

species of *Acacia*). In the southern regions it is common in low layered woodland (*Acacia*, *Casuarina*, *Callitris* etc.) and shrub-steppe (*Kochia*, *Atriplex*) around Port Augusta, Whyalla and as far west as Koonalda; common in semi-arid mallee in the northern half of Eyre Peninsula and in the Murray mallee and occurs rarely in the sclerophyll mallee formation.

NEW SOUTH WALES. It is widely distributed in semi-arid mallee, shrub-steppe and low layered woodland formations in the western half of the state. The most easterly records are from low layered woodland near Bourke, semi-arid mallee near Griffith and savannah woodland near Narrandera.

VICTORIA. It has been found only in the north-western mallee region.

QUEENSLAND. Few sites have been examined and it is known only from desert sclerophyllous grassland and desert steppe in the south-west.

NORTHERN TERRITORY. It occurs in desert sclerophyllous grassland near Alice Springs.

Folsomides sexophthalma (Womersley), **comb. n.**

Proisotoma sexophthalma: Womersley (1934). *Trans. R. Soc. S. Aust.* 58: 100.

Proisotoma sexophthalma: Womersley (1939). "Primitive Insects of South Australia": 156.

The type material of this species (labelled *cotypes*) is in the South Australian Museum. However, the specimens, mounted on microscope slides, are so distorted and fragmented that few of the taxonomically important features can be observed, particularly those relating to the furcula and furcular subcoxae. Attempts to remount specimens on one of the two slides resulted in disintegration of the specimens. There are four specimens on the remaining slide; two of these are completely unrecognisable and significant features are difficult to recognise on the others.

Arrangement of ocelli and post-antennal organ and nature of mandibles and maxillae are similar to that of *F. deserticola*. Downcurved abdominal segments V and VI, incomplete separation of mucro and dens and presence of lamella on empodial appendage indicate that it belongs to the *Subisotoma* group, as does *F. deserticola*. Womersley (1934) stated that the ocelli were not located on pigmented eye patches. However, it is unusual for species in this and related genera to have ocelli on unpigmented areas and it is likely that Womersley's observations were made on mounted specimens in which the pigment around the ocelli had been dissolved by the mountant.

The following notes on the furcula and furcular subcoxae were made from observations on the single specimen in which the relevant features could be reliably identified. Basal swelling of furcular subcoxae with 4 pairs of setae, elongate area with 6 setae. Dens with 5 ventral setae (2 proximal and 3 distal) and 1 dorsal (distal) seta. Womersley (1934) showed the dens with 4 distal setae, 2 dorsal and 2 ventral. The chaetotaxy is thus similar to that of "small adults" of *F. deserticola* except for the presence of an extra ventro-distal seta on the dens.

Recognition of this species will be difficult until a complete series of adults and juveniles is obtained.

ACKNOWLEDGEMENTS

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THE MYCETOPHILIDAE (DIPTERA) OF AUSTRALIA
PART 1. INTRODUCTION, KEY TO SUBFAMILIES, AND REVIEW
OF DITOMYIINAE

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[Manuscript received April 17, 1970]

Abstract

Following a brief introduction to the family Mycetophilidae in Australia, and keys to its subfamilies, the Ditomyiinae are reviewed. Seven species of *Australosymmerus* Freeman are described, six of them new, while the new genus *Crionisca* is erected to accommodate one known species and one new. *Australosymmerus* is confirmed as an "Antarctic" genus, found also in South America and New Zealand, with the Australian species apparently more closely resembling those of the former area. *Crionisca* seems to be endemic.

INTRODUCTION

This paper is the first of a projected series in which I shall review the large and interesting mycetophilid fauna of Australia. Parts will be issued from time to time, following a conventional classification into subfamilies. Discussion of high-level classification and zoogeography will be reserved for a final part, but classification at the generic and lower levels will be treated in the appropriate sections.

Major studies of our fauna comprise only three papers, by Skuse (1888, 1890) and Tonnoir (1929), the last being a review at the generic level only. Between them, they recorded some 42 genera and described 63 species. Another 15 species were described by Walker (1848, 1856), Edwards (1921, 1929), Ferguson (1925), Hickman (1965), and Harrison (1966), while Malloch (1928), Hardy (1960), and Colless and McAlpine (1970) have referred to the family. The related New Zealand and South American faunas were reviewed by Tonnoir and Edwards (1927) and Freeman (1951) respectively. A preliminary survey of my material suggests that no more than 30% of the fauna has been described to date and that there is a number of new or unrecorded genera.

As far as known, the Australian species are not of direct economic importance, but their biology, as so far revealed or suspected, is full of interest. As larvae, most seem to be associated with fungi. They are often found in or on the fruiting bodies, either internally, feeding on mycelium and/or spores, or externally, enclosed in gelatinous webs. Some are predacious and at least one of these (the "glow worm" larva of *Arachnocampa*) is also luminescent, while *Planarivora insignis* Hickman is an endoparasite of planarians. As adults, they live obscure lives, but species of *Mycetophila* Meigen sometimes occur in enormous congregations amongst shaded foliage and some species of *Mycomya* Rondani are known to pollinate native orchids. Finally, the family as a whole is of great antiquity, known from at least the lower Jurassic, and displays distributional patterns of great zoogeographic interest.

I am following a recent scheme of subfamilies (Colless and Liepa, unpublished), which is a conservative one, based largely on that of Edwards (1925). It may well require amendment later; but I do not propose here to follow the lead of those European workers who accord family rank to certain subfamilies. This I regard as still arguable; but I do accept the less contentious practice of excluding the old subfamily Sciarinae. Morphological nomenclature follows that recommended by Colless and McAlpine (1970).

