curved forwards at extreme apex; discal cell rather strongly expanded at distal end through the backward curvature of vein 5.

Abdomen with tergite 2 and parts of tergite 1 long-haired; ♂: tergites 2–5 scaly, scales on tergites 2 and 3 forming a fringe on posterior margin, those on tergites 4 and 5 scattered over surface; tergite 5 slightly shorter than length of tergites 3 and 4 combined; ♀: narrow scales on posterior margins of tergites 2 and 3 only; tergite 5 squarish, about one third as wide as tergite 4; tergite 6 distinct but small and divided into two plates; spiracles of segment 5 situated at the rounded posterior angles of tergite 5, those of segment 4 situated dorsally, close behind posterior margin of tergite 4 and not or very slightly further apart than those of segment 5; spiracles of segment 6 enclosed within the tergal plates; pleural membrane with long white silky hairs in the region of segments 4–5; in both sexes sternites 1–4 well developed, sternite 5 much reduced in ♀. ♂ postabdomen with outer surstylus abruptly narrowed well beyond middle into a subcylindrical strongly backwardly curved distal section with a tubercle on inner surface just beyond the constriction and minute setulae at apex; inner surstylus slightly shorter, with a subterminal black tooth on inner surface and a terminal backwardly curved one; aedeagus with rather long stipe which has a line of dense pubescence on basal half; preglans well defined and sclerotized; filaments long, equal, slightly thickened apically, about 3.5 times as long as glans; cerci rather broad.

Dimensions: total length, ♂ 8.0–11.2 mm, ♀ 8.7–9.8 mm; length of thorax, ♂ 5.0–5.6 mm, ♀ 4.9–5.2 mm; length of wing, ♂ 9.7–10.8 mm, ♀ 9.2–10.4 mm.

Distribution: New South Wales—coastal areas: Queensland—southern coast; Victoria—far east coast.

Holotype ♀: Sydney, New South Wales, no date (BM), anon.

Other material examined. New South Wales: Kurnell, near Sydney, i ii xii 1925–1967 (40 ♂, 50 ♀, AM, 2 ♂, 2 ♀, BM, 1 ♂, 2 ♀, MNM, 1 ♂, 2 ♀, PM, 2 ♂, 2 ♀, USNM), B. Bertram, D.K.M.; Lake Narrabeen, near Sydney, xii 1938 (1 ♀, AM), anon.; Broken Bay, xii 1923 (1 ♀, CSIRO), I.M.M.; Catherine Hill Bay, near Lake Macquarie, iv 1949 (1 ♂, CSIRO), S.J.P.; 4 miles S of Taree, ii 1968 (2 ♀, AM), M. Long; Iluka, Clarence R., xi 1964 (1 ♂, AM), D.K.M. Queensland: Bribie Island, i 1915 (1 ♀, UQ), anon.; Stradbroke Island, xii 1913 (1 ♀, UQ, 1 ♂, 1 ♀, USNM), H.H. Victoria: Wingan, S of Genoa, iii 1946 (1 ♀, NMV), anon.

Habitat: forested areas within a short distance of sea, usually taken on tree-trunks.

E. anostigma is a replacement name for *Platystoma australis* Walker, having the same type.

Euprosopia armipes n. sp.

(Fig. 60)

♂ ♀. Very similar to *E. anostigma*, and agreeing with the description given for that species except as indicated below.

Coloration. Paired facial marks brown rather than blackish; palette of ♂ arista colourless, transparent. Hind tarsus coloured as fore and middle tarsus. Wing (fig. 60) with a narrow transverse stripe in discal cell between stigmatal and discal bands.

Head. Height of cheek 0.30–0.41 times height of eye; eye 1.7–1.8 times as high as long. Antenna extending for about half or slightly more of distance from its basal insertion to epistomal margin. Palpus very slightly broadened distally.

Thorax. ♂: humeral callus haired as in *E. anostigma;* ♀: humeral callus with some rather long hairs anteriorly but all hairs on posterior half much reduced, those towards posterior extremity obsolete. ♂: fore femur with a slight depression on posteroventral surface at about one-quarter of its length from apex; fore tibia with dense group of black bristles long, semi-erect, brush-like, very conspicuous; basal segment of fore tarsus with the pair of apical posterior bristles not as long as in *E. anostigma* but much more strongly clavate.

Abdomen. ♀: spiracles of segment 4 much further apart than those of segment 5, situated slightly above posterior angles of tergite 4 and well removed from anterior angles of tergite 5; pleural membrane with comparatively few, short, inconspicuous hairs in region of segments 4–5. ♂ postabdomen: outer surstylus, beyond the constriction, expanded into a large, straight, leaf-like, round-tipped lamina; aedeagus with glans somewhat stouter and more ovoid than in *D. anostigma.*

Dimensions: total length, ♂ 6.1–10.6 mm, ♀ 6.0–10.1 mm; length of thorax, ♂ 2.8–5.2 mm, ♀ 3.2–5.4 mm; length of wing, ♂ 5.6–9.8 mm, ♀ 6.9–10.4 mm; length of glans of aedeagus 0.46–0.56 mm.

Distribution: New South Wales—North Coast; Queensland—South Coast.

Holotype ♀: Iluka, Clarence River, New South Wales, 15 xi 1964 (AM), D.K.M.

Other material examined. New South Wales: Iluka, xi 1964–1970 (paratypes, 21 ♂, 26 ♀, AM, 1 ♂, 1 ♀, BM, 1 ♂, 1 ♀, USNM), D.K.M. Queensland: Mullet Creek, near Bundaberg, iv 1959 (paratype ♀, CSIRO), T.G.C.; Nambour, xii 1957 (paratype ♀, UQ), Kirkpatrick; Brisbane, i 1929 (paratype ♂, AM), G.H.H.

Habitat: specimens from Iluka taken in rain forest near sea.

Comparative notes: the presence of an additional transverse stripe between the stigmatal and discal bands in the discal cell distinguishes this species from others of the *tenuicornis* species group.

Euprosopia monodon n. sp.

(Figs 50, 69)

♂ ♀. *Coloration.* Head yellow-buff; postfrons brown centrally, darkest anteriorly; postfrons and parafacial with broad whitish-pruinescent orbital margins; face with dark brown mark between each antennal groove and epistomal margin, which extends as a suffusion to lower lateral angle; cheek with slight brownish suffusion below eye; occiput with some dark markings above, its surface, except near vertex, covered with whitish pruinescence; antenna yellowish brown, arista fulvous basally, otherwise dark brown except for the colourless apical palette in ♂: prelabrum yellowish in centre, brown at sides; palpus dark brown, yellowish at base and also at apex where it is covered with pale grey pruinescence. Mesoscutum deep reddish brown with extensive yellow-grey pruinescent markings; scutellum similarly marked but with darker ground colour; thoracic pleura entirely tawny but with irregular covering of yellow to grey pruinescence. Femora reddish brown, the fore one often partly tawny, tibiae tawny, the hind one darkened distally; tarsi black except the basal segment of each which is creamy white, darkened apically and on ventral surface. Wing pattern as in fig. 50; basal section of first basal cell with a large blackish area containing three hyaline spots, of which only the basal one may extend most of the distance across the cell; preapical band somewhat irregular, not approaching the discal band posteriorly and separate anteriorly from the apical mark which is not hyaline in centre; squama pale buff with large pale brown central area. Haltere creamy; scabellum pale yellowish to fulvous. Preabdominal tergites reddish brown with greyish markings, darker brown in ♀.

Head very slightly higher than wide; frontal lunule with narrow median tubercle; facial carina almost smooth; height of cheek 0.32–0.37 of height of eye, the anterior ridge moderately developed; eye 1.6–1.9 times as high as long; outer vertical and cheek bristles well developed; no other cephalic bristles. Antenna extending for slightly more than half the distance from basal insertion to epistomal margin; arista simple in ♀, spatulate in ♂, apparently bare. Prelabrum somewhat shortened (i.e. transversely narrowed) anteriorly; palpus slightly broadened distally and somewhat shortened, not nearly attaining level of anterior extremity of prelabrum.

Thorax. Humeral callus in ♂ with long hairs on entire surface, in ♀ with all hairs confined to anterior part, the posterior part devoid of pruinescence also, smooth, shining; scutellum with rounded outline; basalare of ♀ with well developed but rather short, tapering, thorn-like process; tegula almost normal in ♂, in ♀ produced into a stout process which extends forward a little beyond posterior notopleural bristle; thoracic chaetotaxy as described for *E. anostigma.* Fore leg of ♂: femur with a broad, compressed, distally directed posteroventral tooth just beyond middle, distal posteroventral bristles weakly developed, posteroventral ridge absent beyond the tooth; tibia with soft, folded ventral area present but less developed than in *E. anostigma*, contiguous with a broad conspicuously flattened or slightly concave posteroventral membranous area which is sparsely setulose and occupies slightly more than the distal half of tibia, some short thick fulvous posteroventral bristles towards base of tibia; tarsus with pair of hooked clavate bristles at apex of basal segment posteriorly; fore leg of ♀: femur without posteroventral tooth, a slight rounded prominence in this position; tibia without

modifications noted for ♂, except that there is a narrow, slightly depressed posteroventral strip which is nearly devoid of setulae; tarsus of ♀ without clavate bristles on basal segment; hind trochanter of ♂ without ventral process. Wing with veins 3 and 4 subparallel distally, the latter slightly curved forwards at apex; discal cell somewhat expanded distally.

Abdomen with tergite 2 haired on most of surface, except for a pair of sublateral areas on posterior margin which are shortly setulose like the succeeding tergites, with fringe of narrow scales on posterior margin; ♂: tergites 3–5 almost uniformly setulose, with scales which are sparse on tergite 3 except along its posterior margin, numerous on tergites 4 and 5; tergite 4 a little longer than tergite 3, shorter than tergite 5; ♀: tergite 3 with numerous rather long hairs medially and a fringe of narrow scales on posterior margin; tergite 4 somewhat longer than tergite 3, with numerous scattered scales and some rather long hairs medially towards anterior margin; tergite 5 reduced, wider than long, not more than half as long as tergite 4, with pubescence and fine setulae but without longer hairs or scales; tergite 6 undivided; spiracles of segment 4 situated dorsally between tergites 4 and 5, those of segment 5 situated behind posterior margin of tergite 5. ♂ postabdomen not examined.

Dimensions: total length, ♂ 9.5–10.1 mm, ♀ 9.1–9.6 mm; length of thorax, ♂ 5.5 mm, ♀ 5.1–5.2 mm; length of wing, ♂ 10.1–10.6 mm, ♀ 10.0–10.4 mm.

Distribution: north-eastern Queensland.

Holotype ♂: Tully River, 2 miles E of Cardstone, 14 i 1967 (AM), G.A.H. and D.K.M.

Other material examined: Tully R., 2 miles E of Cardstone, i 1967 (paratypes, 1 ♂, 1 ♀, AM, paratype ♀, BM), G.A.H. and D.K.M.; Forestry Road, 22 miles SW of Ingham, 2,400 ft, iv 1961 (paratype ♀, CSIRO), R.S.

Comparative notes. This is distinguished from other species of the *tenuicornis* species group by the uniform coloration of the sternopleuron and the separate preapical band and apical mark; in addition the male may be distinguished by the toothed fore femur and the female by the vestiture of tergite 3.

Euprosopia tenuicornis Macquart

(Figs 1, 70, 101, 102, 103)

Euprosopia tenuicornis Macquart, 1847: 90, pl. 6, figs 4, 4a; Schiner, 1868: 284; Tillyard, 1926: 371, pl. 25, fig. 25; Malloch, 1930: 430–431. (Not *E. tenuicornis:* Hendel, 1914a, 1914b; Malloch, 1928b—misidentifications of *E. anostigma*, q.v.).

♂ ♀. Generally similar to *E. monodon*, and agreeing with the description given for that species except as indicated below.

Coloration. Apical palette of ♂ arista blackish; palpus brownish, fulvous at base and along margins and more broadly so at apex where it has a thin covering of silvery pruinescence. Mesoscutum with extensive blackish grey markings; ground colouring of sternopleuron and meropleurite largely blackish except in their upper parts, their whole surface with rather thick greyish pruinescence. Wing with basal section of first basal cell with three or four quite separate blackish spots or transverse streaks. Preabdominal tergites dark brown with greyish markings.

Head. Prelabrum better developed and more strongly projecting anteriorly than in *E. monodon;* palpus extending forward approximately to level of upper margin of centre of prelabrum, but not as far as the more prominent lower margin.

Thorax. ♀: humeral callus as described for *E. armipes;* basalar process present but very small; tegula extending forward approximately to level of posterior notopleural bristle but not beyond. Fore leg of ♂: femur without posteroventral tooth but with a strong posteroventral ridge extending from near middle to distal extremity where it becomes weaker,

the posteroventral bristles very weakly developed distally; tibia with folded ventral area on distal half, but with depressed posteroventral area little developed or almost indistinguishable; basal segment of tarsus without clavate bristles; fore leg of ♀: femur with posteroventral ridge less developed than in ♂; tibia without differentiated ventral or posteroventral areas; hind trochanter of ♂ only with a short stout truncate ventral process, which is densely setulose on distal surface (fig. 70).

Abdomen. ♀: tergite 3 with large median area of fine dense pubescence, which is devoid of setulae, hairs, or marginal scales; a small but otherwise similar area of fine pubescence medially on anterior margin of tergite 4; tergites 3–5 subequal in length or tergite 5 a little longer; spiracles of segment 4 situated dorsolaterally behind posterior margin of tergite 4 and lateral to anterior angles of tergite 5. ♂ postabdomen with surstyli rather short and united for most of their length; outer surstylus stout, the free distal part incurved so that its apex lies closely over that of inner surstylus, with a preapical gibbosity; inner surstylus slightly shorter, the free distal section with a subterminal black anterior tooth and a black terminal tooth with posteriorly directed point; stipe of aedeagus long with some minute inconspicuous pubescence on anterior median line of basal half; preglans sclerotized and separated from sclerotized distal end of stipe by a constriction; glans of moderate size; filaments slightly longer than glans, their bases contained in a short, sclerotized tunic; cercus with a single strong setula in addition to the finer hairs.

Dimensions: total length, ♂ 5.9–9.4 mm, ♀ 7.1–9.8 mm; length of thorax, ♂ 3.4–5.0 mm, ♀ 3.7–5.4 mm; length of wing, ♂ 6.2–9.2 mm, ♀ 7.3–9.8 mm.

Distribution: Queensland—southern to north-central districts; New South Wales—coast district; Tasmania—doubtful record.

Type material examined: "Van Diemen" (Van Diemen's Land = Tasmania), no date (lectotype ♂, here designated, paralectype ♂, OXN), anon. When looking for the type material of Macquart in the Bigot collection, now at Oxford, I found above the label "Euprosopia tenuicornis ♂ n.g. n.sp. Macq Van Diemen," the following material: 2 ♂ of the present species; 1 ♂, 1 ♀ of *E. anostigma;* 1 ♀ of *E. megastigma.* None of these specimens was individually labelled. Only the two males of the present species agree with Macquart's description and figure of wing and there is scarcely room for doubt that they represent the species he intended. I have therefore regarded these two specimens as syntypes for purposes of lectotype designation. The other specimens were presumably added to the collection by Bigot or others after the species was described.

Other material examined. Queensland: Townsville, no date (1 ♂, det. Hendel, BM), F.P.D.; Clermont, no date (1 ♂, AM), K. K. Spence; Gatton, ii 1955 (1 ♀, UQ), D. Nunn; Miami, Gold Coast, ii 1958 (1 ♂, UQ), J. Martin. New South Wales: Toukley, near Wyong, i 1963 (1 ♂, 5 ♀, CSIRO), Z.R.L.; Broken Bay, xii 1923 (1 ♂, 1 ♀, CSIRO), I.M.M.; Deep Creek, near Narrabeen, i 1964 (1 ♂, CSIRO), D.H.C.; Narrabeen, iii 1922 (1 ♂, AM), A.M.; Sydney and suburbs, i ii xi xii 1909–1965 (16 ♂, 10 ♀, AM, 3 ♂, 3 ♀, CSIRO) various collectors; Kurnell, near Sydney, i ii iii v 1910–1967 (7 ♂, 41 ♀, AM, 1 ♂, 2 ♀, BM, 1 ♀, CSIRO, 1 ♂, 2 ♀, USNM) various collectors; Cronulla, no date (1 ♀, CSIRO), Purser; Como, near Sydney, ii 1922 (1 ♀, AM), A.M.; Sutherland, i 1951 (1 ♂, CSIRO), anon.; Heathcote, i ii iv 1961–1963 (1 ♂, 3 ♀, AM), R. Witchard; Otford, Illawarra District, ii 1964 (1 ♂, 1 ♀, AM), D.K.M.; Tahmoor, near Picton, i 1961 (8 ♂, 3 ♀, CSIRO), Z.R.L.; Durras Lake, near Bateman's Bay, ii 1965 (1 ♂, 1 ♀, CSIRO), D.H.C.; Bateman's Bay, i 1963 (1 ♀, CSIRO), I.F.C. and M.S.U.

Note on type locality. This species is not known to have been collected in Tasmania since its original description. The fact that, in New South Wales, the species is restricted to the warmer coastal lowlands, renders it improbable that the species would exist also in Tasmania. It is not known to occur in Victoria. G. H. Hardy (1929) considers that, of the species recorded by Macquart (1850) in the fourth supplement to his *Diptères Exotiques* as coming from Tasmania, "the majority if not all, were from Sydney". He further states;

"In no way does this affect Tasmania as a locality in other parts of the *Diptères Exotiques*, but it does raise the question as to whether further mistakes have been made in location". As *E. tenuicornis* is very common in the vicinity of Sydney, it seems probable that Macquart's type came from that locality. On the other hand the Diptera of Tasmania are still far from adequately known and very few specimens of *Euprosopia* are at present available from that state. A final decision on the type locality cannot therefore be made.

Habitat: most frequently in dry sclerophyll forest or isolated groups of trees, usually seen on tree trunks, also on human faeces.

Euprosopia comes n. sp.

(Fig. 67)

♂ ♀. Generally similar to *E. conjuncta*, *E. inermis*, and especially *E. separata*, and agreeing with the description of the first, except as indicated below.

Coloration of head and body somewhat paler than in *E. conjuncta*, more like that of *E. inermis*. Femora reddish brown, fore femur darker distally; dorsal surface of hind femur with group of black setulae near base and numerous black setulae on distal part, the intermediate region with whitish hairs or setulae and usually only a few scattered black setulae, at most forming two irregular rows. Wing with 4 or more, sometimes quite numerous, hyaline marks in dark field in basal part of first basal cell; marginal cell with a transverse streak half way between stigmatal and discal bands, without yellowish suffusion between discal and preapical bands; preapical band well separated from the compact apical mark; squama whitish, sometimes slightly brownish in centre. Preabdomen: ♂ with tergites 1, 2, and basal part of 3 tawny with overlying greyish pruinescence; rest of tergites dark brown except for a grey median anterior patch on tergite 4; preabdominal tergites of ♀ grey, tawny ground colour showing through the grey pruinescence on tergites 1 and 2, tergites 2–4 brown on their posterior margins, or with brown area slightly removed from their posterior margins, tergite 5 largely brown.

Head. Height of cheek 0.27–0.35 of height of eye; eye 1.8–2.1 times as high as long. Arista of ♂ weakly spatulate apically.

Thorax. Humeral callus with long pale hairs on most of surface in both sexes; scutellum with distinct median apical depression, the swollen areas on either side strongly shining; basalar process vestigial in ♂, varying from vestigial to distinct but small and pointed in ♀; tegula unmodified in both sexes; mesopleuron with rather long predominantly pale hairs on most of surface in both sexes; humeral bristle well developed in both sexes. Fore femur with weak black posteroventral bristles distally; ♂: distal half of fore tibia with depressed, finely pubescent posteroventral strip almost devoid of setulae, and with folded coarsely pilose ventral area as in *E. anostigma* and *E. monodon;* hind trochanter with a very dense ventral brush of short, even black setulae covering a small elongate oval area and not situated on a distinct prominence; hind femur with at most very slight basal curvature, not narrowed basally except for the constriction at its articulation with trochanter; hind tibia slightly expanded and compressed at distal end in a vertical plane; ♀: fore tibia with the modified areas described for ♂ not distinctly differentiated; hind trochanter without brush of setulae; hind femur as described for ♂; hind tibia with distal expansion less marked than in ♂.

Abdomen. ♂: tergites 3–5 with numerous broadly obovate scales on surface; ♀: tergite 3 with well developed fringe of narrow marginal scales; tergite 4 sometimes with much smaller marginal scales and sparse surface scales; tergite 5 considerably shorter and narrower than tergite 4; spiracles of segment 4 situated on dorsal surface between tergite 4 and 5, closer to median line than to lateral margins of tergite 4; spiracles of segment 5 approximated dorsally in slight incisions in posterior margin of tergite 5, each situated closer to median line than to lateral margins of tergite 5. ♂ postabdomen: outer and inner surstyli united for almost their

entire length, the former very slightly longer than the latter, together forming a straight, elongate, parallel-sided structure; outer surstylus terminating in a short pigmented section with a slight, blunt, posteriorly directed tooth; inner surstylus with two closely placed black teeth, the terminal one without posteriorly directed point; aedeagus with rather slender stipe, pubescent on median line in basal half; preglans well developed, about twice as long as maximum diameter; glans subcylindrical, somewhat elongate; filaments equal in length, about one and a half times as long as glans but somewhat variable.