The material at my disposal is extremely generous, of the order of 5,000 adult specimens; the immature stages, however, remain almost entirely uncollected. Most is lodged in the Australian National Insect Collection, in the care of this Division; it includes Tonnoir's original material, greatly augmented by subsequent collecting, while other useful specimens, including Skuse's types, have been made available by the Macleay Museum and the various State Museums. The bulk of the

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material was taken either by sweeping forest undergrowth or in light traps; the former method can be distinctly more productive, but at the cost of greater damage to specimens. Additional specimens have come from Malaise, oil bath, and "yellow-tray" traps, often as a by-product of other investigations, and I am exceedingly grateful to the many colleagues who have contributed in that fashion—I cannot list them all here, but must acknowledge the particularly substantial contributions of Drs. I. F. B. Common and N. V. Dobrotworsky, Mr. M. S. Upton and Miss Z. Liepa.

In this and subsequent papers, the names of museums will be abbreviated as below; in lists of specimens, no location will be given for those held in the A.N.I.C.:

- ANIC — Australian National Insect Collection, Canberra.
 AM — The Australian Museum, Sydney.
 MM — The Macleay Museum, University of Sydney.
 TM — School of Public Health and Tropical Medicine, University of Sydney.
 NMV — The National Museum of Victoria, Melbourne.
 QM — The Queensland Museum, Brisbane.
 SAM — The South Australian Museum, Adelaide.
 BM — The British Museum (Natural History), London.
 USNM — The United States National Museum, Washington.
 Bishop — The Bishop Museum, Honolulu.

KEY TO SUBFAMILIES OF MYCETOPHILIDAE*

1. M_{3-4} and M_{1-2} connected basally ("m — cu" of authors present); basal portion of M usually absent 2
 M_{3-4} not connected basally to M_{1+2} ("m — cu" absent), usually appearing to fork from CuA ; basal portion of M usually present 5
2. R_4 present and long, about half or more the length of R_5 . Posterior pronotum with one or two long bristles. [Australian genera with R_s arising at about level of fork of M] **Ditomyiinae**
 R_4 absent, or short, much shorter than above. Posterior pronotum without any long bristles. R_s arising well basal to level of fork of M 3
3. Crossvein r-m absent, M_{1+2} and R_s fused over a short distance **Keroplatinae** (part)
 Crossvein r-m distinct, M_{1+2} and R_s not fused 4
4. Basal part of M present; m-cu at a level far distal to that of r-m **Keroplatinae** (part)†
 Basal part of M absent; m-cu in line with, or basal to, level of r-m **Diadocidiinae**
5. R_1 and R_s apparently unconnected and both arising at base of wing; branches of M free at wing margin. Proboscis greatly elongated **Lygistorrhiniinae**
 Venation and (usually) proboscis otherwise 6
6. Prothorax without strong bristles. Antennae inserted well above centre of head. Palp conspicuously long, antepenultimate segment inflated, penultimate segment usually inserted before its apex **Manotinae**
 Lacking some or all of the above attributes 7
7. Microtrichia of wings irregularly arranged. Sc usually long. Lateral ocelli often far from eye margins **Sciophilinae**
 Microtrichia of wings arranged in quite distinct lines. Sc almost always short or obsolescent. Lateral ocelli touching eye-margins **Mycetophilinae**

* Illustrative figures can be found in Edwards (1925), Tonnoir and Edwards (1927), Landrock (1926), Tonnoir (1929), and Johannsen (1909).

† I am following Edwards (1929) and Harrison (1966) in their tentative allocation of *Arachnocampa* to this subfamily; but it might well be given one of its own.

Subfamily DITOMYIINAE

Two genera occur in Australia: the "Antarctic" *Australosymmerus* Freeman, which also occurs in New Zealand and South America, and the apparently endemic *Crionisca* gen. n. Both resemble the Holarctic *Symmerus* in having R_s and M_{1+2} separate, joined by a distinct r-m crossvein, R_5 not or very little longer than the stem of R_s , eyes moderately emarginate, and anepisternite bristled. They differ from that genus most obviously in having r-m and the base of M_{3+4} forming a more or less vertical line and R_4 more or less parallel with R_5 . With the inclusion of *Crionisca*, the apically obsolescent Sc is no longer completely characteristic of the subfamily.

The Australian genera are separated as follows:—

- Sc unbranched, weak over all but a short basal section, apically obsolescent. Pleurotergites bare **Australosymmerus**
 Sc with a short, strong anterior branch ending in the costa, the posterior branch weak, apically obsolescent. Pleurotergites with long hairs **Crionisca** gen. n.

Australosymmerus Freeman

Centrocnemis Philippi, 1865, *Verh. zool.-bot. Ges. Wien.* (preocc.).

Symmerus Johannsen, 1909, *Gen. Insect.* 93: 11 (part).

Centrocnemis Edwards, 1921, *Ann. Mag. nat. Hist.* (9) 7: 432.

Australomyia Freeman, 1951, *Dipt. Pat. S. Chile* 3: 7 (nom. nov., preocc.).

Australosymmerus Freeman, 1953, *Rev. Chil. Ent.* 3: 39 (nom. nov.).

Type species: *Centrocnemis stigmatica* Philippi.

Antennae 2—15-segmented, flagellar segments rather flattened, the last very small. Eyes haired, well separated dorsally. Ocelli three in number, placed in a transverse line, the median one a little smaller than the lateral ones, which are directed laterally. Wing with numerous macrotrichia, but most species (including the Australian) without microtrichia. Sc short, apically obsolescent: r-m crossvein present. Basal piece of M_{3-4} more or less vertical, not in line with m-cu. Both R_{4+5} and M_{1-2} with the anterior branch strongly arched or angulate near the base, the posterior branch continuing in line with the main stem. IA reaching the margin but its basal portion very faint or absent. All tibiae with strong spines: fore-tibia with a single spur, mid- and hind-tibiae each with two long spurs of equal length. Abdomen with seven apparent segments, excluding the terminalia. Male terminalia with prominent ninth tergite: tenth segment membranous, more or less rudimentary, except for the prominent cerci and associated processes; in most species, the cerci appear to rise from the posterior margin of the ninth tergite. Coxites stout, separate, usually produced at apex, the styles variously modified, but apparently in all cases terminating in a set of spines or teeth. Female with 8th sternite bilobed, each lobe with strong apical setae; 10th segment elongate, cerci elongate, 2-segmented.

The following additional attributes apply to Australian species at least.

Integument dull, markings not bold. Fronto-clypeus short, not projecting beyond lower margin of head. Eyes quite strongly emarginate above antennae. Lateral ocellus separated from eye-margin by rather less than its own diameter. Post-orbital bristles in a more or less regular row, the dorsal ones usually weak. Antennal segment 1, and in some species segment 2, with small coarse setae on the anterior surface; in some species, the setae are spiny and profuse, as are those on the clypeus also. Posterior pronotum with two strong bristles, set laterally in front of the spiracle. Prosternum and coxal bridge fringed with hairs or bristles.* Anepisternite with antero-dorsal patch or row of setae, but pleurotergite and mediotergite bare. Scutellum with 4 long bristles. Fore-tibia with the usual, anterior, apical comb of scale-like setulae, but no associated sensory area. Mid-tibia usually with distinct ventral and posterior, apical combs of small spinulae (rudimentary in one species). Apex of hind tibia with conspicuous, posterior comb of flattened setulae, a ventral comb of about 4 spinulae (between the spurs), and several similar spinulae antero-ventrally; also, in addition to the spurs, only a single, anterior, apical spine (except in one species, which has a small dorsal spine also). Abdominal sternite 2 divided by a V-shaped sulcus.

* To my knowledge, a similar condition is found outside the Ditomyiinae only in the Manotinae and some Sciophilinae.

Male terminalia usually at least partly rotated. Cerci large and prominent, almost as long as, or longer than, the 9th tergite, with projecting lobes arising from their ventral surfaces, or pointed, arm-like processes latero-basally.

The morphological status of the process associated with the cercus is rather obscure. In *tonnoiri* (Fig. 8) it is clearly a lobe on the ventral surface of the cercus, while in *naevius* (Fig. 14) it could be regarded as a similar lobe that has moved to the posterolateral angle of the cercus. In *cornutus* (Fig. 17) and *nebulosus* (Fig. 12) it is clearly a latero-basal arm of the cercus; but in *anthostylus* (Fig. 5) and *propinquus* (Fig. 7) a very similar process is just as clearly a surstyle-like appendage of the 9th tergite. Nevertheless, homology between the processes in the last two groups is suggested by the rather intermediate condition seen in *fuscinervis* (Fig. 1).

If these arms, and perhaps the lobes, are in fact homologous, it seems equally likely that part of the cercus has evolved to become detached on to the 9th tergite, or, conversely, that a surstyle has become fused on to the cercus. It might be noted, too, that the related *Crionisca* has what appears to be a rudimentary surstyle. The point is interesting, but, in my view, of no taxonomic significance. It affords a good example of a situation in which a "phylogenetic" worker might feel impelled to weigh a mass of completely equivocal evidence, finally to conclude that one or the other condition was "primitive".

Intragenetic relationships

Even intuitive estimates of overall resemblance leave no doubt that, within the Australian fauna, *anthostylus* and *propinquus* are very closely related. Also, *naevius* and *tonnoiri* have many attributes in common (weak legs, form of cercus, lack of posterior apical spine on fore-tibia, etc.), which argue for a fairly close relationship. *Fuscinervis* and *cornutus* show some perhaps significant similarities to each other, and to the *anthostylus-propinquus* group and *nebulosus* also seems related to the last four species, rather than *naevius* and *tonnoiri*.

In comparisons with exotic species, the evidence concerns little more than structures of the male terminalia; but it is nevertheless very suggestive. The figures given by Freeman (1951) for Patagonian species and Tonnoir and Edwards (1927) for New Zealand species confirm that the genus is quite homogeneous and a good example of the "Antarctic" distribution. Moreover, the Australian species seem most closely to resemble the Patagonian, rather than the New Zealand species. The former show very similar, conspicuous processes on the cerci, with the exception of *A. stigmaticus*, which has an apparent parallel in the Australian *A. naevius*. The New Zealand species, on the other hand, appear to show no traces of such a process. In some features, for example the style of *A. basalis*, they are reminiscent of the related *Crionisca*.

KEY TO AUSTRALIAN SPECIES OF *Australosymerus*

1. Dorsum of head with a conspicuous, sharply defined dark area over the ocelli, not extending laterally along the eyes, or posteriorly to the nape. Abdomen not obviously banded. Halteres with rather dark knob 2
Dorsum of head otherwise; dark ocellar area, if present, diffuse and pruinose, and/or extending laterally along the eye-margins or posteriorly to the nape 3
2. Subcostal cell dark above the base of R_4 , but usually clear at the extreme apex (Plate IE). Legs slender; hind tibia c.35 times as long as its central width, and most postero-dorsal spines much shorter than anterior spines; fore tibia with postero-dorsal, but no posterior, apical spine *naevius* sp. n.
Subcostal cell clear above the base of R_4 but usually darkened apically (Plate IF). Legs stouter; hind tibia c.25 times as long as its central width, and most postero-dorsal spines little, if at all, shorter than anterior spines; fore tibia with both postero-dorsal and posterior, apical spines *cornutus* sp. n.