Dimensions: total length, ♂ 4.8–8.5 mm, ♀ 5.2–8.0 mm; length of thorax, ♂ 2.4–4.4 mm, ♀ 3.0–4.1 mm; length of wing, ♂ 4.9–8.4 mm, ♀ 5.8–7.7 mm; length of glans of aedeagus 0.33–0.42 mm.

Distribution: Queensland—tropical section of east coast. Specimens from Dunwich, in southern Queensland are doubtfully referable to this species.

Holotype ♂: Mulgrave River, 4 miles W of Gordonvale, 4 i 1959 (AM), D.K.M.

Other material examined: Mulgrave R., 4 miles W of Gordonvale, xii 1966 (paratype ♂, AM), G.A.H. and D.K.M.; Claudie R., near Mount Lamond, Iron Range district, v 1966 (paratype ♀, AM), D.K.M.; Claudie R., xi 1913—ii 1914 (paratype ♀, NMV), J. A. Kershaw; 18 miles N of Cooktown, ix 1969 (paratype ♀, CSIRO), R. J. Huppatz; Mowbray R., near Mossman, v 1960 (paratypes, 1 ♂, 1 ♀, CSIRO), T.G.C.; Bramston Beach, near Innisfail, iv 1967 (paratype ♂, CSIRO), D.H.C.; Ingham, vii 1958 (paratype ♀, CSIRO), K. L. Harley; Palm Island, near Ingham, no date (paratypes, 1 ♂, 3 ♀, CSIRO), T.L.B., i xii 1930–1931 (paratypes, 1 ♂, 8 ♀, CSIRO, 1 ♂, 1 ♀, BM), I.M.M.; Townsville, no date (paratypes, 1 ♂, SAM, 1 ♂, AM), G. F. Hill; Magnetic Island, near Townsville, no date (paratype ♂, SAM), anon.; Dunwich, North Stradbroke Island, iv 1958–1965 (1 ♂, UQ, 1 ♀, CNC), E. A. Bernays, G.M.

Habitat: specimens from Mulgrave R. and Claudie R. taken in rain forest near river bank.

Comparative notes. This species is exceedingly similar to *E. separata* but a useful character for distinguishing both sexes is the reduction or absence of black setulae on the central part of the dorsal region of the hind femur. The male may also be distinguished from that of *E. separata* by the form of the hind trochanter and femur (fig. 67) and by the size of the glans of the aedeagus.

Although there is ample evidence that *E. comes* and *E. separata* have the status of separate species on the tropical section of the Queensland coast, the specimens (only one of each sex available) from Dunwich, southern Queensland, shows characters intermediate between the two species. Both specimens have an extensive area of black setulae on dorsal surface of hind femur as in *E. separata.* The male has the brush of setulae on hind trochanter formed as in *E. comes*, but the form of the hind femur and tibia is intermediate between the two species. In the female the spiracles of segment 5 are rather close together as in *E. comes.* It appears possible that this is an example of the phenomenon known as *character displacement*, defined by Brown and Wilson (1956) as "the situation in which, when two species of animals overlap geographically, the differences between them are accentuated in the zone of sympatry and weakened or lost entirely in the parts of their range outside this zone". A better knowledge of the Dunwich population and of populations between Dunwich and Townsville is desirable to decide this point.

Euprosopia separata Hendel

(Fig. 68)

Euprosopia separata Hendel, 1914a: 150, pl. 14, fig. 259; 1914b: 338–339, pl. 2, fig. 37; Malloch, 1928a: 344–345; 1929: 512.

♂ ♀. Exceedingly similar to *E. comes* in most characters and deviating from the description of that species only in the following characters.

Coloration. Hind femur with black setulae on a broad dorsal area extending its full length.

Thorax. ♂: brush of black setulae more compact than in *E. comes*, covering a rounded area and situated on a distinct prominence, the central setulae longer than the outer ones, thus giving the brush a narrowly rounded outline distally; hind femur strongly curved and narrowed basally, its maximum vertical diameter about 1.5 times that a short distance beyond base; hind tibia more strongly expanded distally than in *E. comes*.

Abdomen. ♀: spiracles of segment 5 situated close to posterior margin of tergite 5 and closer to its lateral margin than to median line. ♂ postabdomen: glans of aedeagus larger than in *E. comes*.

Dimensions: total length, ♂ 7.2–9.1 mm, ♀ 6.7–9.2 mm; length of thorax, ♂ 3.2–4.6 mm, ♀ 3.5–4.8 mm; length of wing, ♂ 7.0–9.1 mm, ♀ 7.4–9.4 mm; length of glans of aedeagus 0.47–0.52 mm.

Distribution: North Queensland.

Holotype ♀: Townsville, no date (WM), anon.

Other material examined: Townsville, no date (1 ♂, 3 ♀, BM), F.P.D.; Kuranda, ii vi xi 1910 (2 ♂, 3 ♀, AM, 10 ♂, 42 ♀, BM), F.P.D.; Thornton Range to Hutchinson Creek, Daintree R. district, i 1967 (1 ♀, AM), D.K.M.

Habitat: specimen from near Thornton Range taken in rain forest.

Notes. As the name *E. separata* Hendel (1914a) first became available through publication of a figure without description, the figure must be taken as representing the holotype. It is certain that the original figure and the photographic one subsequently published by Hendel (1914b: fig. 37) are taken from the same specimen, a right wing which was probably mounted on a slide. Though this mounted wing cannot now be found, I believe that the specimen preserved in WM and lacking the right wing is the rest of the holotype. Further specimens labelled "Cotype" (N.E. Queensland, no date, 2 ♀, BM, C.M.K.) have no type status.

Euprosopia inermis n. sp.

Similar to *E. conjuncta* in most characters, and agreeing with the description given for that species except as indicated below. ♂ unknown.

♀. *Coloration.* Postfrons yellow, with brown suffusion much lighter than in *E. conjuncta;* lower lateral angle of face yellowish; occiput usually not much darkened above; palpus brown, fulvous at base and apex, the latter with greyish white pruinescence. Sternopleuron usually extensively stained with dark brown, less so in holotype. Fore femur tawny; other femora tawny to reddish brown with variable darker brown suffusions. Wing without yellowish suffusion in marginal cell between discal and preapical bands.

Head. Height of cheek 0.23–0.30 of height of eye; eye 1.7–1.8 times as high as long; prelabrum with fine parallel grooves on entire surface.

Thorax. Humeral callus with numerous hairs, slightly shortened but still quite well developed posteriorly, and a strong humeral bristle; scutellum with marked median apical depression; basalar process reduced to a minute tuft of pubescence on a very slight prominence; tegula slightly enlarged, reaching almost to anterior edge of basalare, but not produced anteriorly; mesopleuron with hairs mostly fine, but those near centre not much shortened. Fore femur without well differentiated posteroventral bristles.

Abdomen. Spiracles of segment 5 situated dorsally, very close to posterior margin of tergite 5 but not within deep incisions of its posterior margin.

Dimensions: total length 6.1–8.8 mm; length of thorax 3.6–5.0 mm; length of wing 7.0–9.2 mm.

Distribution: north-eastern Queensland; Northern Territory.

Holotype ♀: Daintree River, 6 miles NW of Daintree, 31 xii 1958 (AM), D.K.M.

Other material examined. Queensland: Dungeness, near Ingham, xii 1962 (paratype ♀, CSIRO), K.R.N. Northern Territory: Darwin, no date (1 ♀, paralectotype of *E. conjuncta* Hendel), R.G.S. Buckland; Howard Springs, 15 miles E of Darwin, vi 1964 (5 ♀, CSIRO, 1 ♀, AM, 1 ♀, USNM), K.R.N.; Groote Eylandt, no date (1 ♀, SAM), N. B. Tindale; Holmes Jungle, Palm Creek, near Darwin, iii 1961 (2 ♀, BPB), J. L. and M. Gressitt.

Habitat: holotype on tree-trunk in small group of trees near stream in semi-open country.

Comparative notes. This species is separated from its nearest allies in Australia (*E. conjuncta* and *E. biarmata*) by the reduction of the posteroventral bristles of the fore femur, and, in the female sex, by the normally developed humeral bristle and scarcely enlarged tegula. It is also very similar to *E. connexa* Malloch (1940) from the Solomon Islands, which has a similar tegula in the female, but *E. connexa* has the humeral bristle and the hairs on the posterior part of the humeral callus of the female much reduced and the yellowish hairs on the scutellum much longer than in *E. inermis*.

The absence of males in the available material of this species suggests either that the males have different habits from the females, or that it is a parthenogenetic male-less form. Perhaps some support is given to the latter alternative by the fact that the female differs from that of the three most closely related species in the complete absence of those modifications of the thorax which I assume to play a role in mating.

Euprosopia conjuncta Hendel

Euprosopia conjuncta Hendel, 1914a: 149 (nomen nudum); 1914b: 339–340, pl. 2, fig. 35 (described); Malloch, 1929: 512; 1930: 329.

♂ ♀. *Coloration.* Head buff; postfrons yellow with brown suffusion; postfrons and parafacial with whitish pruinescent orbital margins; face with large blackish brown mark on each side from antennal groove to epistomal margin; lower lateral angles of face tawny; cheek with a tawny suffusion near middle; occiput darkened above but its entire surface covered with whitish pruinescence which is thinnest near vertex; antenna yellowish brown, arista fulvous at base, blackish beyond, palette of ♂ dark grey; prelabrum blackish laterally, yellow in centre; palpus brown with greyish pruinescence. Mesoscutum reddish brown laterally, usually becoming dark brown or blackish medially, the whole with yellowish grey pruinescent markings; scutellum dark brown, becoming blackish and shining laterally and towards apex, with a large triangular median greyish yellow pruinescent area, the vertex of

which is prolonged over apex; pleura tawny-brown with extensive whitish to yellowish pruinescence. Femora reddish brown, darkened distally, the fore one sometimes darker brown; fore tibia brown; middle and hind tibiae tawny, dark brown distally; tarsi blackish, basal segment creamy, darkened at extreme apex. Wing with blackish area in basal half of first basal cell usually enclosing at least four hyaline marks which may partly divide it transversely; stigmatal and discal bands complete, without any intermediate markings, usually with some yellow incisions on their anterior edges; marginal cell often with a yellowish suffusion between discal and preapical bands which may enclose a dark spot; preapical band broadly joined to apical mark anteriorly; squama buff, usually pale brown in centre. Haltere creamy to fulvous. Preabdominal tergites very variable in colour, usually combining tawny, reddish brown, dark brown, and grey.

Head approximately as high as wide; height of cheek 0.22–0.35 of height of eye; anterior ridge of cheek well developed; eye 1.6–1.9 times as high as long; outer vertical and cheek bristles present but no other cephalic bristles present. Antenna extending at least two thirds of distance from its base to epistomal margin in ♂, extending distinctly more than half the distance in ♀; arista with very minute basal hairs, spatulate apically in ♂, simple in ♀. Prelabrum moderately developed, rugose in centre, almost smooth at sides; palpus moderately broad.

Thorax. Humeral callus with hairs all or nearly all pale, long in ♂, in ♀ the hairs moderately developed anteriorly, very short posteriorly; setulae on and near notopleural area not shortened; scutellum always with a distinct apical groove or depression of variable width and depth, which separates a pair of convexities on which are situated the apical bristles; ♂: basalar process represented by a slight prominence only; tegula moderately developed, not produced forwards; ♀: basalar process distinct but very small, acuminate; tegula strongly produced forwards at least as far as base of posterior notopleural, but not as far as base of anterior notopleural, not thickened distally; mesopleuron without specially developed hairs towards ventral margin in either sex, with most hairs, except the enlarged posterior marginal ones, rather short, more so in ♀, but not as short as in ♀ of *E. biarmata;* the following thoracic bristles present: prescutellar acrostichal, dorsocentral, humeral strongly developed in ♂, very weak or absent in ♀, 1 + 1 notopleurals, supra-alar, postalar, posterior intra-alar, two pairs of scutellars. Fore femur with series of moderately strong black posteroventral bristles on distal third or more; fore tibia and tarsus unmodified. Wing with veins 3 and 4 gradually converging distally; vein 4 with barely noticeable forward curvature at apex.

Abdomen. ♂: tergite 2 with posterior marginal fringe of scales; tergites 3–5 subequal in length, with scattered scales, sparser on tergite 3 where they may be reduced to the marginal fringe; ♀: tergite 2 with posterior marginal fringe of scales, other tergites devoid of scales; tergite 5 narrower but not much shorter than preceding tergites; spiracles of segment 5 situated in deep incisions in posterior margin of tergite 5, those of segment 4 situated between tergites 4 and 5, usually a little more widely separated from one another than are those of segment 5. ♂ postabdomen: inner and outer surstyli united for most of their length; free distal part of outer surstylus with a short anterior lobe, beyond which it is narrower, the rounded apex slightly curved inwards and backwards; inner surstylus with comparatively narrow head bearing two compact black teeth; aedeagus with stipe of moderate length, almost bare; preglans well differentiated, sclerotized; glans somewhat elongate; bulb short, sclerotized; filaments equal, very short, only slightly longer than glans.

Dimensions: total length, ♂ 5.8–8.3 mm, ♀ 5.9–9.8 mm; length of thorax, ♂ 3.2–4.9 mm, ♀ 3.1–5.0 mm; length of wing, ♂ 6.5–9.6 mm, ♀ 7.0–10.2 mm.

Distribution: Queensland—east coast from Cape York Peninsula almost to southern border. Hendel's record from Port Darwin is erroneous, as it refers to the species here described as *E. inermis.*

Type material examined: Townsville, no date (lectotype ♀, here designated, also 1 ♀, possibly a paralectotype but without determination label, BM), F.P.D.

Other material examined: Claudie R., near Mount Lamond, Iron Range district, vi 1966 (1 ♀, AM), D.K.M.; Claudie R., ii 1914 (1 ♂, 3 ♀, NMV), J. A. Kershaw; Thornton Range to Hutchinson Creek, Daintree R. district, i 1967 (1 ♀, AM), G.A.H. and D.K.M.; Kuranda, 1910 (2 ♂, 8 ♀, BM), F.P.D.; Meringa, near Gordonvale, xi 1925–1926 (2 ♀, CSIRO), G. M. Goldfinch; Mulgrave R., 4 miles W of Gordonvale, i xii 1959–1966 (2 ♂, 1 ♀, AM), D.K.M.; 2 miles N of Tully R. bridge, E of Cardstone, Cardstone–Ravenshoe Road, i 1967 (2 ♂, 3 ♀, AM), G.A.H. and D.K.M.; 2 miles E of Cardstone, Tully R. district, i 1967 (1 ♂, 7 ♀, AM), G.A.H. and D.K.M.; Little Crystal Creek, Mount Spec, near Paluma, xii 1954 (2 ♀, UQ), anon.; Broken R., Eungella, xii 1961 (9 ♂, 8 ♀, AM), R.L. and D.K.M.; Finch Hatton Gorge, xii 1961 (1 ♀, AM), R.L. and D.K.M.; Upper Finch Hatton Creek, near Finch Hatton, i 1965 (1 ♀, UQ), G.M.; Saint Helen's Creek, xii 1961 (2 ♂, AM), R.L. and D.K.M.; Mackay, no date (1 ♀, BM), G. Turner; Mary's Creek, near Gympie, ii 1961 (2 ♂, 3 ♀, AM), D.K.M.; Maroochydore, xii 1948 (1 ♀, UQ), J. A. Beck; Caloundra, iii 1960 (1 ♀, UQ), R. Shephard; Highvale, 14 miles NW of Brisbane, i ii 1960 (1 ♂, 2 ♀, CSIRO), R.S.; Tamborine Mountain, ii iii iv 1952–1960 (2 ♀, UQ), F.A.P., anon. (1 ♀, CSIRO), K.R.N.; Canungra, ii 1955 (2 ♀, CSIRO), Sharp, anon.

Habitat: rain forest or small groups of trees near streams, most frequently taken on tree-trunks or mammalian faeces.

Euprosopia biarmata Malloch

(Figs 63, 106, 107, 108)

Euprosopia biarmata Malloch, 1929: 512–513; 1930a: 431.

♂ ♀. Very similar to *E. conjuncta* in most characters, so that only the differentiating characters are here given.

Coloration. Wing with blackish area in basal half of first basal cell containing three hyaline spots, two at same level just before fork of veins 2 and 3, and one more basally situated.

Head. Prelabrum with numerous fine subparallel grooves, weaker laterally.

Thorax. Scutellum almost semicircular in outline, but with a slight median apical depression and slight convexity on either side which are less marked than in *E. conjuncta*, margin devoid of pruinescence, except on median line, and somewhat shining but not highly glossy on account of the fine sculpturing of the entire dorsal surface, which extends to the apical bristles and slightly below the lateral bristles, extreme margins and ventral surface smooth and glossy; ♂: mesopleuron haired as in ♂ of *E. conjuncta* but with some much coarser predominantly pale hairs along its ventral margin; other secondary sexual characters of thorax as described for *E. conjuncta;* ♀: hairs on posterior half of humeral callus reduced to extremely short black setulae; hairs in vicinity of anterior notopleural bristle similarly reduced; basalar process well developed, lanceolate, extending for about half the distance from its base to anterior extremity of tegula; tegula produced forwards slightly beyond level of base of anterior notopleural bristle, slightly thickened anteriorly; mesopleuron with hairs on most of surface much shortened, many of those near centre almost indistinguishable though their sockets are visible, a group along ventral margin much enlarged into coarse, black setulae. Fore femur with posteroventral bristles as in *E. conjuncta*, or somewhat weaker.

Abdomen. ♂: tergite 3 with posterior marginal fringe of scales only. ♂ postabdomen very similar to that of *E. conjuncta* except for following characters: surstyli shorter and broader, head of inner surstylus broad, with the 2 black teeth transversely dilated and closely appressed.

Dimensions: total length, ♂ 4.9–7.9 mm, ♀ 4.9–8.0 mm; length of thorax, ♂ 2.7–4.3 mm, ♀ 2.4–4.5 mm; length of wing, ♂ 5.7–8.0 mm, ♀ 6.0–9.3 mm.

Distribution: northeastern Queensland—Cairns, Atherton, and Tully districts.

Type material examined: Herberton, ii 1911 (holotype ♀, DEI), F.P.D.

Other material examined: 9 miles N of Kuranda, iii 1964 (1 ♂, CSIRO), I.F.C. and M.S.U.: Mulgrave R., 4 miles W of Gordonvale, i 1967 (1 ♂, 1 ♀, AM), G.A.H. and D.K.M.; The Boulders, near Babinda, v 1967 (1 ♀, CSIRO), D.H.C.; Tolga, near Atherton, iv 1955 (1 ♀, CSIRO), K.R.N. and I.F.C.; Wongabel State Forest, near Atherton, v 1967 (1 ♀, CSIRO), D.H.C.; Malanda, x 1962 (1 ♀, CSIRO), K. Harley; The Crater (or Mount Hypipamee), near Herberton, i 1967 (1 ♀, AM), G.A.H. and D.K.M.; Herberton, i 1911 (1 ♀, BM), F.P.D.; 2 miles N of Tully R. bridge, E. of Cardstone, Cardstone–Ravenshoe road, i 1967 (1 ♂, 1 ♀, AM), G.A.H. and D.K.M.; 2 miles E of Cardstone, i 1967 (2 ♂, 3 ♀, AM, 1 ♀, BM, 1 ♀, USNM), G.A.H. and D.K.M.; 5 miles W of Tully, iv 1955 (1 ♂, 1 ♀, CSIRO), K.R.N. and I.F.C.

Habitat: rain forest near streams.

Malloch's statement that the basalar process of the female is about as long as the tegular process is misleading. Though longer than in other species of the *separata* group, it is about half as long as the distance from its base to the anterior extremity of the tegula in all female specimens examined, including the holotype.

XI. LIST OF NEW NAMES, SYNONYMY, AND TYPE DESIGNATIONS

New generic name: *Apiola* (replacement name for *Xenognathus* Malloch, not Gilbert).

New specific names: *Mesoctenia australis*, *Plagiostenopterina* (*Stenopterosoma*) *claudiana*, ***P.*** (*S.*) *crinita*, ***P.*** (*S.*) *macies*, *Lamprogaster tricauda*, *L. nigrihirta*, *L. flavihirta*, *L. rugifacies*, *L. imperialis*, *L. corax*, *L. excelsa*, *L. corusca*, *L. relucens*, *Duomyia personata*, *D. commoni*, *D. convallis*, *D. pallipes*, *D. monteithi*, *D. foliata*, *D. triquetra*, *D. botulus*, *D. argentata*, *D. eremia*, *D. smaragdina*, *D. lacunosa*, *D. marginalis*, *D. chaetostigma*, *D. lutea*, *D. longicauda*, *D. serra*, *D. umbrosa*, *D. curta*, *D. octoseta*, *D. scipio*, *D. aurantiaca*, *D. dete*, *D. capnodes*, *D. ustulata*, *D. brevicornis*, *D. angustata*, *D. lonchaeina*, *D. capitalis*, *D. picta*, *D. rasa*, *D. latipilus*, *D. parallela*, *D. adelaidae*, *D. iris*, *D. acrogenea*, *D. uptoni*, *D. viridaurea*, *D. ameniina*, *D. montium* (replacement name), *D. scintilla*, *D. hypene*, *D. howensis*, *D. glebosa*, *D. loxocerina*, *D. cancellata*, *D. hebes*, *D. brevifurca*, *D. rudis*, *Euprosopia rete*, *E. acula*, *E. xanthops*, *E. lenticula*, *E. sericata*, *E. crassa*, *E. piperata*, *E. conferta*, *E. integra*, *E. kurandae*, *E. mica*, *E. remota*, *E. hollowayi*, *E. megastigma*, *E. crispa*, *E. albipila*, *E. fimbripes*, *E. vitrea*, *E. alpina*, *E. celsa*, *E. hypostigma*, *E. subacuta*, *E. filicornis*, *E. ramosa*, *E. subula*, *E. anostigma* (replacement name), *E. armipes*, *E. monodon*, *E. comes*, *E. inermis*.

New synonymy—generic (the invalid junior synonym placed first): *Mystia* Walker = *Achias* Fabricius; *Campigaster* Macquart = *Duomyia* Walker; *Helocnemia* Enderlein = *Duomyia* Walker; *Pachymyza* Frey = *Phasiamya* Walker.

New synonymy—specific: *Dacus basalis* Walker = *Plagiostenopterina aenea* (Wiedemann); *Dacus longivitta* Walker = *Plagiostenopterina aenea* (Wiedemann); *Lamprogaster elongata* Van der Wulp = *L. violacea* (Macquart); *Lamprogaster pseudelongata* Malloch = *L. indistincta* Malloch; *Chromatomyia jucunda* Walker = *Lamprogaster bicolor* Macquart; *Lamprogaster unimacula* Hendel = *L. flavipennis* Macquart; *Chromatomyia formosa* Walker = *Lamprogaster laeta* (Macquart); *Lamprogaster fuscibasis* Malloch = *L. macrocephala* Hendel; *Senopterina grandis* Schiner = *Duomyia scutellaris* (Macquart); *Duomyia annulipes* Hendel = *D. apicalis* (Walker); *Duomyia fidschiensis* Enderlein = *D. maculipennis* Hendel; *Pachymyza coleoptrata* Frey = *Phasiamya metallica* Walker.

New combinations: *Rhytidortalis solocifemur* (Enderlein) (*Pseudepicausta*); *Plagiostenopterina* (*Stenopterosoma*) *similis* (Hendel) (*Pogonortalis*); *Microepicausta terraereginae* (Malloch) (*Elassogaster*); *Microepicausta evitta* (Malloch) (*Elassogaster*); *Rivellia nigripes* (Macquart) (*Urophora*); *Lamprogaster nigripes* (Macquart) (*Senopterina*); *Achias attrahens* (Walker) (*Mystia*); *Achiosoma apictipenne* (Hennig) (*Achias*); *Duomyia apicalis* (Walker) (*Chromatomyia*); *Duomyia testacea* (Macquart) (*Campigaster*); *Duomyia gigas* (Macquart) (*Senopterina*).

Type species are designated for the following nominal genera: *Chromatomyia* Walker, type species *C. formosa* Walker; *Plagiostenopterina* Hendel, type species *Dacus longivitta* Walker.

Lectotypes are designated for the following nominal species: *Rhytidortalis solocifemur* (Enderlein); *Lamprogaster bicolor* Macquart; *Chromatomyia jucunda* Walker; *Lamprogaster nigripes* (Macquart); *Lamprogaster flavipennis* var. *nigripes* Hendel; *Chromatomyia formosa* Walker; *Lamprogaster hilaris* (Walker); *Lamprogaster maculipennis* Macquart; *Duomyia sericea* Hendel; *Duomyia apicalis* (Walker); *Duomyia decora* (Macquart); *Chromatomyia laeta* Walker; *Duomyia obscura* Walker; *Duomyia maculipennis* Hendel; *Duomyia fidschiensis* Enderlein; *Euprosopia miliaria* Hendel; *Euprosopia ventralis* (Walker); *Platystoma australis* Macquart; *Euprosopia tenuicornis* Macquart; *Euprosopia conjuncta* Hendel.

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INDEX TO TAXA

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P

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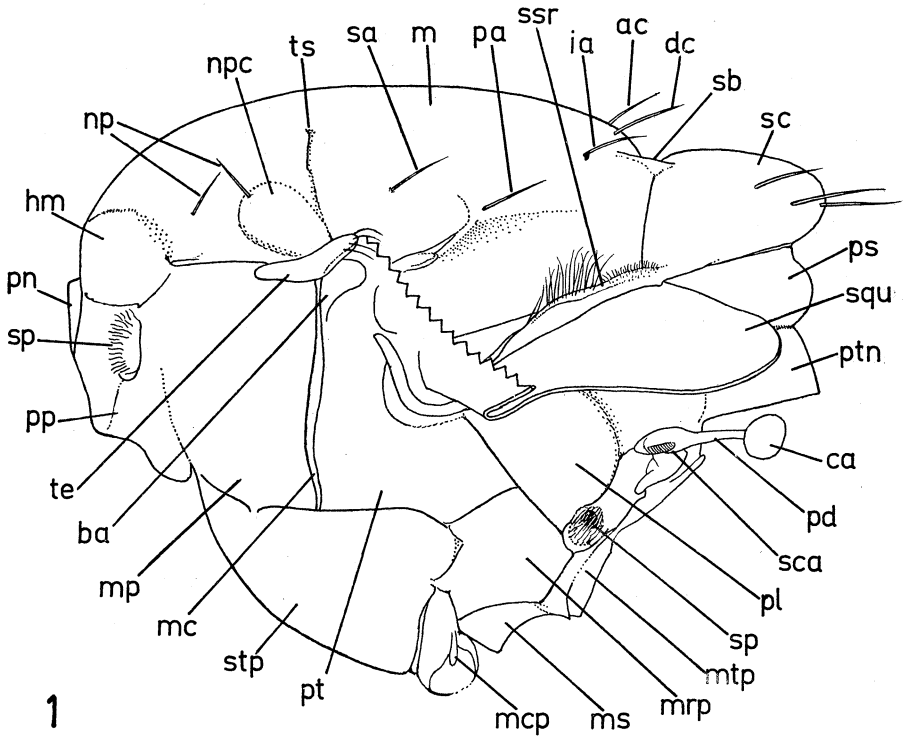


Fig. 1

Euprosopia tenuicornis, ♀. Left lateral aspect of thorax to illustrate terminology.

ac, prescutellar acrostichal bristle. ba, basalare. ca, capitellum of haltere. dc, dorsocentral bristle. hm, humeral callus. ia, intra-alar bristle. m, mesocutum. mc, membranous cleft. mcp, midcoxal prong. mp, mesopleuron. mrp, meropleuron. ms, metasternum. mtp, metapleuron. np, notopleural bristles. npc, posterior notopleural callus. pa, postalar bristle. pd, pedicel of haltere. pl, pleurotergite. pp, propleuron. ps, postscutellum. pt, pteropleuron. ptn, postnotum. sa, supra-alar bristle. sb, scutellar bridge. sc, scutellum. sca, scabellum of haltere. sp, spiracle. squ, squama. ssr, supra-squamal ridge. stp, sternopleuron. ts, transverse suture.

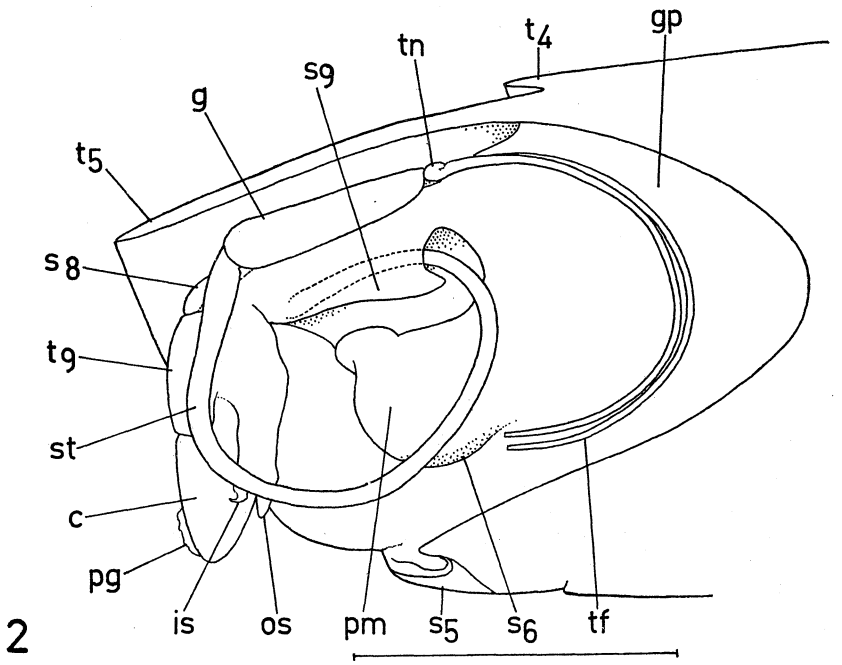


Fig. 2

Euprosopia conferta, paratype ♂. Distal part of abdomen from right, cut away to show genital pouch and postabdomen. Scale represents 1 mm.

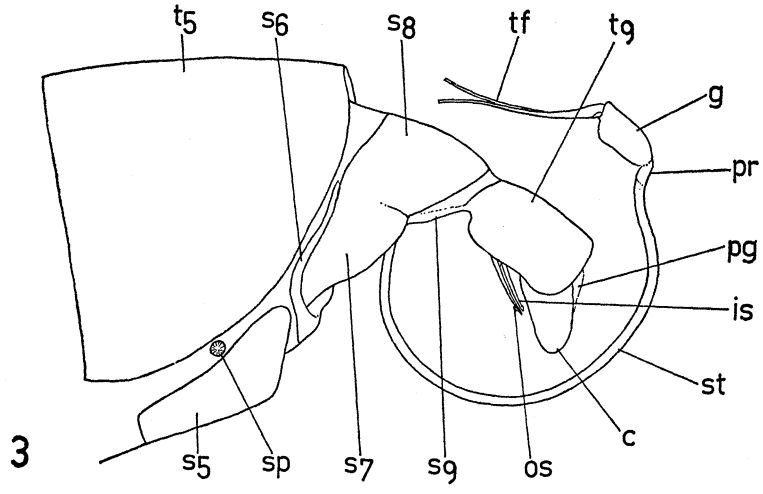
c, cercus. g, glans of aedeagus. gp, genital pouch. is, inner surstylus. os, outer surstylus. pg, proctiger. pm, protrandrium (membranous part). st, stipe of aedeagus. s_5–s_9, sternites 5–9. tf, terminal filaments of aedeagus. tn, tunic of aedeagus. t_4–t_9, tergites 4–9.

Fig. 3. *Euprosopia subula*, ♂. Distal part of abdomen from left, postabdomen fully extended.

Fig. 4. *Mesoctenia australis*, paratype, Thornton Range. ♂ genitalia from left. Scale represents 1 mm.

Fig. 5. *M. australis*, holotype. Head, anterior aspect.

aa, aedeagal apodeme. c, cercus. g, glans of aedeagus. is, inner surstylus. os, outer surstylus. pg, proctiger. pr, preglans of aedeagus. sp, spiracle st, stipe of aedeagus. s_5–s_9, sternites 5–9. tf, terminal filaments of aedeagus. t_5–t_9, tergites 5–9.



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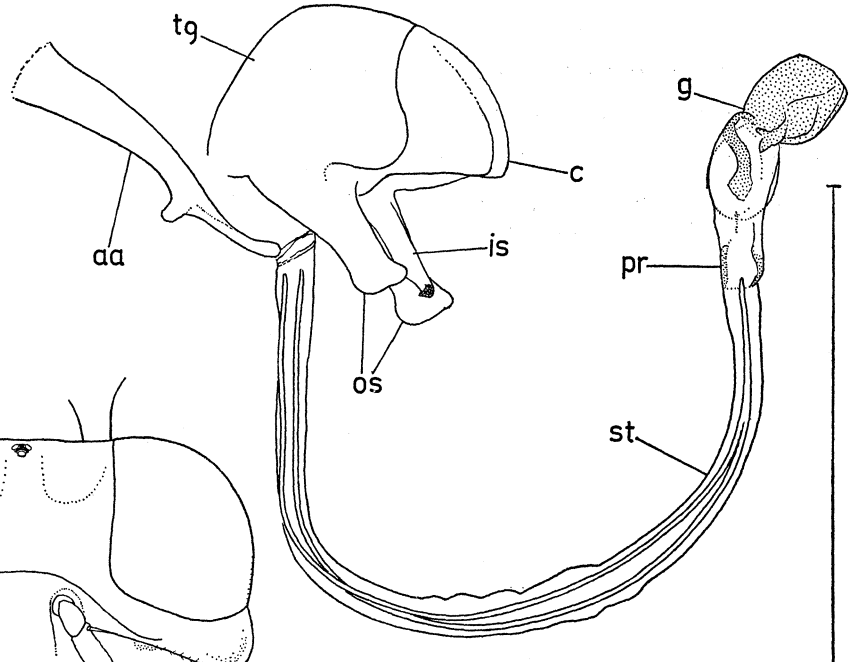

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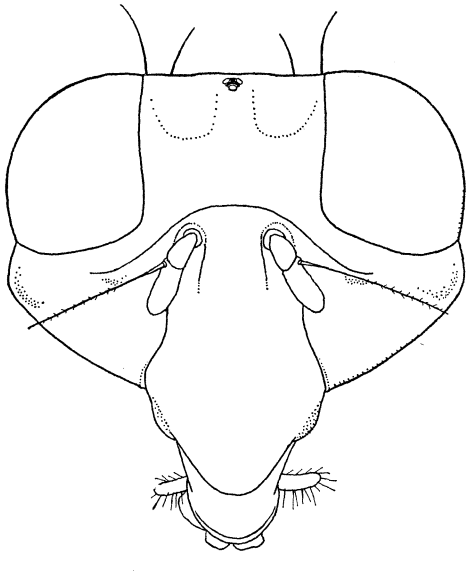

Fig. 6. *Plagiostenopterina claudiana*, paratype. Epandrium from left.

Fig. 7. *P. claudiana*, paratype. Aedeagus.

Fig. 8. *P. crinita*, paratype. Aedeagus.

Fig. 9. *Lamprogaster rugifacies*, paratype. Epandrium from left.
The scale represents 1 mm.

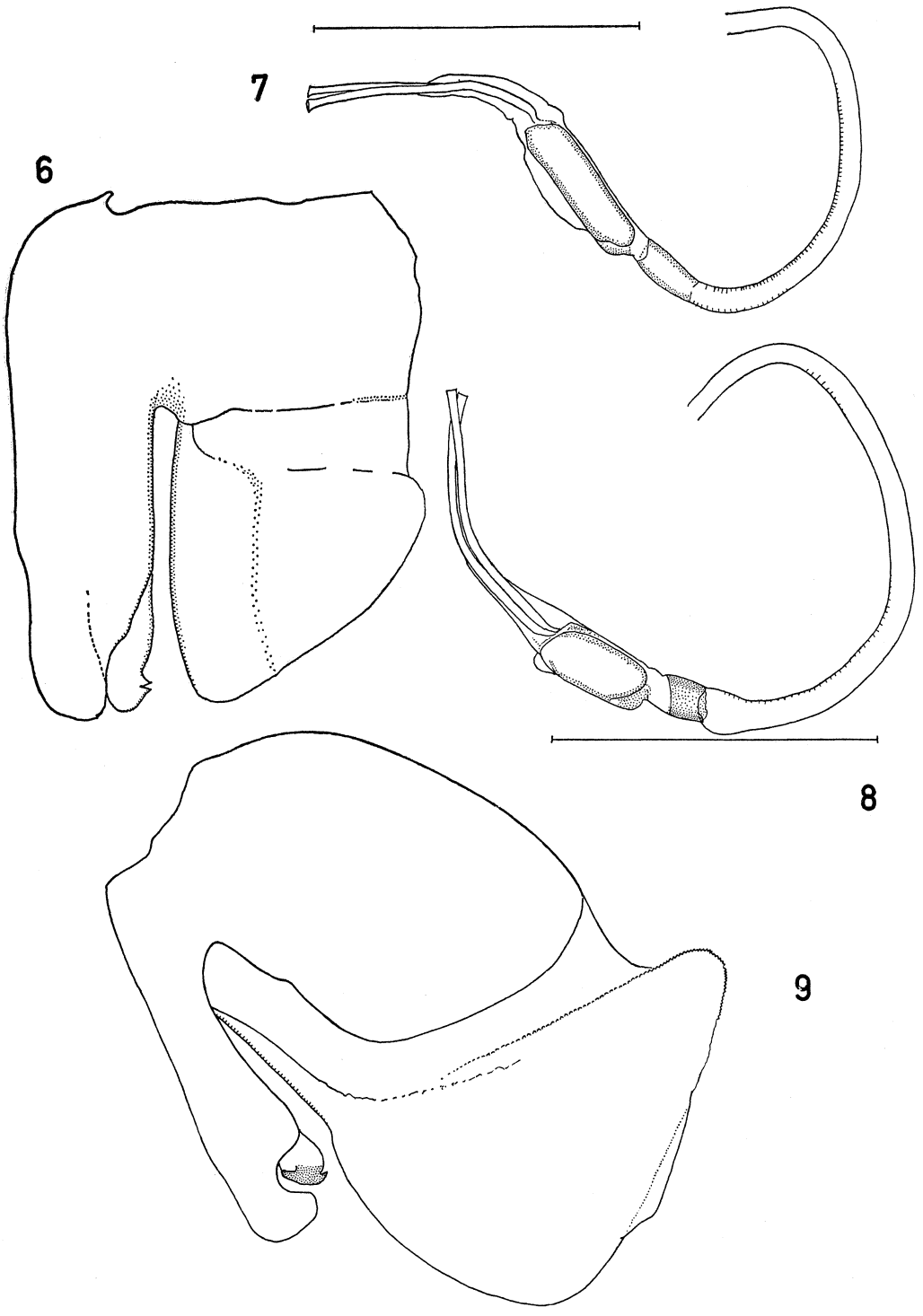
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Fig. 10. *Lamprogaster imperialis*, paratype, Millstream Falls. Epandrium from left.

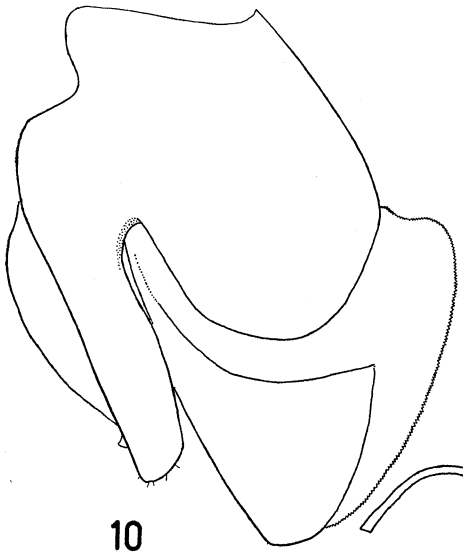
Fig. 11. *L. tricauda*, holotype. Wing.

Fig. 12. *L. imperialis*, paratype, Millstream Falls. Distal part of aedeagus.

Fig. 13. *L. rugifacies*, paratype. Distal part of aedeagus.

Fig. 14. *L. corax*, paratype. Epandrium from left.

The scale represents 1 mm.