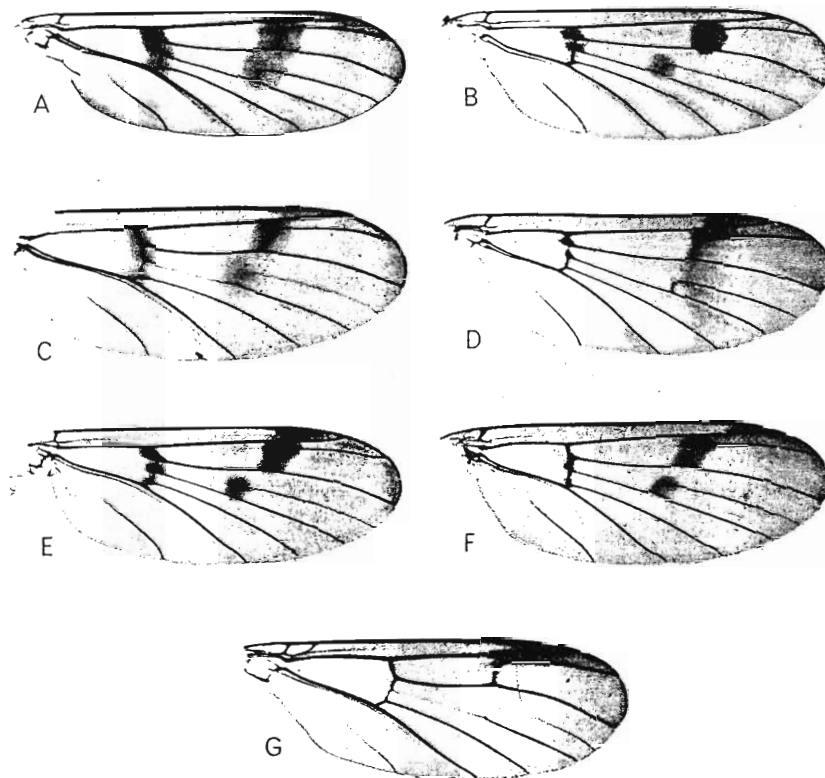


PLATE I

Wings; all male; to various scales. (A) *Australosymerus fuscineris* (Edwards); (B) *A. propinquus* sp. n.; (C) *A. tonnoiri* sp. n.; (D) *A. nebulosus* sp. n.; (E) *A. naevius* sp. n.; (F) *A. cornutus* sp. n.; (G) *Crionisca aculeata* (Edwards).

3. Antennal seg. 2 with conspicuous, coarse setae on anterior surface. Apical third of wing faintly clouded (best seen at low magnifications), with a diffuse darker area over the base of R_4 ; rather faint dark spots present over bases of R_s and M_{1+2} (Plate ID). Palps pale *nebulosus* sp. n.
Antennal seg. 2 with at most inconspicuous, fine setae on anterior surface. Apical third of wing not uniformly clouded; a short transverse dark band present between R_1 and $Cu A$, across the base of R_s and the crossvein. Palps at least partly dark 4
4. Abdominal tergites with conspicuous apical pale bands, extending well on to haired surface. R_4 almost always sharply angled, often with a "stub" projecting from the angle (Plate IA). Base of R_s more or less smoothly curved to join R_1 *fuscineris* (Edwards)
Abdominal tergites with apical banding absent or inconspicuous, extending at most to first row of hairs. R_4 almost always smoothly curved 5

5. Base of Rs smoothly curved, or at least very obliquely angled, to join R₁ (Plate 1C). Dark spot over base of R₄ extending to fill apex of subcostal cell. Fore-tibia without any posterior spine at apex *tonnoiri* sp. n.
 Base of Rs sharply angled, at almost 90 degrees, to join R₁, often with a small "stub" at the angle (Plate 1B). Dark spot over base of R₄ not extending across R₁. Fore-tibia with a small, posterior, apical spine, in addition to the larger, postero-dorsal spine (possibly absent in ♀) 6
 6. Male 9th tergite deeply emarginate apically; basal arm of cercus simple, incurved, pointed (Fig. 5) *anthostylus* sp. n.
 Male 9th tergite produced apically, with a blunt central projection between the cerci; basal arm of cercus shallowly bifid, with a pointed, incurved, ventral lobe and truncate, toothed, dorsal lobe (Fig. 7) *propinquus* sp. n.

Australosymmerus fuscinervis (Edwards) comb. n.

Centrocnemis fuscinervis, Edwards, 1921, *Ann. Mag. nat. Hist.* (9) 7: 434.

Types.—Not designated by author, but a specimen in BM (Mangalore, 14.ix.1914, A. White) bears a holotype label. I hereby designate it as *lectotype*. Another specimen (same data, 4.x.1913) is a *paralectotype*. Both have abdomens missing, but, from their size, are almost certainly males.

Type locality.—Mangalore, TASMANIA.

Male

Head.—Vertex pruinose, greyish or yellowish-grey laterally, the centre darker, usually on a poorly defined, subtriangular area, based on the ocelli, and extending back to the nape. Post-orbital setae rather weak, more or less radially directed, the dorsal ones usually distinctly smallest; no ocellar bristles. Frons and clypeus yellow-brown, labella rather darker, segments 2 and 3 of palps dark-brown. Clypeus with rather inconspicuous, fine hairs, usually golden, sometimes more ventral ones brown. Antennal segments 1 and 2 yellow-brown, segments 3-8 progressively darker, apical segments dark-brown; setae on anterior surface of segment 1 often rather sparse and fine; segment 2 with minute setae on anterior surface.