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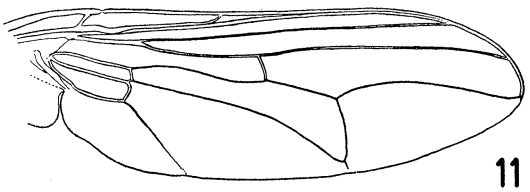

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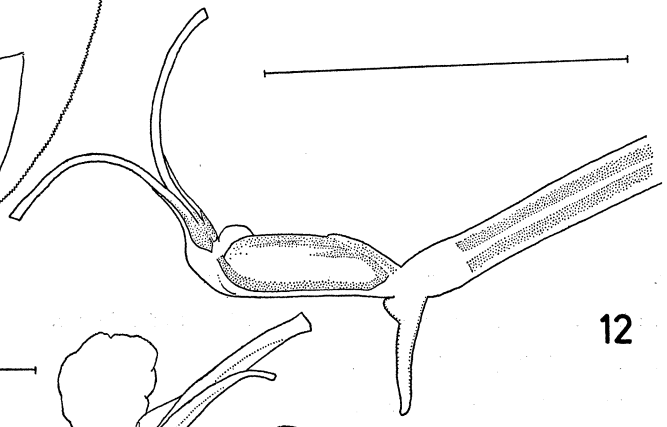

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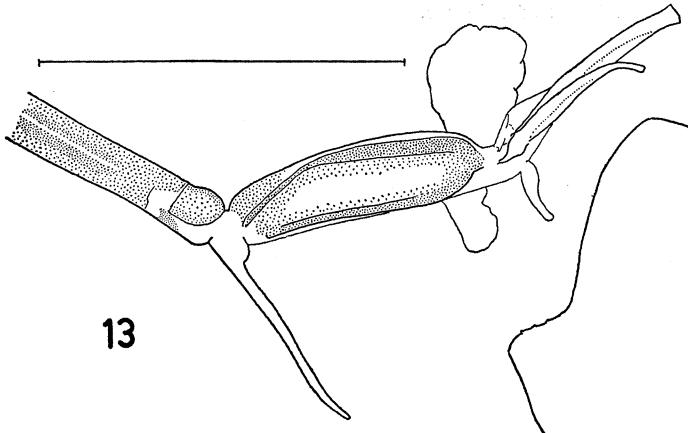

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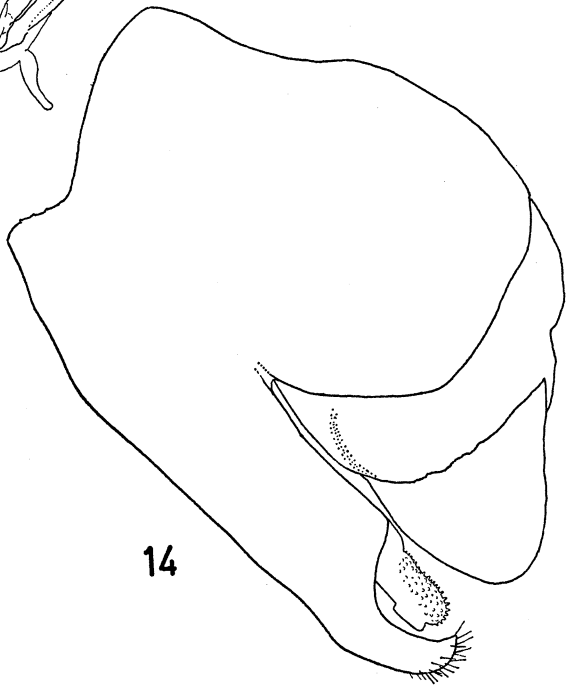


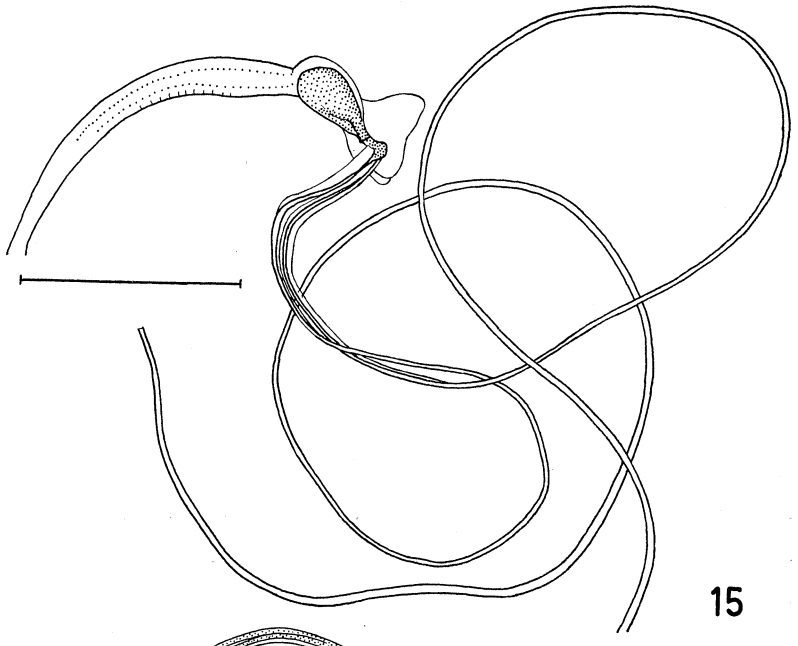
14

Fig. 15. *Lamprogaster corax*, paratype. Aedeagus.

Fig. 16. *L. relucens*, paratype, Royalla. Distal part of aedeagus.

Fig. 17. *L. nigripes*, paralectotype. Aedeagus.

The scale represents 1 mm.



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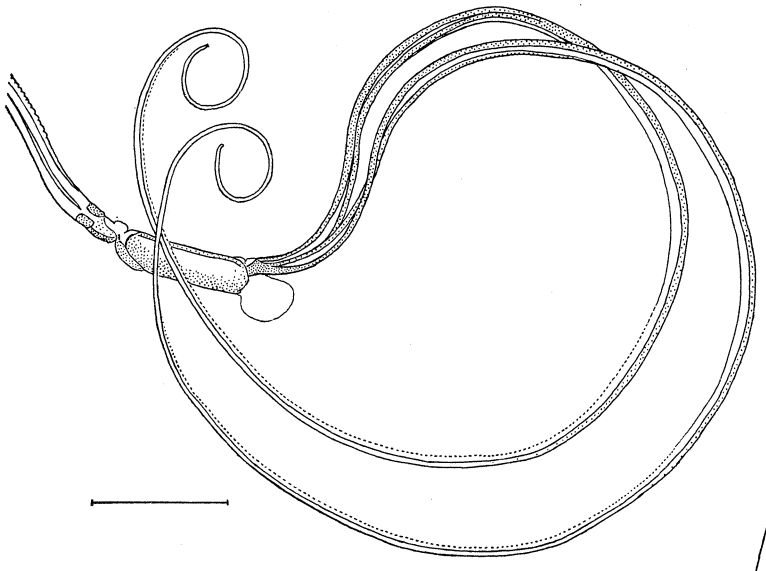

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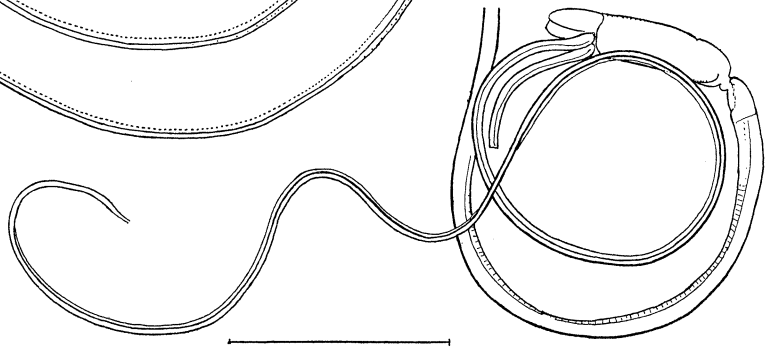

Fig. 18. *Lamprogaster nigrihirta*, paratype, Kuranda. Epandrium from left.

Fig. 19. *L. flavihirta*, paratype, Herberton. Epandrium from left.

Fig. 20. *L. viola*, near Tully River. Wing.

Fig. 21. *L. nigrihirta*, holotype. Wing.

Fig. 22. *L. imperialis*, holotype. Wing.

Fig. 23. *L. corax*, holotype. Wing.

Fig. 24. *L. relucens*, holotype. Wing.

Fig. 25. *L. corusca*, holotype. Wing.

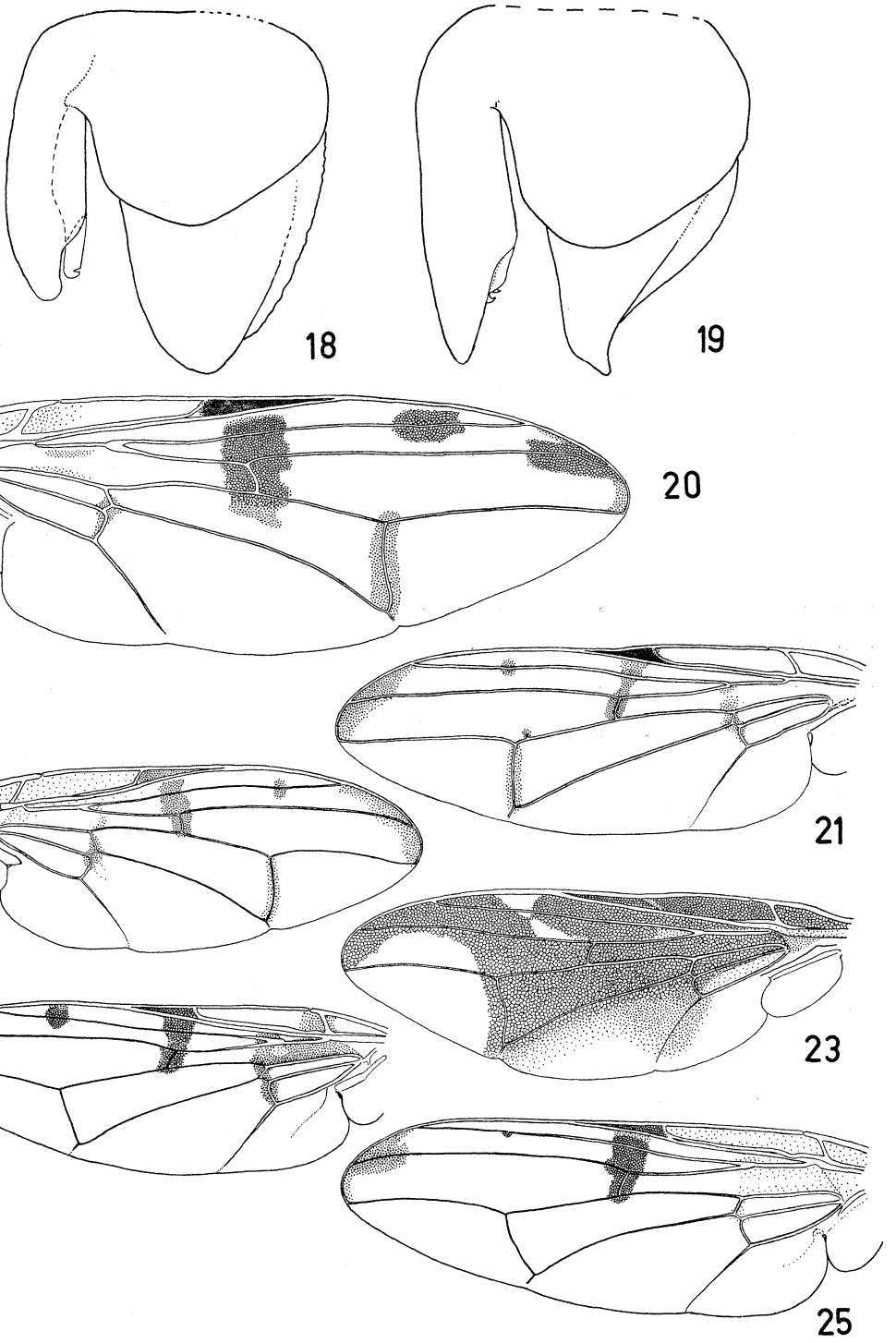
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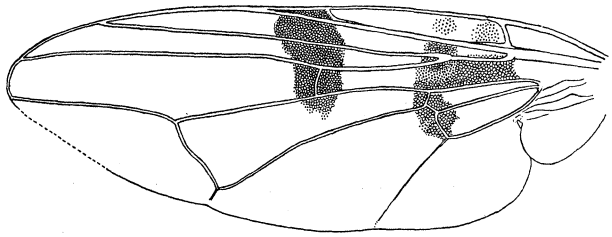
Fig. 26. *Lamprogaster maculipennis*, Blundell's. Wing.

Fig. 27. *Duomyia pallipes*, holotype. Aedeagus.

Fig. 28. *D. tomentosa*, Caloundra. Aedeagus.

The scale represents 1 mm.



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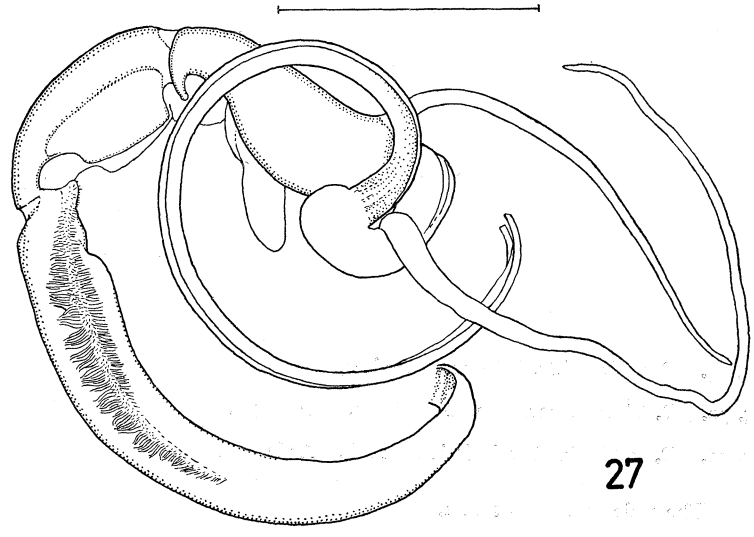

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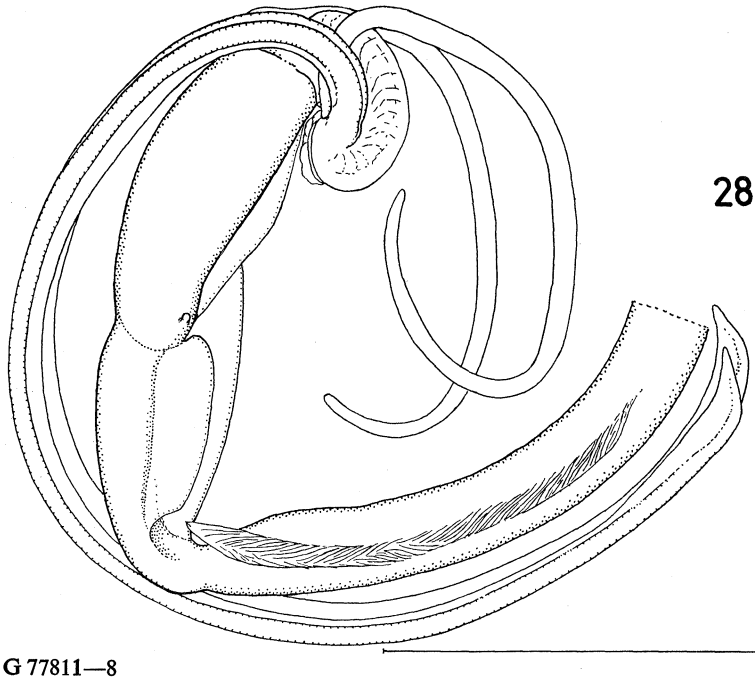

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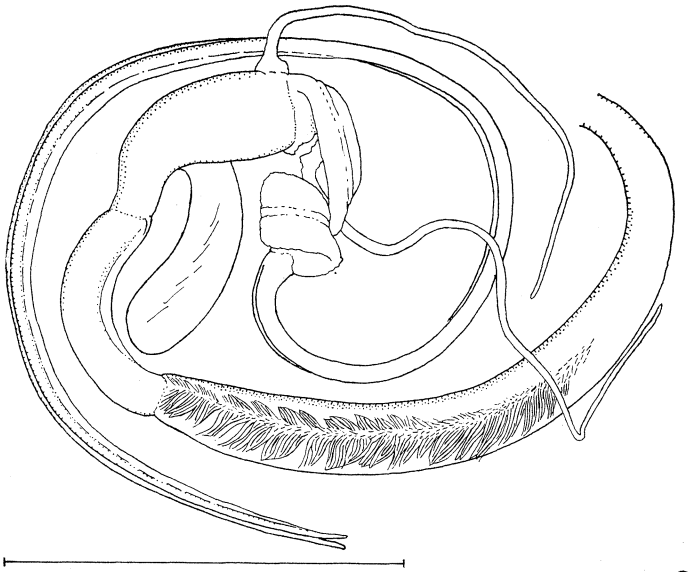
Fig. 29. *Duomyia foliata*, holotype. Aedeagus.

Fig. 30. *D. triquetra*, paratype, Gap Creek. Aedeagus.

Fig. 31. *D. scutellaris*, Royal National Park. Aedeagus.

The scale represents 1 mm.



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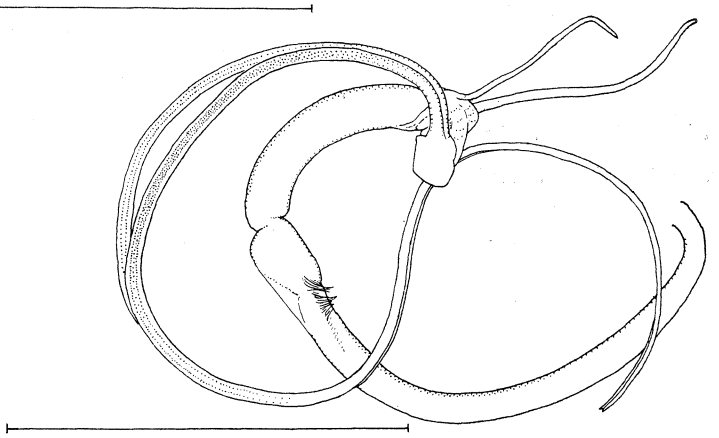

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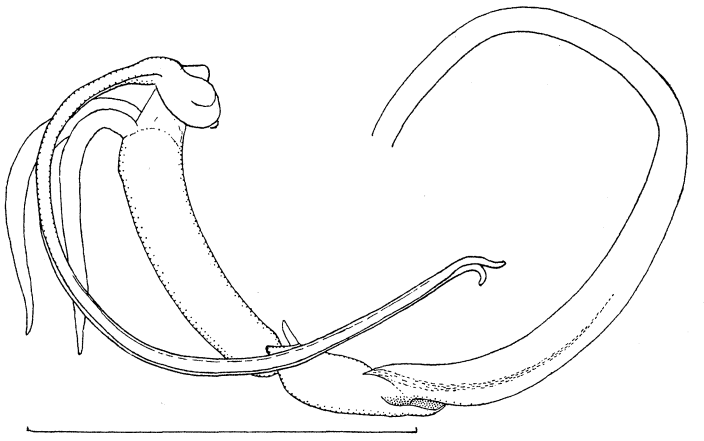

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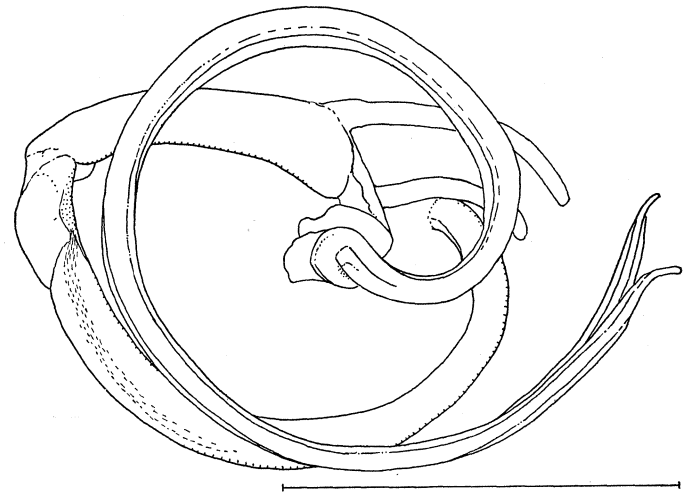
Fig. 32. *Duomyia personata*, holotype. Aedeagus.

Fig. 33. *D. botulus*, holotype. Aedeagus.

Fig. 34. *D. eremia*, holotype. Aedeagus.

The scale represents 1 mm.



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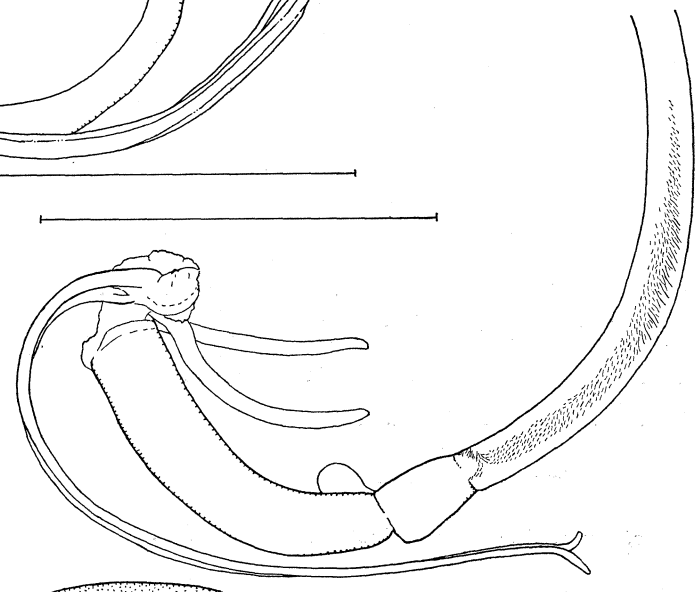

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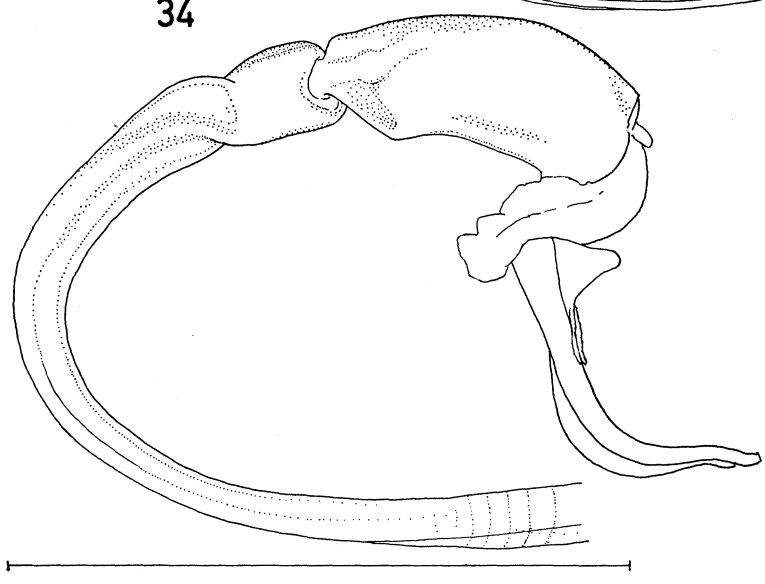


34

Fig. 35. *Duomyia smaragdina*, holotype. Epandrium from left.

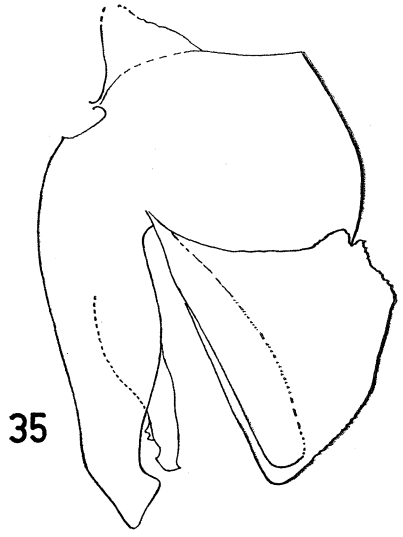
Fig. 36. *D. lacunosa*, paratype, Nedlands. Epandrium from left.

Fig. 37. *D. lacunosa*, paratype, Nedlands. Aedeagus.

Fig. 38. *D. smaragdina*, holotype. Aedeagus.

The scale represents 1 mm.

c, cercus. is, inner surstylus. os, outer surstylus.



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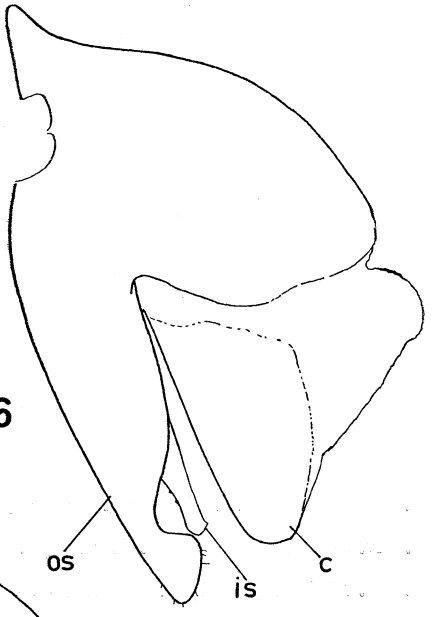

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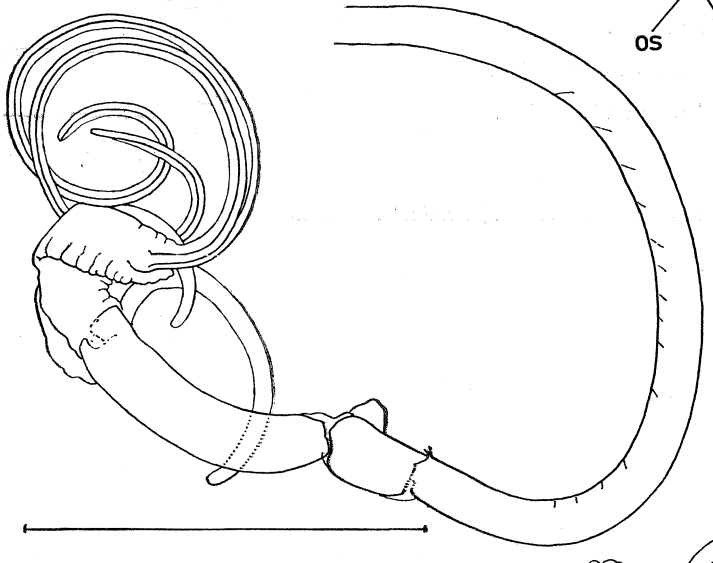

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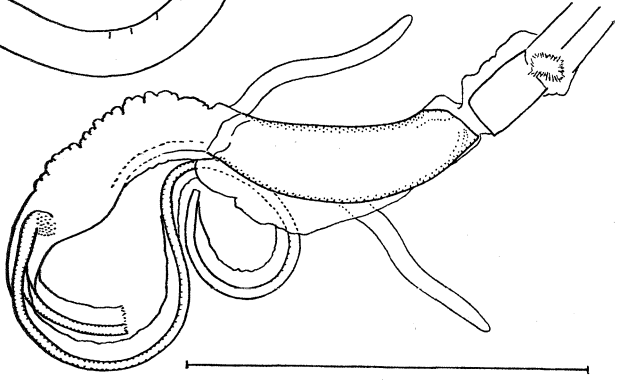


38

Fig. 39. *Duomyia marginalis*, holotype. Aedeagus.

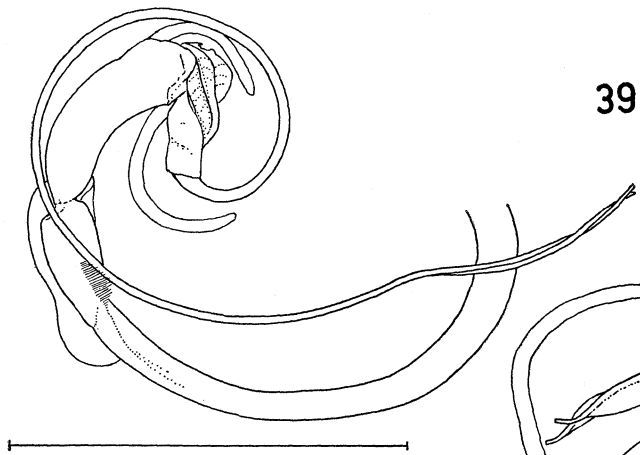
Fig. 40. *D. chaetostigma*, holotype. Aedeagus.

Fig. 41. *D. lonchaeina*, holotype. Distal part of aedeagus.

Fig. 42. *D. angustata*, holotype. Distal part of aedeagus.

The scale represents 1 mm.

bu, membranous bulb. g, glans. pr, preglans. tf, terminal filaments.



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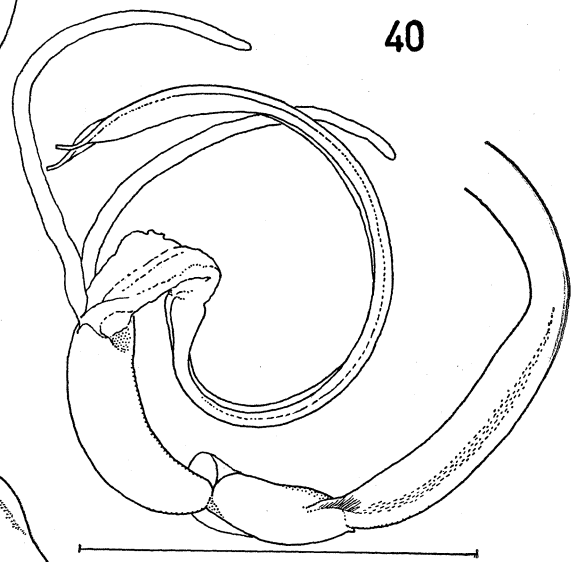

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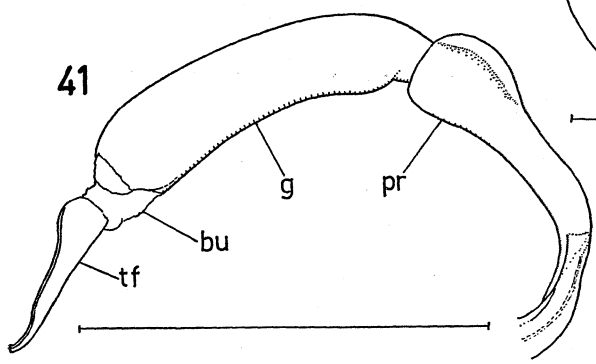

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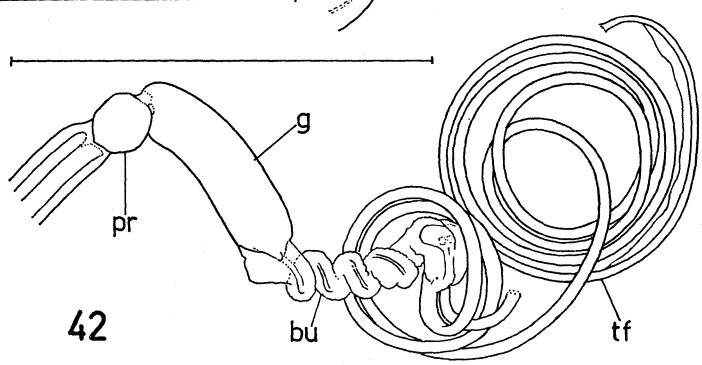

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Fig. 43. *Duomyia howensis*, holotype. Wing.

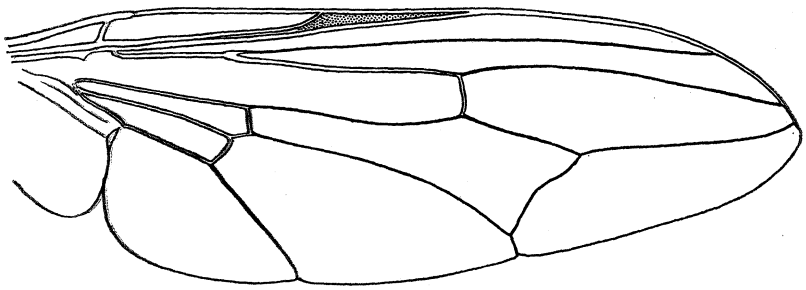
Fig. 44. *D. howensis*, holotype. Distal part of aedeagus.

Fig. 45. *D. obscura*, Kellyville. Aedeagus. Only one of two terminal filaments shown complete.

Fig. 46. *D. thalassina*, Roseville. Aedeagus.

The scale represents 1 mm.

bu, membranous bulb. cae, membranous caeca. g, glans. pr, preglans. st, stipe. tf, terminal filaments.



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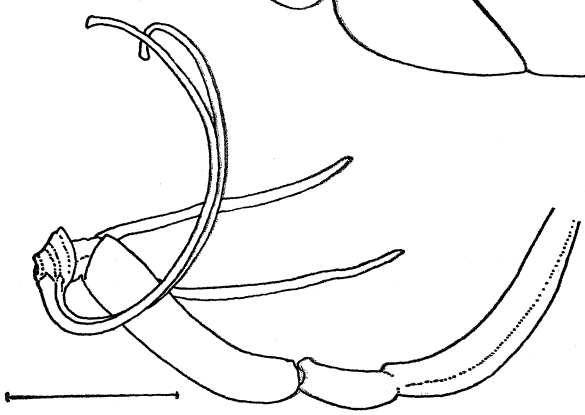

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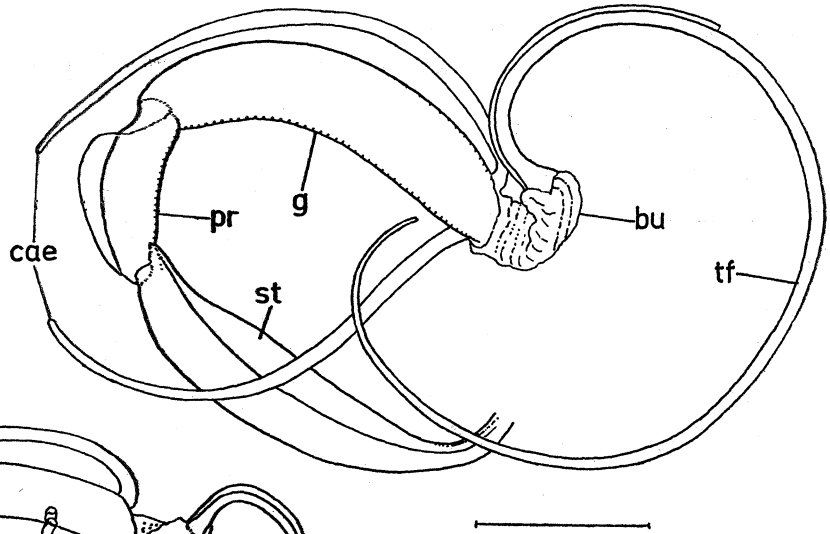

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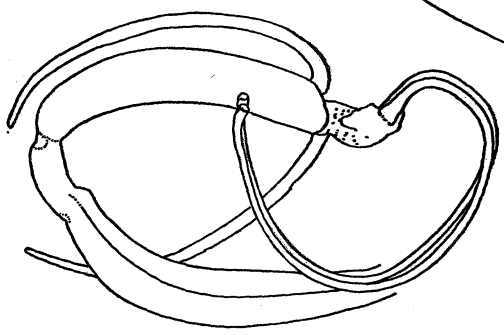

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Fig. 47. *Duomyia brevifurca*, paratype. Aedeagus.

Fig. 48. *D. hebes*, paratype, Shute Harbour. Aedeagus.

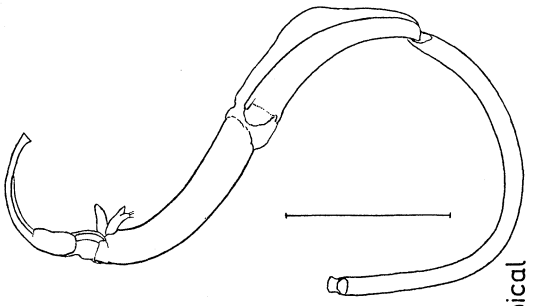
Fig. 49. *D. rudis*, paratype. Aedeagus.

Fig. 50. *Euprosopia monodon*, holotype. Wing, showing nomenclature of bands.

Fig. 51. *E. rete*, holotype. Wing.

The scale represents 1 mm.

bu, membranous bulb. cae, membranous caeca. g, glans. pr, preglans. tf, terminal filaments.



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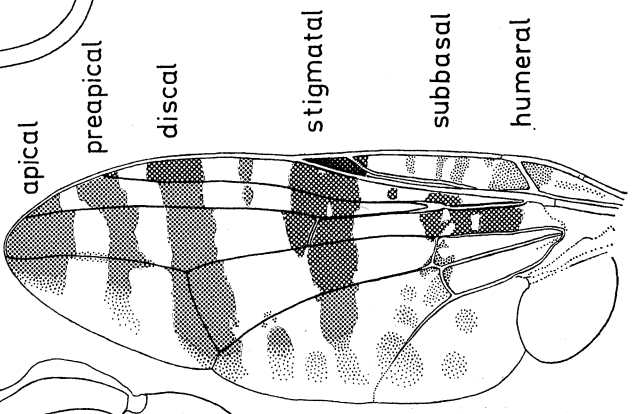
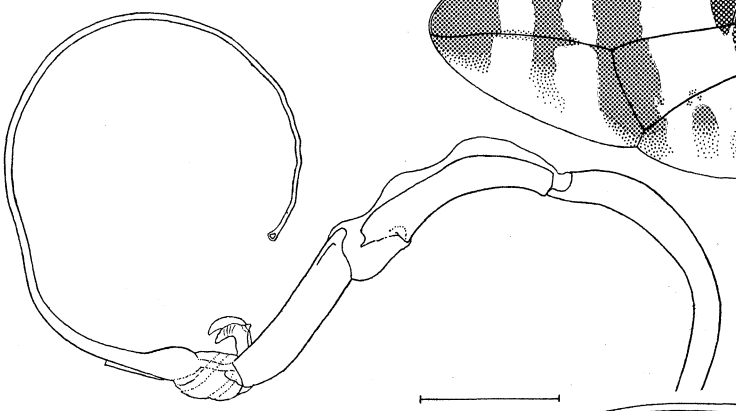

apical
preapical
discal
stigmatal
subbasal
humeral



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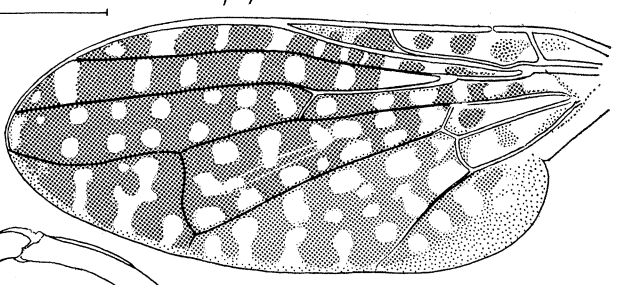

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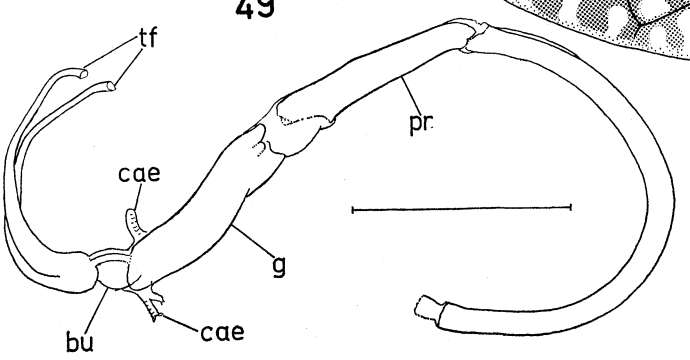
tf
pr
cae
g
bu
cae

Fig. 52. *Euprosopia integra*, holotype. Wing.

Fig. 53. *E. kurandae*, holotype. Wing.

Fig. 54. *E. hollowayi*, holotype. Wing.

Fig. 55. *E. megastigma*, holotype. Wing.

Fig. 56. *E. albipila*, holotype. Wing.

Fig. 57. *E. vitrea*, holotype. Wing.

Fig. 58. *E. hypostigma*, holotype. Wing.

Fig. 59. *E. ramosa*, holotype. Wing.

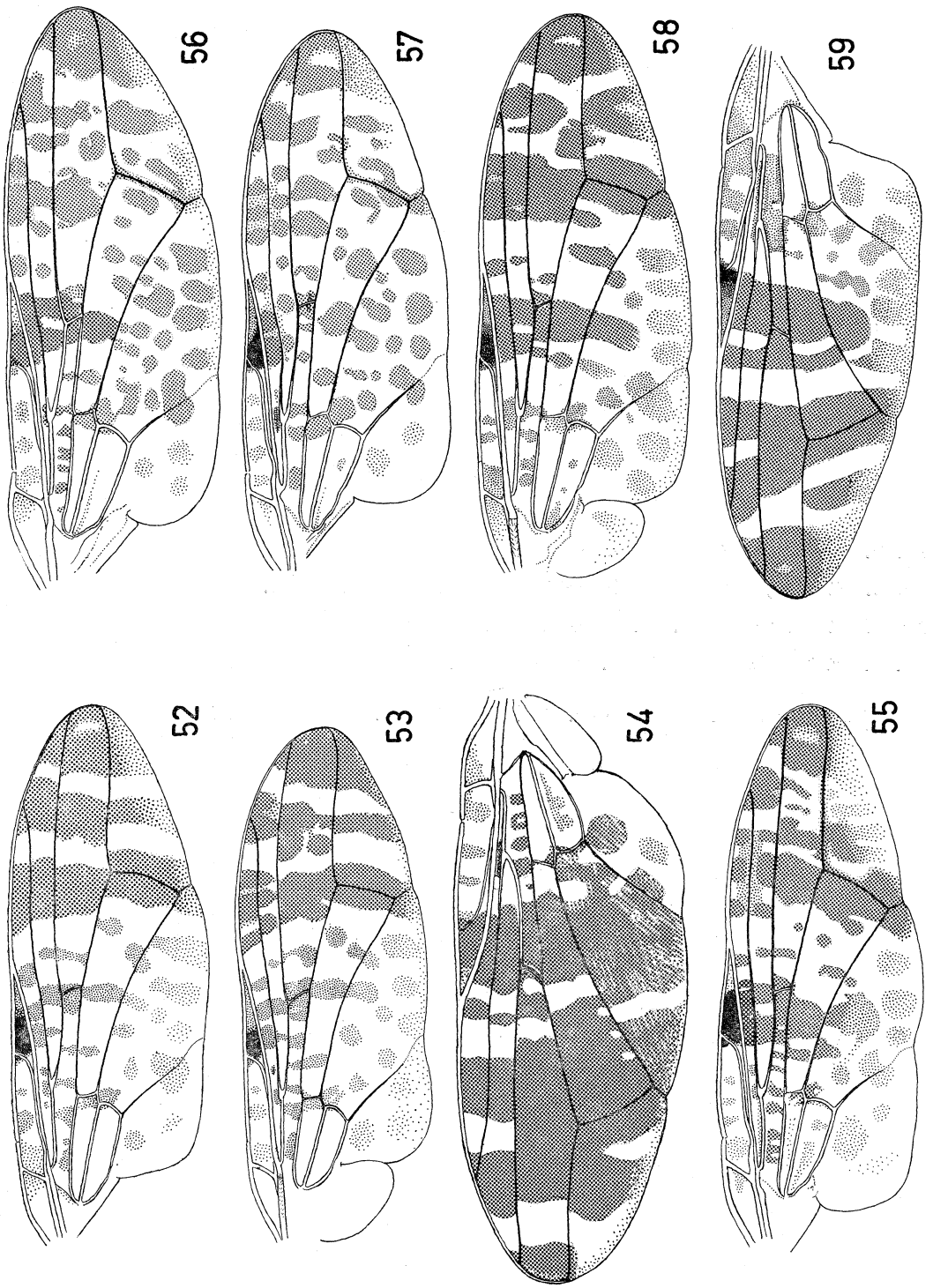
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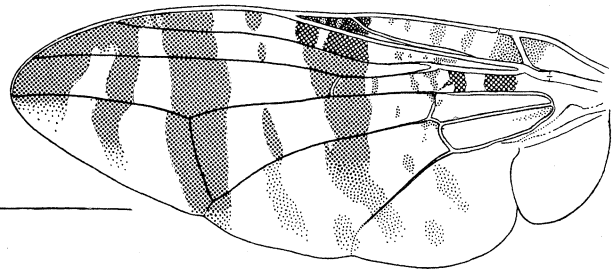
Fig. 60. *Euprosopia armipes*, holotype. Wing.