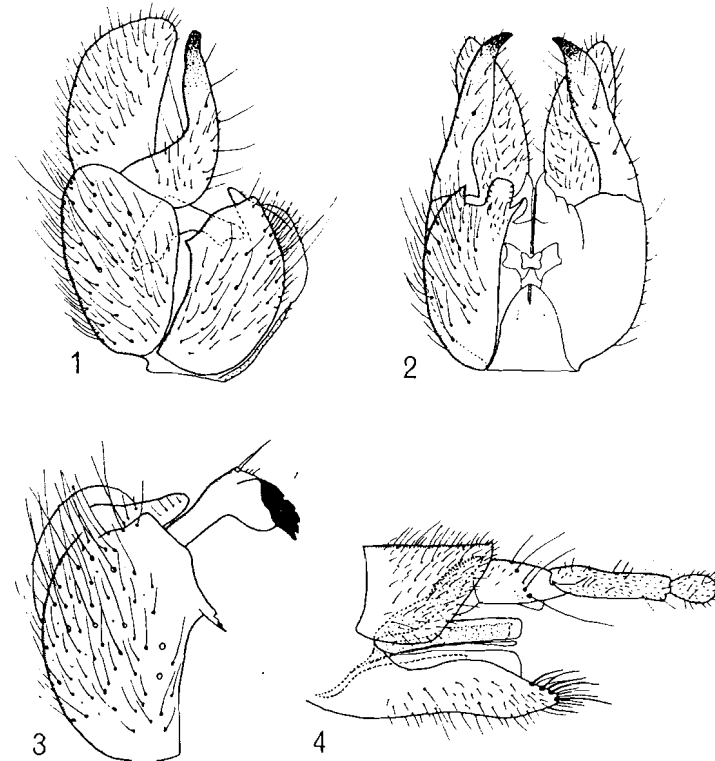
Thorax.—Mesonotum dull, rather pruinose, grey or yellowish-grey with three prominent dark brown stripes, the central one often divided by a narrow, median, paler line; bristles dark-brown. Scutellum and postnotum yellow-brown, the latter sometimes darker, greyish. Pleura with dark patches ventrally on anepisternite, sternopleuron, and pleurotergite, and immediately above the fore-coxa. Prosternum and coxal bridge fringed with a row of moderately strong bristles, becoming weaker and finer ventrally, the row continuing almost to the ventral lobes of prosternum. Halteres pale.

Legs.—Coxae pale, sometimes a little darkened on mid- and hind-legs. Femora brown, tibiae and tarsi dark-brown: tibial spines relatively slender and short, up to three times as long as central diameter of tibia, but most only 1-2 times as long; spurs very dark-brown or black; fore-tibia with a small posterior spine at apex, in addition to the postero-dorsal one, in about 50% of specimens; mid-tibia with posterior comb incomplete, usually rudimentary, with only 1-2 spinules. Hind coxa with rather weak, pale setae.

Wing.—Length 5.8-6.5 mm. Venation and markings as in Plate 1A. Sc with the strong basal portion short, the piece distal to the humeral crossvein as long as or shorter than the crossvein. Basal curve of R₄ usually forming a sharp angle, often (about 70% of specimens) with a small protruding stub. M, often similarly angled, sometimes with a stub or the basal portion missing. Basal portion of Rs almost always curved, rather than angled, meeting R₁ at a right angle and proximal to level of r-m, not forming a straight line with it and the base of M₃₊₄. Dark spots at centre of wing coalesced to form a short transverse band between R and CuA; the dark areas over the radial and median forks almost always confluent, the former not extending across R₁ into the subcostal cell.

Abdomen.—Tergites dark-brown; segments 1-5 with prominent apical pale bands, usually covering about 1/3 of the segment and segment 2 with a rather indistinct, sub-basal band, segment 6 sometimes with narrow pale apical band. Sternites 1-5 mainly pale, with variable, dark basal banding; segment 6 mainly or entirely dark; segment 7 dark.

Terminalia.—(Figs. 1-3) paler than tergites, often rather reddish-brown. Cerci very prominent,



FIGS. 1-4.—*Australosymmerus fuscinervis* (Edwards), terminalia: (1) male, lateral; (2) male, ventral; (3) male, coxite; (4) female, lateral

almost as long as the ninth tergite; beneath them, a pair of prominent curved processes, darkened apically. Style with apical cluster of teeth.

Female

Generally resembling male, but larger; wing length 6.7-8.0 mm. Vertex of head often more yellowish laterally and the central dark area more sharply defined. Tibial spines usually rather longer; fore-tibia with posterior, apical spine in all specimens seen. Angle of R₄ with stub in most specimens. Abdominal banding more prominent, extending on to segments 6 and 7. Terminalia as in Fig. 4; eighth sternites with lobes rather broad, but tapering in lateral view, not very deeply divided in ventral view.

Notes

The commonest and most widespread member of the genus in Australia, usually taken by sweeping in wet forest, though a few have been taken in rather dry situations and one specimen flew into a car travelling in open country. Known from Tasmania to as far north as the Blue Mountains, near Sydney, and west to Adelaide. Although the male terminalia cannot be compared with those of the type (which lacks the abdomen), there is little doubt that my specimens are correctly identified; the stub on vein R₄ is particularly distinctive.

Specimens examined

NEW SOUTH WALES: Kosciusko, 5.xii.1921, 1 ♀ (TM); Alpine Ck., near Kiandra, 2 Nov. 1965, D. H. Colless, 1 ♂; Mt. Tomah, Oct. 1930, T. E. Wilson.