Fig. 61. *E. subula*, holotype, ♀. Anterodorsal part of thorax from left side.

Fig. 62. *E. macrotegularia*, ♀. Mulgrave R. Same as above.

Fig. 63. *E. biarmata*, near Cardstone. Same as above.

ba, basalare. bp, basalar process. hm, humeral callus. mc, membranous cleft. np, notopleura bristles. npc, posterior notopleural callus. sa, supra-alar bristle. sp, spiracle. te, tegula.



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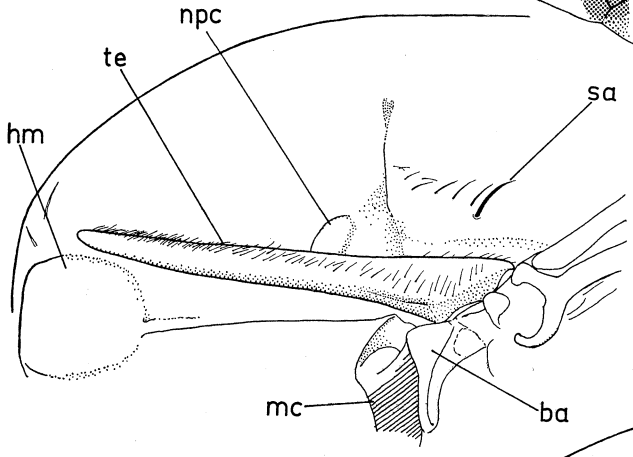

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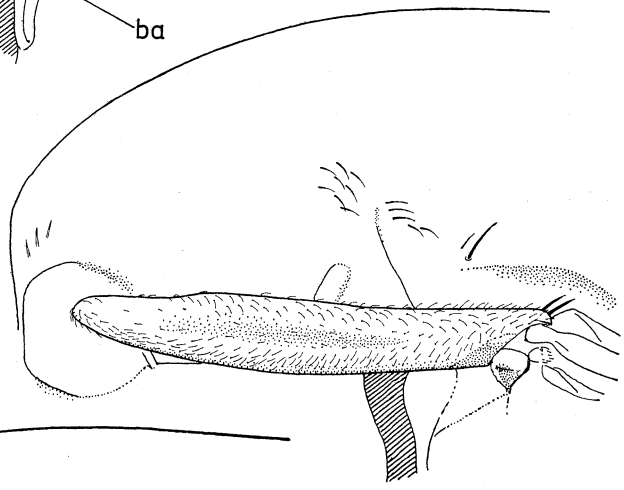

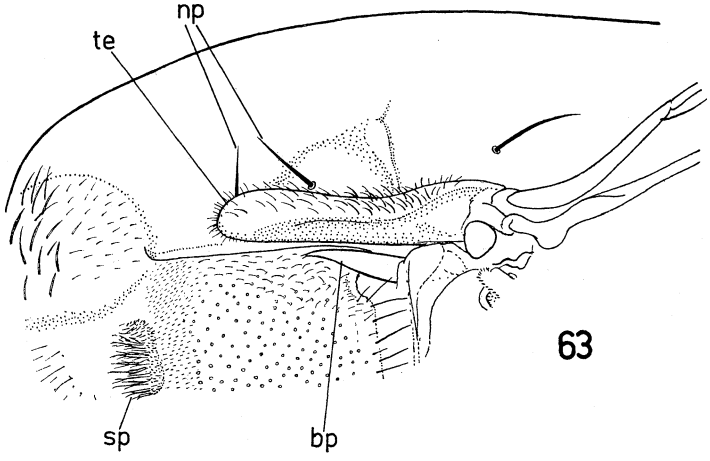

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Fig. 64. *Euprosopia crassa*, paratype ♀. Nerang R. Region of left wing base.

Fig. 65. *E. anostigma*, ♂. Kurnell. Apex of basal segment of fore tarsus.

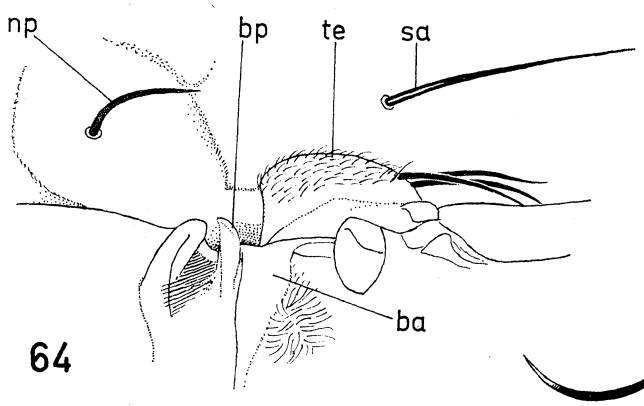
Fig. 66. *E. crispa*, paratype ♀. Broken Bay. Region of left wing base.

Fig. 67. *E. comes*, holotype ♂. Hind trochanter and femur, anterior aspect.

Fig. 68. *E. separata*, ♂. Townsville. Same as above.

Fig. 69. *E. monodon*, holotype ♂. Fore femur and tibia, posterior aspect.

ba, basalare. bp, basalar process. br, brush of setulae on trochanter. np, notopleural bristle (posterior). sa, supra-alar bristle. se, specialised area of tibia. te, tegula.



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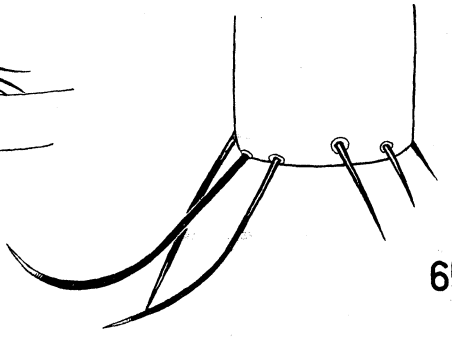

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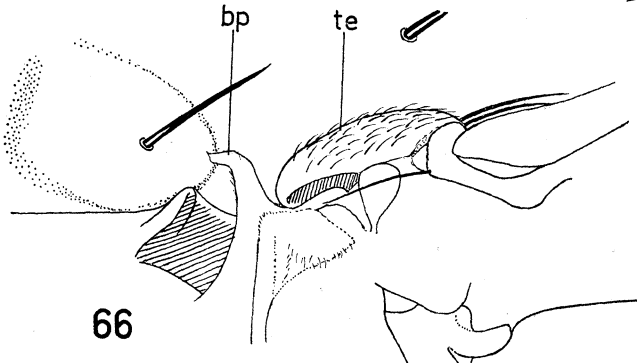

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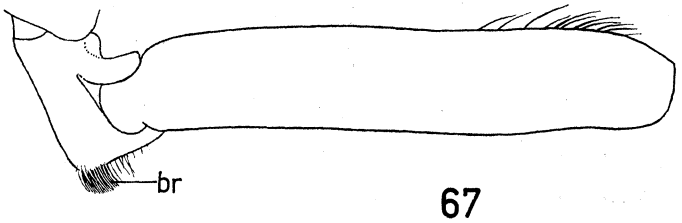

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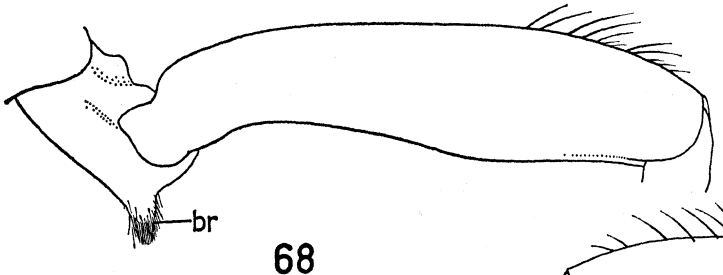

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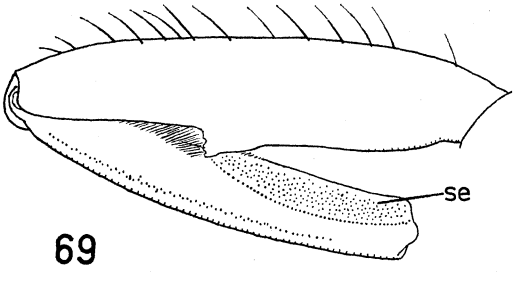


69

Fig. 70. *Euprosopia tenuicornis*, ♂. Northmead. Hind trochanter.

Fig. 71. *E. subula*, holotype ♀. Abdominal tergite 5, showing border of tergite 4 and adjacent spiracles, semi-diagrammatic.

Fig. 72. *E. macrotegularia*, ♀. Mulgrave R. Same as above.

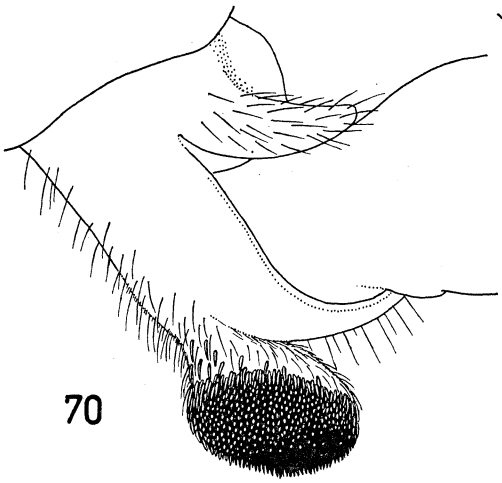
Fig. 73. *E. mica*, ♀ (composite). Same as above, velvety areas stippled.

Fig. 74. *E. conferta*, holotype ♀. Same as above.

Fig. 75. *E. piperata*, ♀. Broken R. Same as above.

Fig. 76. *E. sericata*, ♀ (composite). Same as above.

Fig. 77. *E. crassa*, holotype ♀. Same as above.



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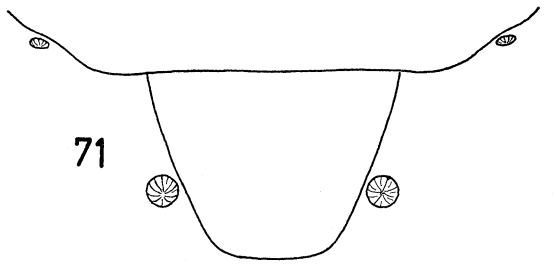

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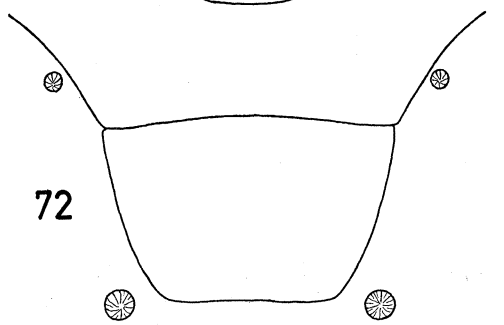

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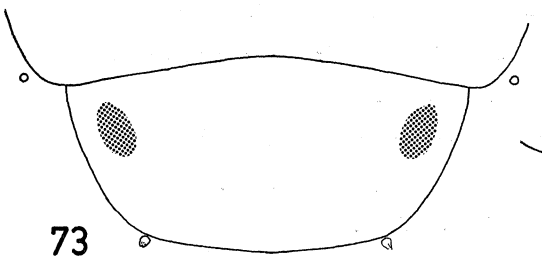

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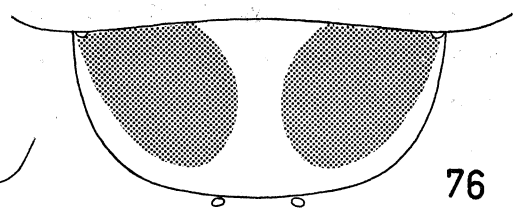

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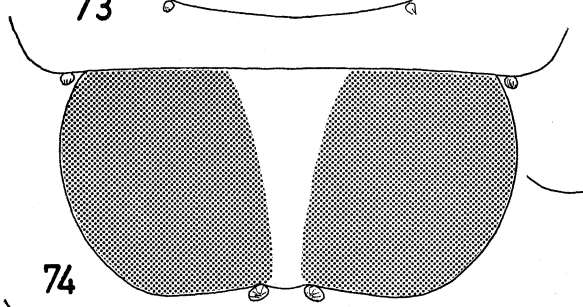

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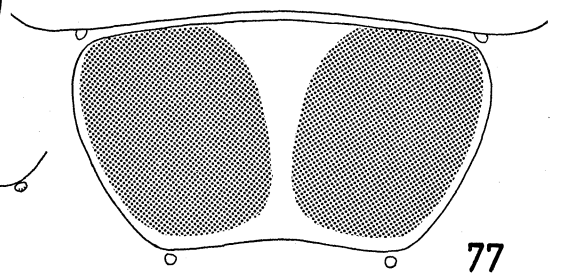

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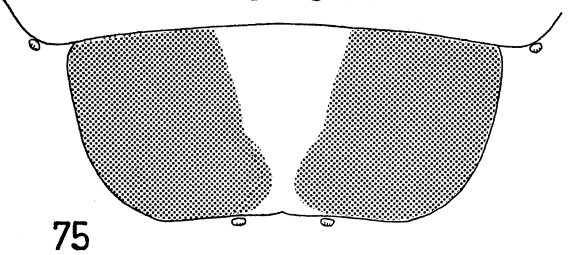

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Fig. 78. *Euprosopia integra*, holotype ♀. Abdominal tergite 5, showing border of tergite 4 and adjacent spiracles, semi-diagrammatic.

Fig. 79. *E. megastigma*, paratype ♀. Otford. Same as above, scales omitted.

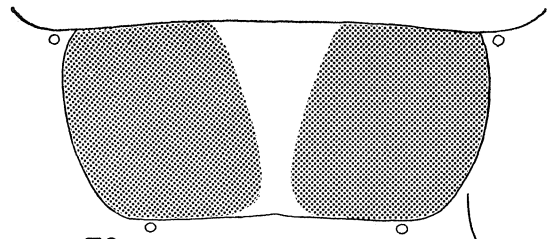
Fig. 80. *E. ramosa*, holotype ♀. Same as above, scales and fourth pair of spiracles omitted.

Fig. 81. *E. subacuta*, holotype ♀. Same as above, scales omitted.

Fig. 82. *E. filicornis*, paratype ♀. Kurnell. Same as above, scales omitted.

Fig. 83. *E. scatophaga*, ♀. Little Crystal Creek. Same as above, scales omitted.

Fig. 84. *E. hypostigma*, holotype ♀. Same as above, scales omitted.



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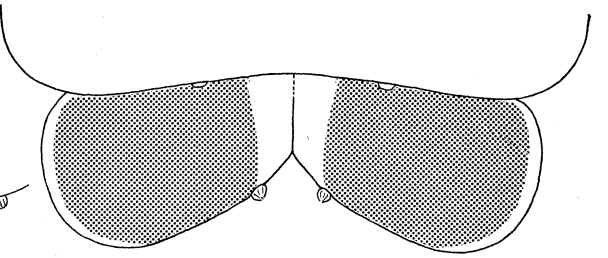

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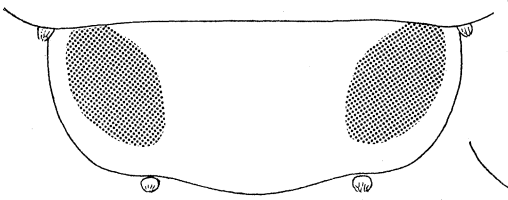

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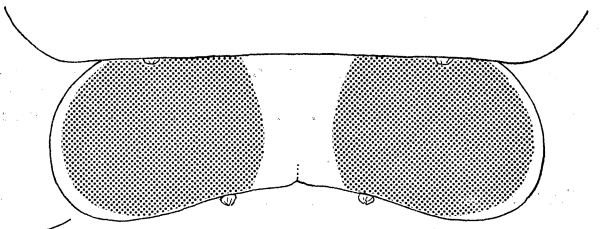

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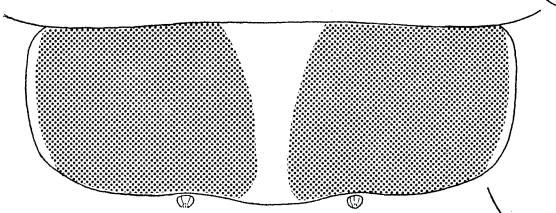

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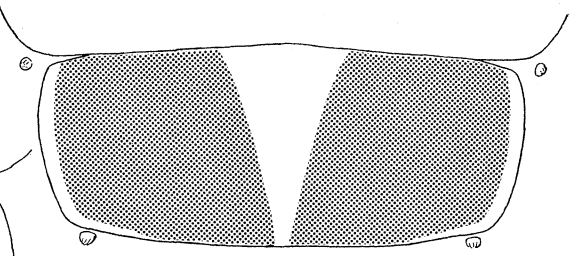

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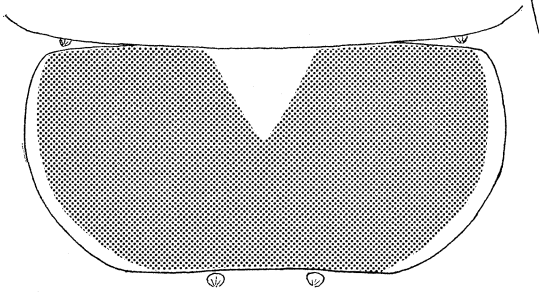


81

Fig. 85. *Euprosopia rete*, paratype. Mulgrave R. Left surstyli, anterior aspect.

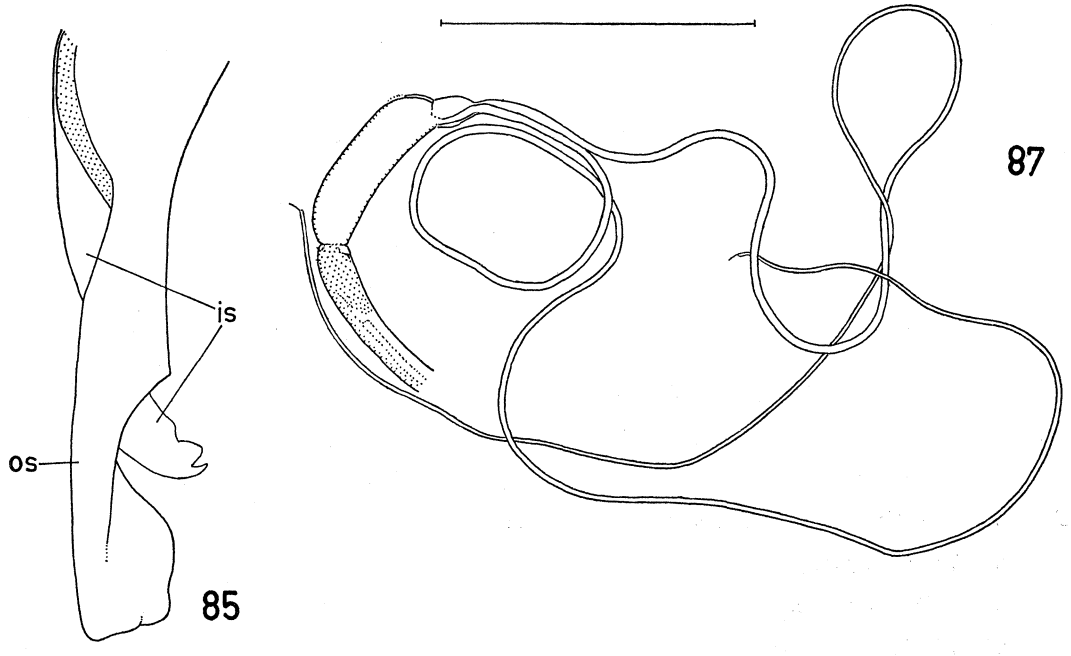
Fig. 86. *E. acula*, paratype. The Crater. Same as above.