1 ♂ (NMV): Diggers Ck. Fall. Kosciusko, 10.xii.1931, 1 ♂; Snowy R., 12.xi.1931. A. L. Tonnoir, 1 ♀; Colo Vale, 2.ix.1960, D. H. Colless, 1 ♂; Bredbo, 11.xi.1961, D. H. Colless, 1 ♂. AUSTRALIAN CAPITAL TERRITORY: Mt. Gingera, 25.xi.1930. K. R. Norris, 1 ♀. VICTORIA: Sassafras, 19.x.1922, A. L. Tonnoir, 1 ♂; Warburton, 14.xii.1930. E. F. Wilson, 1 ♂ (NMV); Mt. Dom Dom, 22.x.1961, D. H. Colless, 1 ♂; Sherbrooke, 27.x.1964, 1 ♂; Grampians, 1.x.60, 1 ♂—both N. Dobrotworsky. TASMANIA: Burnie, 27.x.1922, 1 ♀; St. Patrick's R., 1.xi.1922, 3 ♀; Mt. Field, 18.xi.1922, 1 ♀, Eaglehawk Neck, 19.xi.1922, 1 ♂, Nat. Pk., 6.xii.1922, 1 ♂—all A. L. Tonnoir; Mt. Wellington, Jan. 1933, F. E. Wilson, 1 ♀ (NMV). SOUTH AUSTRALIA: Adelaide, Nat. Pk., 24.ix.1965, N. Dobrotworsky, 1 ♂.

Australosymmerus anthostylus sp. n.

Types.—*Holotype* male (L. Margaret, Tas., 3.ii.23, A. L. Tonnoir. Terminalia on slide M32) in ANIC, No. 5912; 2 male *paratypes*, both in ANIC.

Type locality.—Lake Margaret, north of Queenstown, TASMANIA.

Male

Very similar to *A. fuscineris*, differing as follows:—

Dorsum of head almost uniformly dark. Antennal seg. 2 with coarser, more conspicuous setae. Mesonotum with stripes almost completely coalesced, the paler dividing stripes faint. Pleura almost uniformly dark. Fringe of coxal bridge and prosternum well developed, but ending well short of ventral angle of prosternum. Tibial spines longer, particularly on mid- and hind-legs, many of them 3-4 times the central diameter of tibia. Mid-tibial combs well-developed. Halteres darker, mainly brown. Wing (as in *A. propinquus*, Plate 1B) with R₂ rather evenly curved (but a trace of a stub on one wing of one specimen): base of R₃ sharply angled, the basal portion more or less in line with r-m and base of M₁; length 5.7-6.5 mm. Abdomen with very narrow apical pale bands. Terminalia as in Figs. 5, 6: ninth tergite deeply emarginate posteriorly; cerci with postero-ventral angles sharply acute, the ventral, arm-like processes strongly incurved, centrally constricted, and sharp-pointed; style with apical rosette of blunt teeth.

Female

A single, rather poor specimen, possibly of this species bears most of the structural attributes of the above males and was collected in company with one of them: however, it seems to lack the posterior, apical spine on the fore-tibia. It differs from *fuscineris* most obviously in having at most a trace of apical banding on tergites 1 and 4-6, while there appear to be median pale patches across the junctions of tergites 2 and 3, and 3 and 4.

Specimens examined

TASMANIA: *Holotype*; 10 mls. E. of Strahan, 20.ii.1963, I. F. B. Common and M. S. Upton, 1 ♂; same locality, 7.ii.1967, E. F. Riek, 1 ♀, 1 ♂. [The female specimen is NOT a paratype].

Australosymmerus propinquus sp. n.

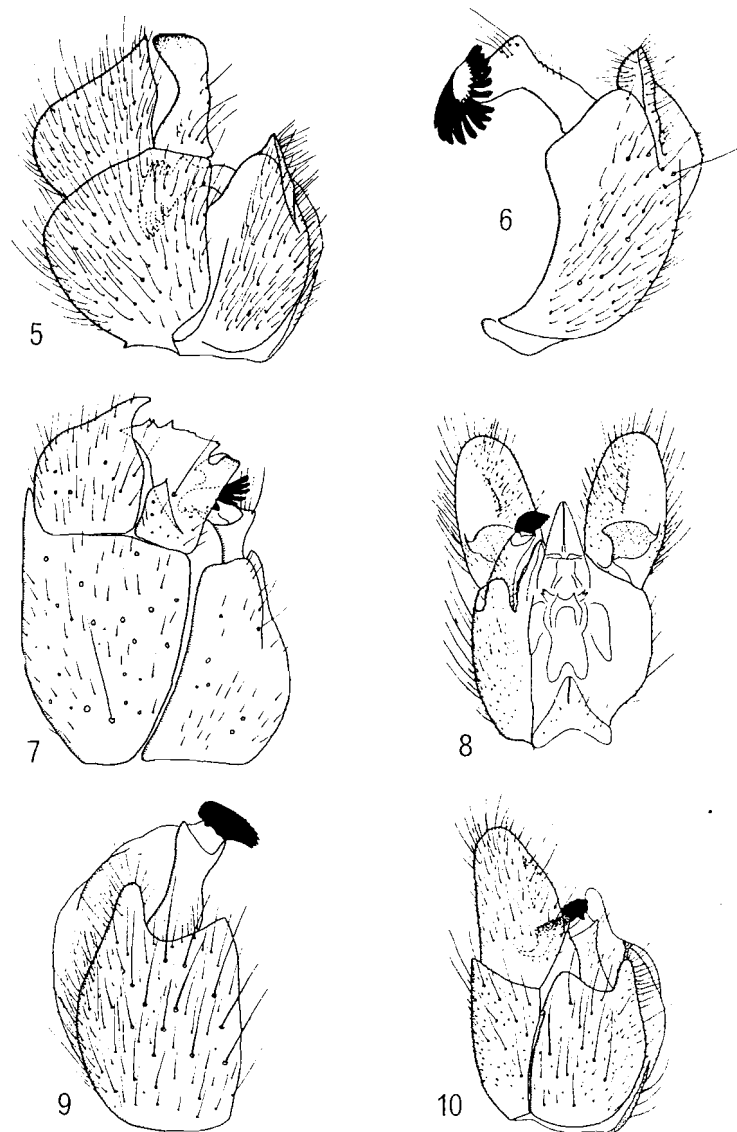
Types.—*Holotype* male (Mt. Wellington, Tas., 12 Feb. 1963, D. H. Colless) in ANIC, No. 5913; 1 ♂ *paratype* in ANIC.

Type locality.—Mt. Wellington, near Hobart, TASMANIA.

Male

Extremely similar to *anthostylus*, (wing as in Plate 1B), but differing as follows:—

Dorsum of head as in *fuscineris*, with poorly defined, central dark triangle. Abdominal tergites with at most a trace of apical pale banding, but tergites 3-5 with narrow, indistinct, basal bands. Terminalia as in Fig. 7: posterior margin of ninth tergite with a sub-triangular, median process that projects between the cerci; posteroventral angles of cerci acute but rounded, blunt; basal arm-like process of cercus of complex form, terminating in two shallow lobes, the dorsal one broad, with toothed margin, the ventral one narrower, pointed, curved inwards and dorsally.



FIGS. 5-10.—Male terminalia: (5, 6) *Australosymmerus anthostylus* sp. n.—(5) lateral, (6) coxite; (7) *A. propinquus* sp. n., lateral; (8-10) *A. tonnoiri* sp. n.—(8) ventral, (9) coxite, (10) lateral.

Female

Not known (though that described under *anthostylus* might well belong here).

Specimens examined

TASMANIA: *Holotype* and 1 other ♂, same data.

Australosymmerus tonnoiri sp. n.

Types.—*Holotype* male (Mt. Wellington, Tasm., 30 Nov. 1922, A. Tonnoir) in ANIC, No. 5914, 1 ♂ *paratype* in ANIC.

Type locality.—Mt. Wellington, near Hobart, TASMANIA.

Male

Very similar to *A. fuscineris*, differing as follows:—

Vertex of head uniformly dark, pruinose. Antenna with basal segments of flagellum little, if at all, paler than the apical segments; segment 2 with very fine, pale setae.

Mesonotum almost uniformly dark, greyish brown, slightly paler at the humeral angles, and with, at most, the barest trace of paler lines separating the dark stripes. Pleura almost uniformly dark, pruinose. Coxal bridge and prosternum with profuse fringe, extending almost to the ventral angles, but hairs very fine, pale. Wing (Plate IC) with basal portion of R_s curved in 1 specimen, angled in the other, but meeting R_1 at an oblique angle; R_2 without stub; dark patch over base of R_4 extending across R_1 , to fill apex of subcostal cell; length 5.9–6.1 mm. Mid-tibial comb well-developed; tibial spines stronger, but not as strong as in *anthostylus*; apex of fore-tibia lacking the posterior spine.

Abdomen: tergites dark, with, at most, small, pale, latero-basal spots on segments 2–5. Terminalia as in Figs. 8–10; cerci rounded apically, each with a small, dark, lobe-like process arising from the base of the ventral surface.

Female

Not known.

Specimens examined

Holotype and 1 ♂, same data but for date, 28.xi.1922.

Australosymmerus sp. indet., ♀

Two females, one from Tasmania and one from West Australia, show a general resemblance to *tonnoiri* and may well belong to that species. However, the absence of the posterior apical spine on the fore-tibia cannot be considered conclusive, since it is variable in *fuscineris* and absent in the presumed female, but not the male, of *anthostylus*. Moreover, both specimens lack the very characteristic darkening of the apex of the subcostal cell, and both have prominent basal bands on the abdominal tergites (though the latter could readily be ascribed to sexual dimorphism).

The specimen from West Australia has the antennal flagellum distinctly narrower than in any other species; also, a peculiar, but probably abnormal, venation in the one remaining wing; the longitudinal portion of R_4 lacks about its basal quarter and the remaining, free portion is confluent basally with R_1 . Although very likely to be abnormal, the condition is interesting in that it recalls the close approach, or fusion, of R_4 and R_1 in the related *Nervijuncta* Marshall of New Zealand.

Specimens examined

TASMANIA: Mt. Wellington, 27.xi.1922, A. Tonnoir, 1 ♀. WESTERN AUSTRALIA: 24 mls. N.W. Pemberton, Tea-tree swamp, 9.x.1965, N. Dobrotworsky, 1 ♀.

Australosymmerus nebulosus sp. n.