Fig. 87. *E. rete*, paratype. Mulgrave R. Distal part of aedeagus.

Fig. 88. *E. acula*, paratype. The Crater. Same as above.

The scale represents 1 mm.

is, inner surstylus. os, outer surstylus.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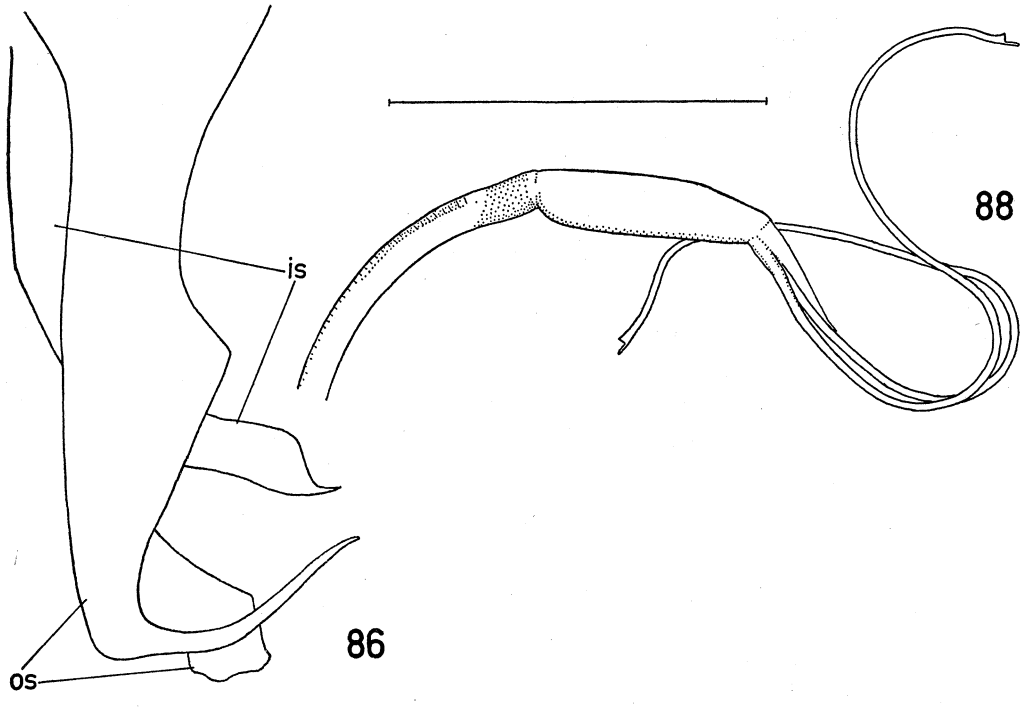
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Fig. 89. *Euprosopia xanthops*, holotype. Epandrium from left.

Fig. 90. *E, lenticula*, paratype. Same as above.

Fig. 91. *E. vitrea*, paratype. Mount Boyce. Same as above.

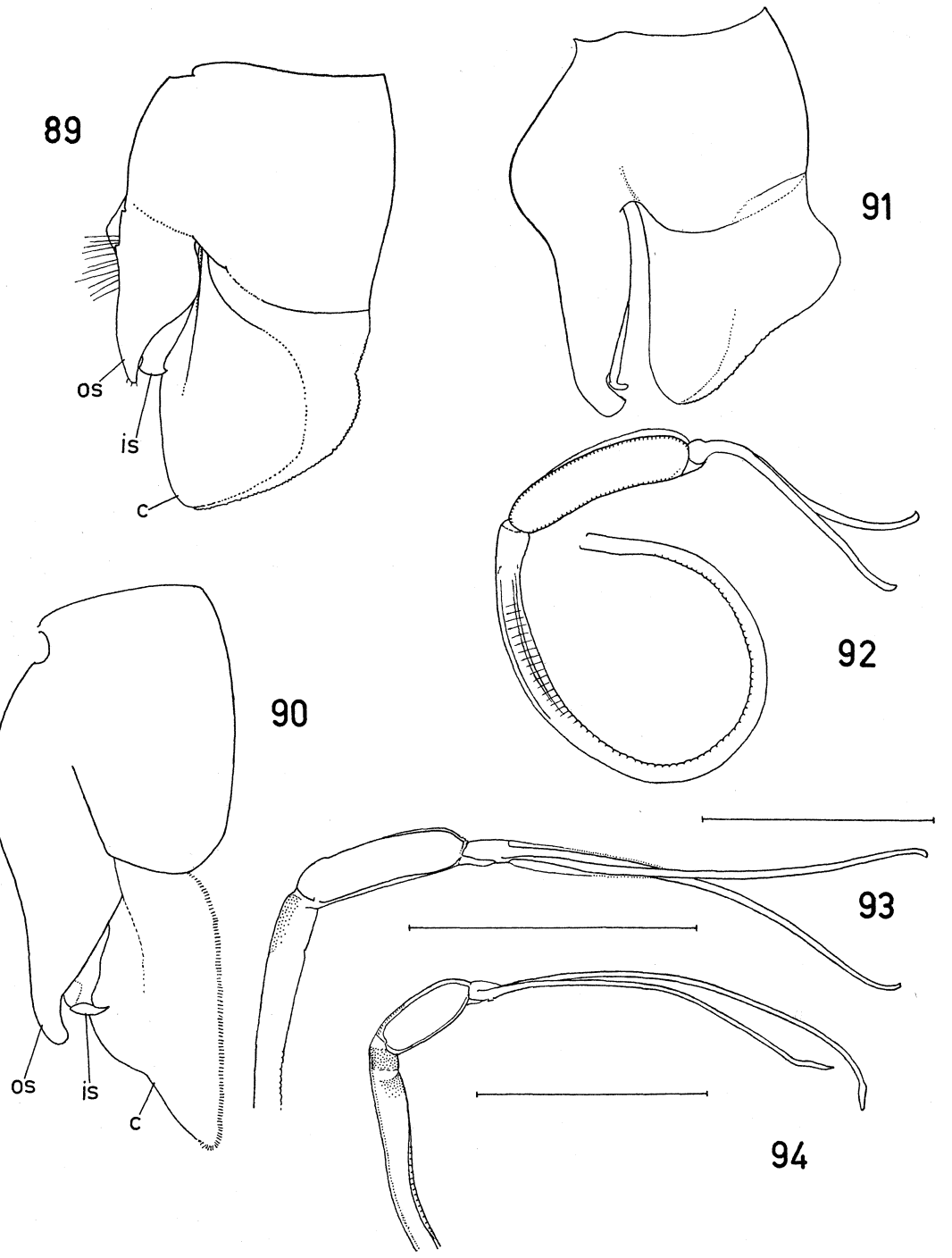
Fig. 92. *E. lenticula*, paratype. Aedeagus.

Fig. 93. *E. xanthops*, holotype. Distal part of aedeagus.

Fig. 94. *E. vitrea*, paratype. Mount Boyce. Same as above.

The scale represents 1 mm.

c, cercus. is, inner surstylus. os, outer surstylus.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GUIDE TO AUTHORS OF AUSTRALIAN MUSEUM MEMOIRS AND RECORDS

1. Scope

The Australian Museum publishes in its Records and Memoirs the results of original research dealing with material in its collections or with subjects of interest to the Museum, including taxonomic and general zoology, palaeontology, anthropology, mineralogy, and related fields. Contributions of well above average length are published in the Memoirs.

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Manuscripts should be sent to the Editor, Records and Memoirs of the Australian Museum. The original and one copy of the text must be submitted; the author should retain one copy. Original artwork should be retained by the author pending final acceptance of the paper for publication; two copies of the illustrations must be submitted with the text. Alternatively, good-quality photographic reproductions of the original artwork may be submitted. Papers will be reviewed by at least one referee before being considered for final acceptance. They must be in final form for publication so that changes at proof stage will be as few as possible.

The manuscript—including tables, headings, indices, legends to figures, and literature cited—must be clearly and neatly typewritten, double-spaced, on one side of bond or other good quality paper, and with 3 cm margins all round. Pages should be numbered consecutively. Tables and legends to illustrations should be on separate pages at the end of the manuscript. The entire manuscript should be securely fastened together.

3. Presentation

Papers should be arranged as follows:

(i) The title, which should be concise and specific. The higher classification of the group dealt with should be indicated in the title of zoological papers; in palaeontological papers the position of a local formation in the world scheme should be indicated.

(ii) The author's name and professional address.

(iii) A summary not exceeding either 3 per cent of the text or 200 words and intelligible to the reader without reference to the main text.

(iv) A list of contents may be included if the paper is very long.

(v) Introduction.

(vi) The main text of the paper.

(vii) Acknowledgements.

(viii) References (see below).

(ix) Index (in the case of very long papers).

The approximate position of tables and figures should be indicated in pencil at the left-hand margin.

Only the names of genera and species should be underlined. Unless indicated elsewhere in the text, or where nomenclature follows a generally accepted standard (which should be cited), the authority should be cited when any specific name is used for the first time.

In taxonomic papers the short form (taxon, author, date, page) should be used in synonymies and the full reference taken to the end of the paper. In synonymies a period and dash (.—) should separate the name of the taxon and the name of the author except in the case of the reference to the original description. Where new species are described the location of the type material must be indicated and Article 73 and associated recommendations of the International Code of Zoological Nomenclature should be followed. Dichotomous keys with contrasting parts of couplets adjacent to each other are recommended. In these only the first part of the couplet should be numbered and the beginning of the second indicated with a dash at the left-hand margin. Keys must not use serially indented couplets.

4. Tables

Tables should be typed on separate sheets and numbered in arabic numerals. Headings should be self-explanatory. Material in the text should not duplicate that in the tables. Duplication of information in tables and graphs should generally be avoided.

Tables should have the very minimum number of horizontal and vertical lines. Very large or complex tables should be submitted in a form suitable for direct preparation of line blocks; such tables should not exceed 14 cm x 20 cm, and numbers and letters should be as large as practicable.

5. Illustrations

Line drawings, maps and graphs are regarded as "figures" and are to be numbered consecutively; these numbers will be used in the final printed copy. Photographs are regarded as "plates"; they should be numbered, but the numbers eventually assigned to them will follow the series in the volume of the Records; references to plate numbers in the text should therefore be carefully checked at proof stage.

Figures should be drawn in black indian ink on bristol board, good quality paper, tracing linen, or faintly blue-lined graph paper. Related diagrams should be grouped to form a single figure suitable for eventual reduction to a size not exceeding 14 cm x 20 cm. Parts of figures should be labelled a, b, c, etc. (e.g. fig. 1a, 1b). The name(s) of the author(s), the number of the figure and the intended reduction should be clearly marked on the back of the illustration and the orientation of all illustrations indicated.

Photographs should be best-quality, glossy, with moderately high contrast, and mounted on white board.

All legends to illustrations should be submitted on pages separate from the text and not attached to the artwork.

6. References

References should be arranged alphabetically and chronologically. Titles of journals should be abbreviated according to the World List of Scientific Periodicals (4th ed.). Titles of all references must be given in full. It will be assumed that the list of references has been checked for accuracy by the author. The following examples may be of assistance:

Gibb, J. A., 1966. Tit predation and the abundance of *Ernarmonia conicolana* (Heyl.) on Weeting Heath, Norfolk, 1962–63. *J. Anim. Ecol.* 35: 43–53, 5 tables, 2 figs.

Mayr, E., E. G. Linsley, and R. L. Usinger, 1953. Methods and principles of systematic zoology. McGraw-Hill, New York. Pp. ix, 328, 14 tables, 45 figs.

Schöne, H., 1961. Complex behaviour. In T. H. Waterman (ed.), The physiology of Crustacea. Vol. 2: 465–520, 22 figs. Academic Press, New York.

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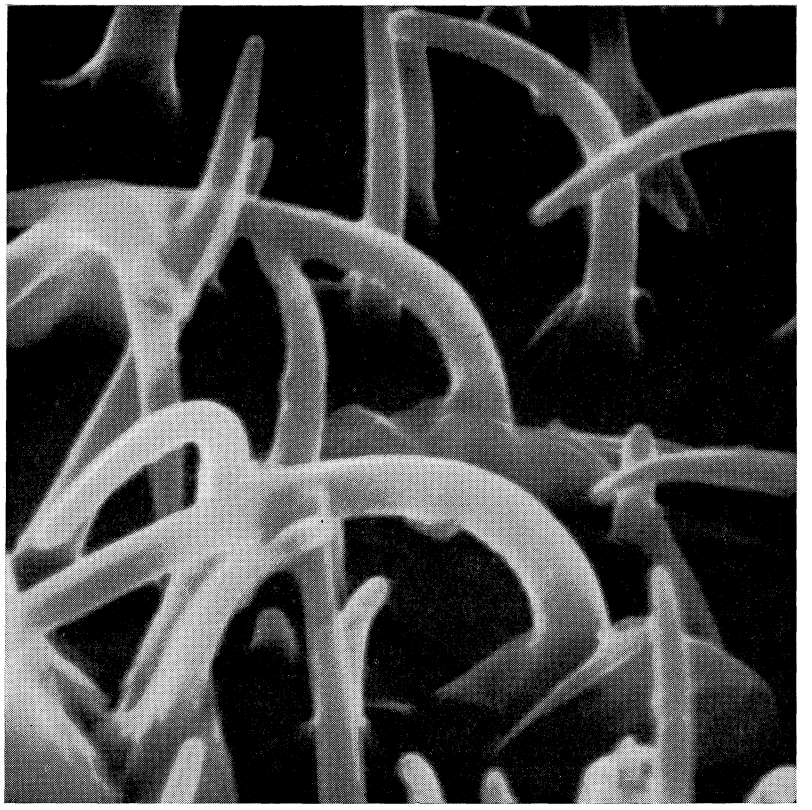

Fig. 95

Euprosopia conferta, paratype ♀. Microtrichia of velvety area of tergite 5, x 12,000. Scanning electron micrograph.

Fig. 96

Euprosopia conferta. Same as 95, x 6,000.

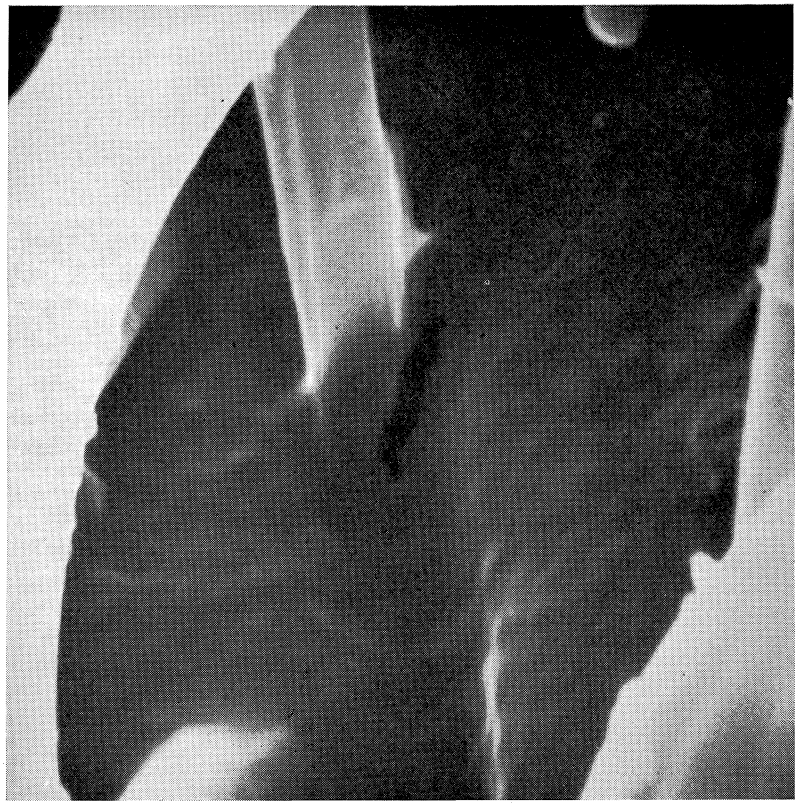

Fig. 97

Euprosopia conferta, paratype ♀. Cuticle and microtrichia of pruinescent area of tergite 5, x 23,000, showing groove in cuticle. Scanning electron micrograph.

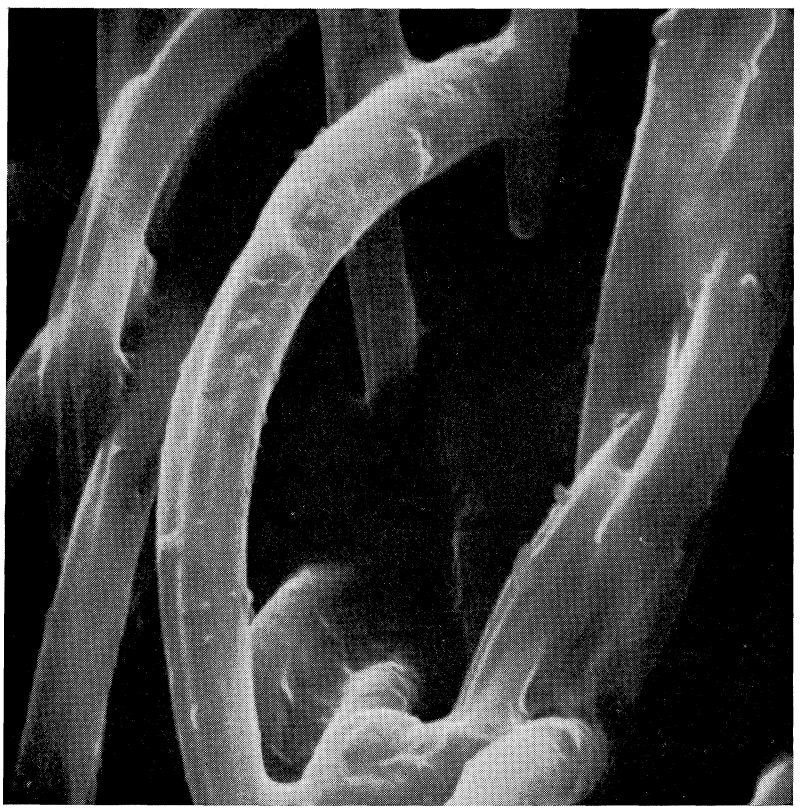

Fig. 98

Euprosopia conferta. Same as 97, x 11,000.

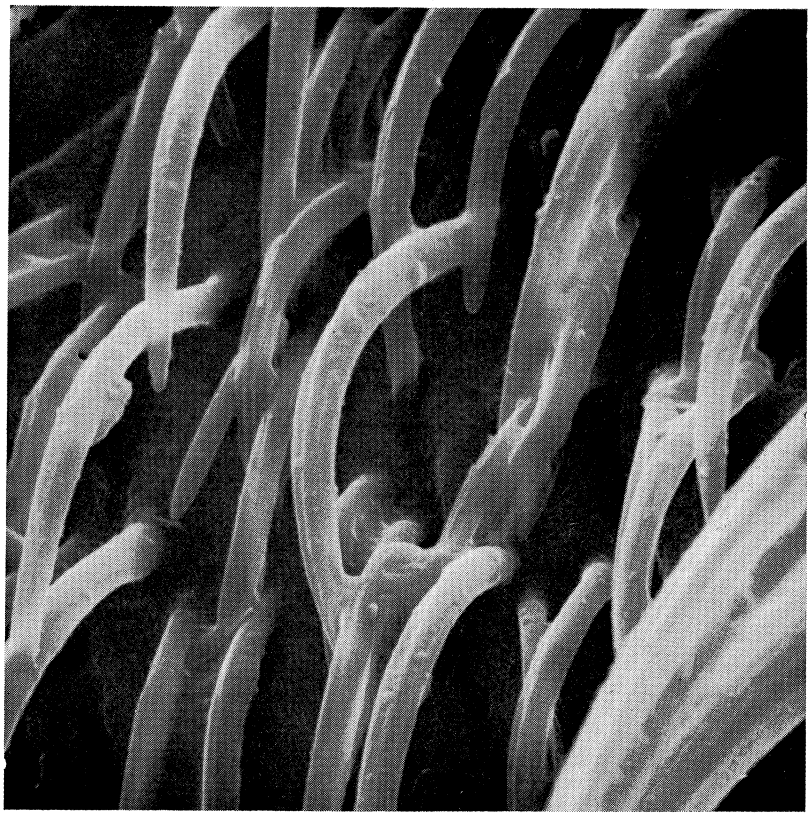

Fig. 99

Euprosopia conferta, paratype ♀. Microtrichia of pruinescent area of tergite 5, x 5,800, part of a macrotrichium at right. Scanning electron micrograph.

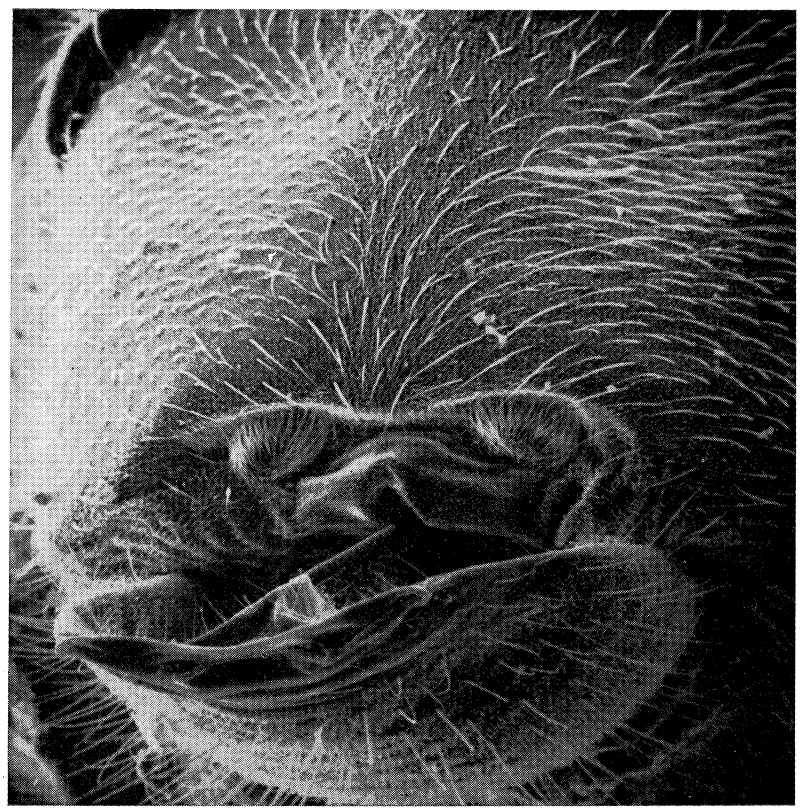

Fig. 100

Eubrosopia conferta, paratype ♀. Segments 5–7, posterior aspect, x 170, showing spiracles of segment 5. Scanning electron micrograph.

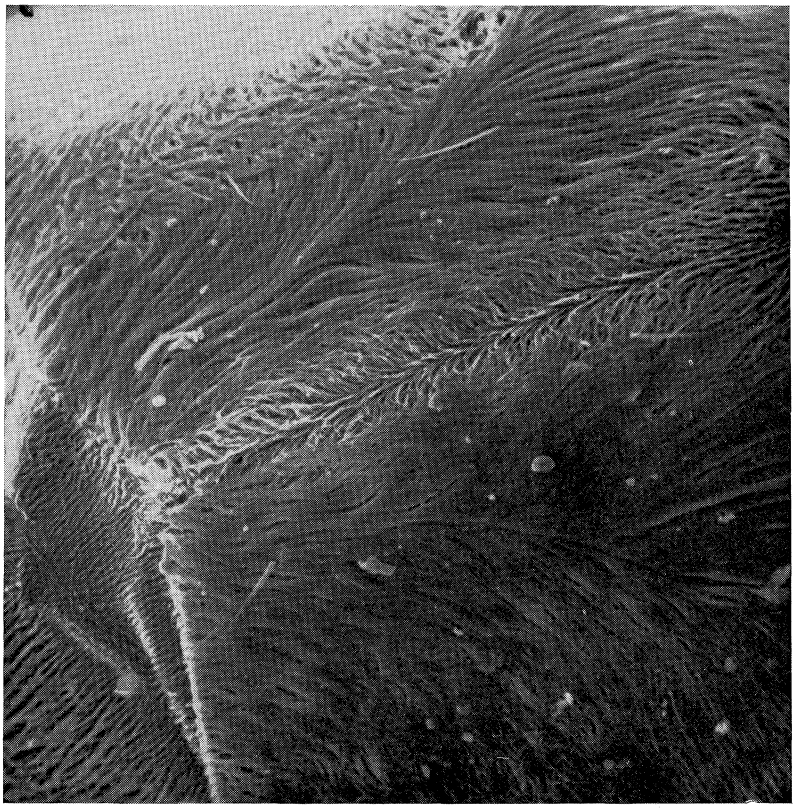

Fig. 101

Euprosopia tenuicornis, ♀. Tergite 3 and base of tergite 4, x 120, showing combed pubescence. Anterior towards upper right. Scanning electron micrograph.

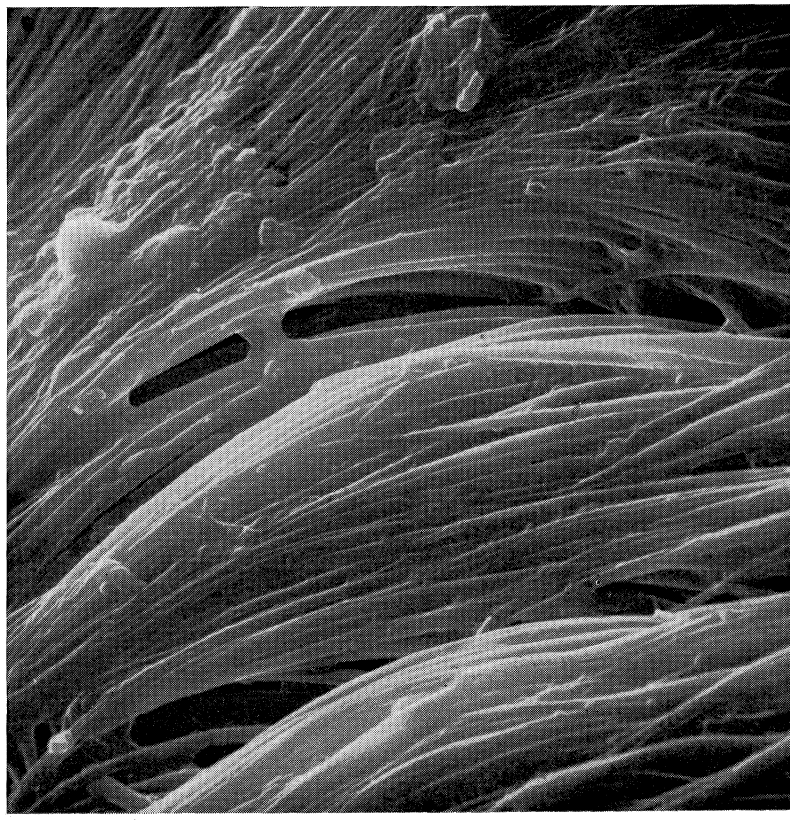

Fig. 102

Euprosopia tenuicornis, ♀. Combed pubescence on tergite 3, x 1,180. Scanning electron micrograph.

Fig. 103

Euprosopia tenuicornis, ♀. Combed pubescence on tergite 4, x 590. Scanning electron micrograph.

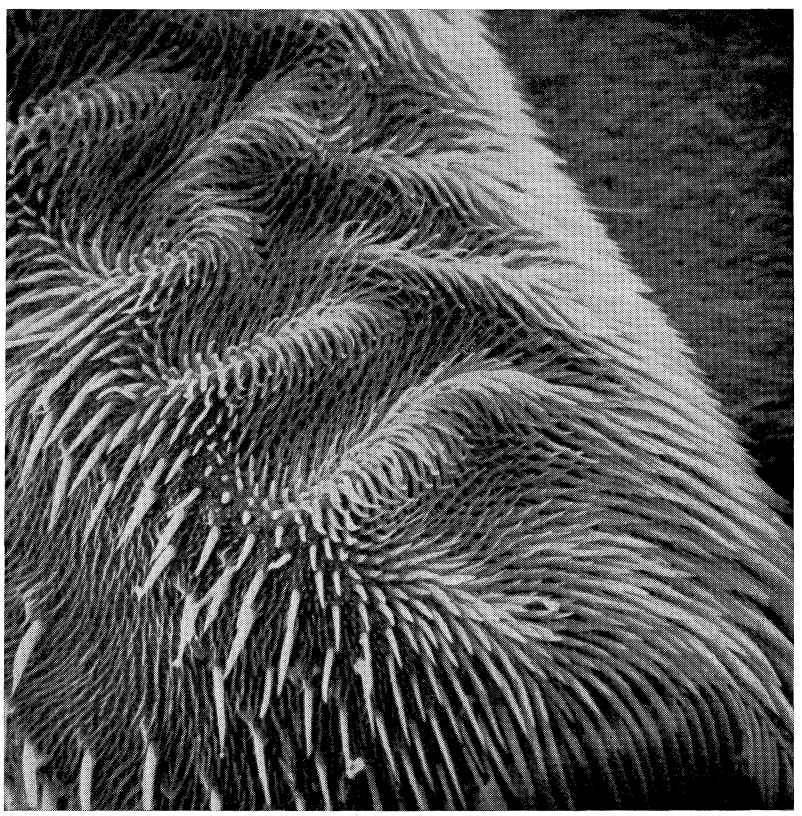

Fig. 104

Euprosopia anostigma, ♂. Apical part of fore tibia, ventral aspect, x 225, showing undulated area. Scanning electron micrograph.

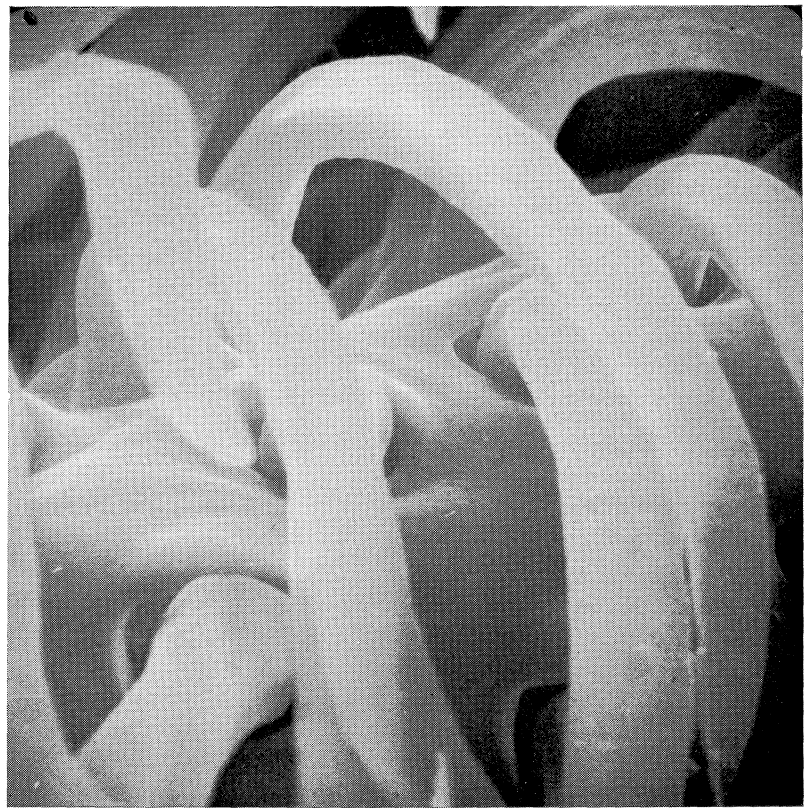

Fig. 105

Euprosopia anostigma, ♂. Sensory setae from crest of ridge on undulated area of fore tibia, x 5,600. Note the deep basal sockets. Scanning electron micrograph.

Fig. 106

Euprosopia biarmata, ♀. Pruinescence and stumpy macrotrichia on mesopleuron, x 1,080. Scanning electron micrograph.

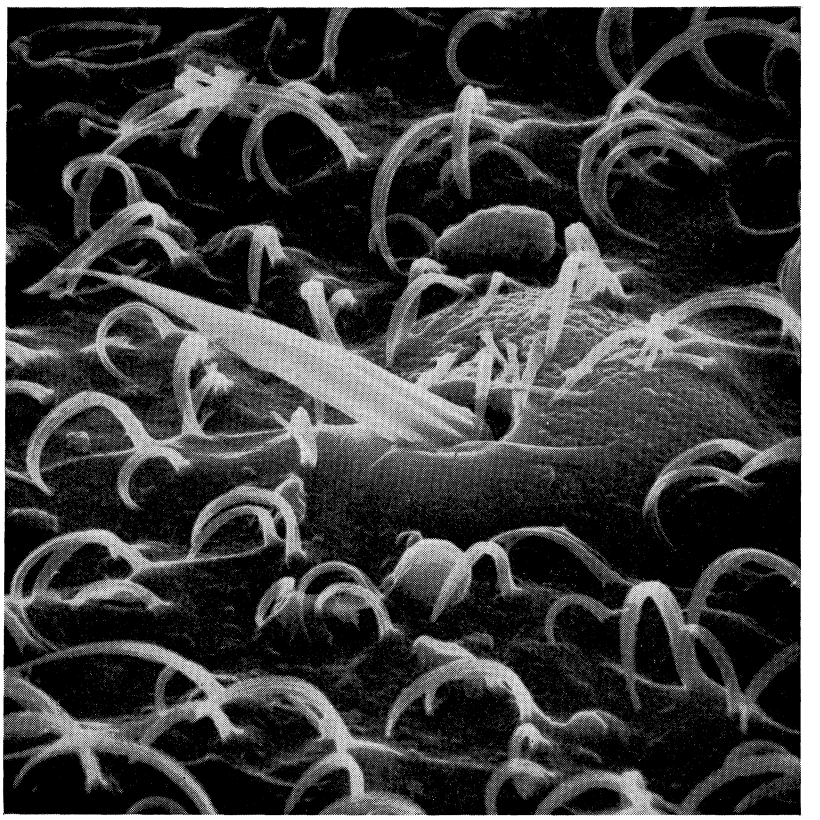

Fig. 107

Euprosopia biarmata, ♀. A stumpy macrotrichium and surrounding microtrichia on mesopleuron, x 2,900. Scanning electron micrograph.

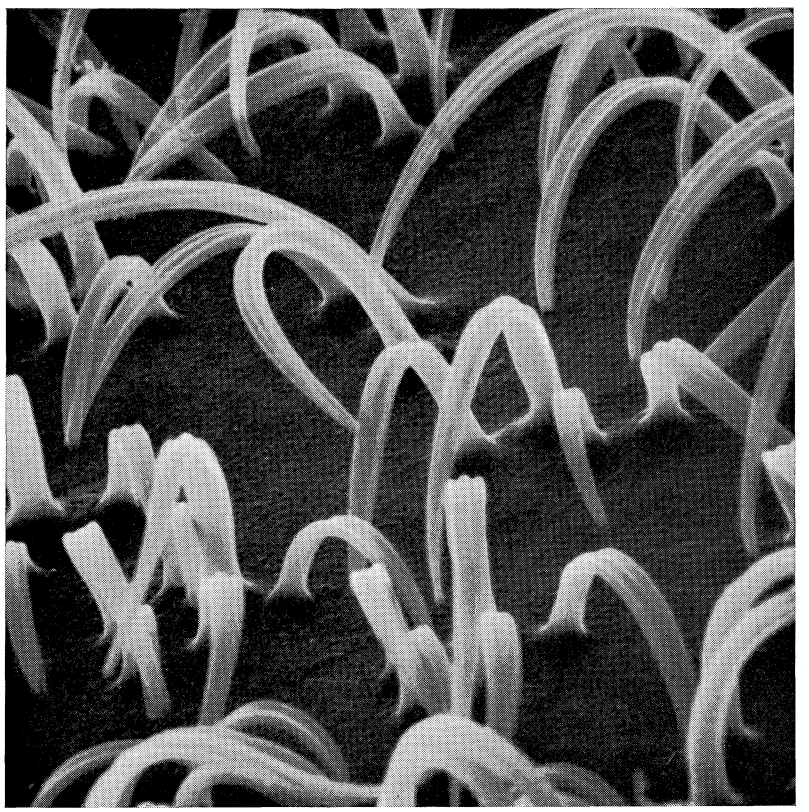

Fig. 108

Euprosopia biarmata, ♀. Pruinescence (microtrichia) from lower anterior margin of mesopleuron, x 5,300. Note absence of basal sockets. Scanning electron micrograph

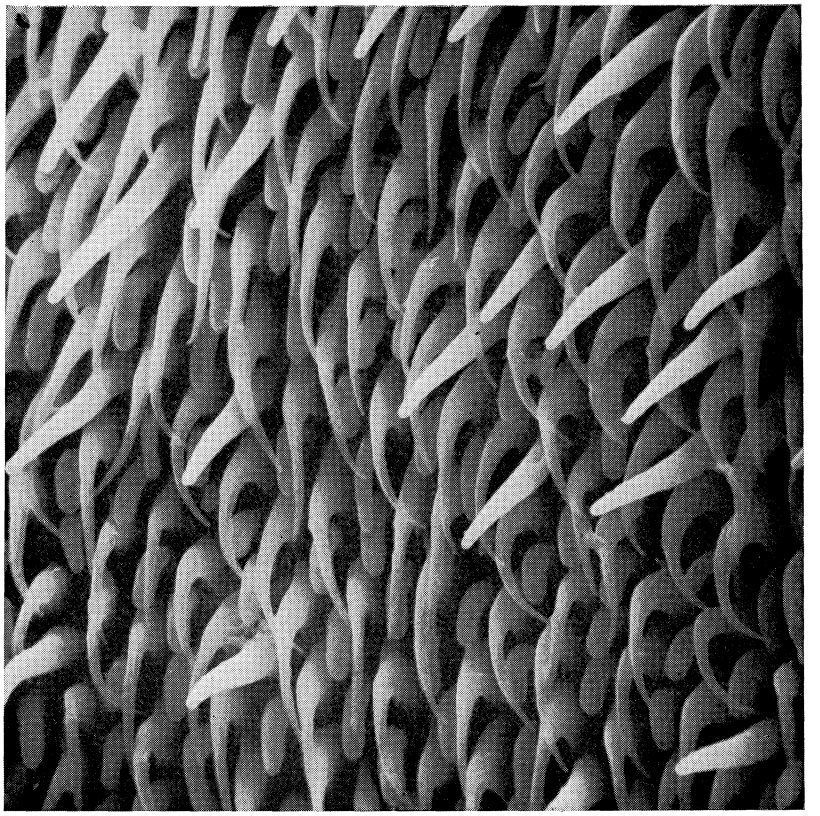

Fig. 109

Euprosopia anostigma, ♂. Sensory setae from outer surface of third antennal segment, x 2,130. Scanning electron micrograph.

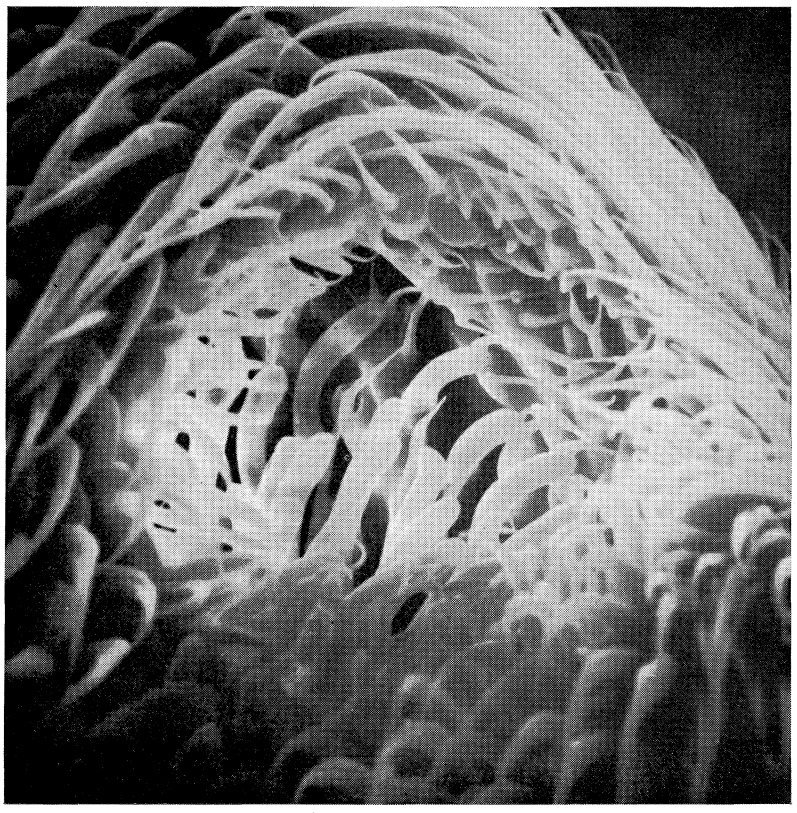

Fig. 110

Euprosopia anostigma, ♂. Sensory pit of third antennal segment, x 2,120. x 2,120. Scanning electron micrograph