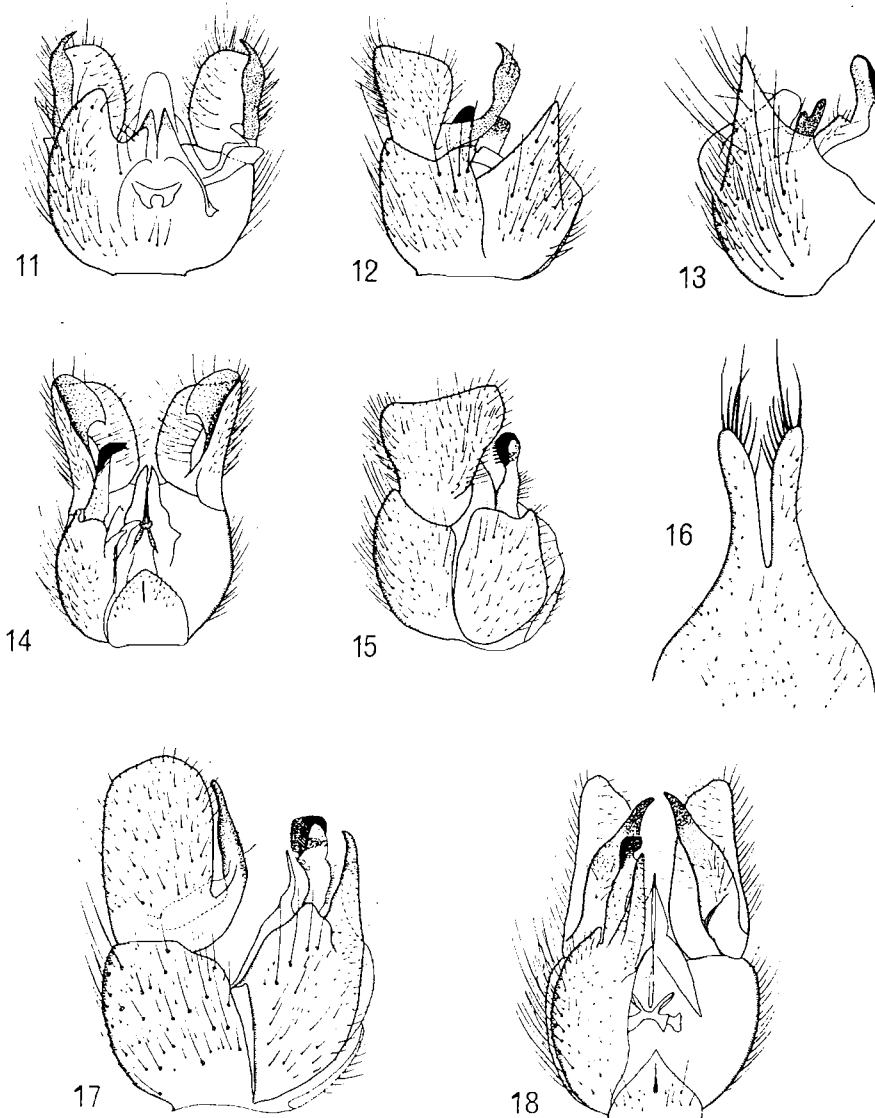
Types.—*Holotype* male (Helyer Gorge, Tas., 4 Feb. 1967, E. F. Riek) in ANIC, No. 5917; 6 ♂, 2 ♀ *paratypes* in ANIC and 1 ♂ *paratype* to be placed in BM.

Type locality.—Helyer Gorge, N.W. TASMANIA.

Male

Head with vertex pruinose, broadly dark across ocelli and along eye-margins, rather paler posteriorly

towards nape; clypeus and mouthparts, including the palps, pale. Post-orbital bristles distinctly stout and conspicuous, the more dorsal one or two usually incurved and subequal to the laterals; lateral ocellar prominence with a small but distinct bristle internally at its base. Antennal segment 2, and sometimes 1, of much the same colour as the basal flagellar segments, which are often little paler than the succeeding ones. Clypeus and segments 1 and 2 of antenna all with profuse, coarse, spiny setae on their anterior surfaces.



FIGS. 11–18.—Terminalia, (16) female, others male: (11–13) *Australosymmerus nebulosus* sp. n.—(11) ventral, (12) lateral, (13) coxite; (14–16) *A. naevius* sp. n.—(14) ventral, (15) lateral, (16) female 8th sternite, ventral; (17, 18) *A. cornutus* sp. n.—(17) lateral, (18) ventral.

Thorax relatively pale, with strong, dark bristles; pleura pale-brown; mesonotum somewhat darker, yellowish-brown, stripes barely, if at all, differentiated. Coxal bridge and prosternum with complete fringe of strong bristles, extending right to ventral angles. Halteres with dark knob. Wing (Plate 1D) faintly clouded over the apical third, darker across the base of R_4 and in apex of subcostal cell; small, rather faint spots present over bases of R_s and M_{1+2} ; base of R_s sharply angled, often with a small stub; R_4 usually curved, sometimes angled; length 5.6-6.4 mm. Tibial spines strong, black, many of them well over 4 times as long as the diameter of the tibia; mid- and hind-tibia with posterior and ventral combs well developed; fore-tibia with strong, posterior, apical spine, as large as the postero-dorsal; hind-tibia with a small, but distinct, dorsal spine at apex.

Abdominal tergites dark brown with narrow apical pale bands on segments 1-6; sternites variable, from entirely pale to dark with apical bands. Terminalia as in Figs. 11-13, dark-brown dorsally, paler ventrally, noticeably small. Cerci truncate, broadest posteriorly, the ventral, arm-like process bulbous on apical half, tapering sharply to a dark, claw-like tip; coxite with prominent apical crest, and an anomalous, bifid, darkened process arising from near the base of the style.

Female

Generally as for male, but wing markings very faint, barely discernible, and abdomen rather yellowish-brown, without banding. Terminalia: eighth sternite very shallowly emarginate. Wing length 6.6-6.9 mm.

Notes

The most distinctive member of the genus in Australia, by virtue of the strongly developed bristling. Apparently restricted to wet forest in the colder climates.

Specimens examined

TASMANIA: Holotype; Mt. Field, 21.xii.1922, A. Tonnoir, 1 ♂. VICTORIA: Marysville, Cumberland Cr., 21.xi.64, 1 ♂; 9 ml. N. of Dargo, Spring Hill Junct., 4,000 ft., 13.ii.1965, 1 ♂; 9 ml. S. of Treasure H'st., N. of Dargo, 4,060 ft., 14.ii.1965, 1 ♂; Bogong, 24.i.65, 2 ♂—all N. Dobrotworsky; Nowa Nowa, 28.x.1961, D. H. Colless, 1 ♂, 1 ♀; 10 m. E. of Beech Forest, 1.i.1967, Z. Liepa, 1 ♀.

Australosymmerus naevius sp. n.

Types.—*Holotype* male (Kangaroo Valley, N.S.W., 23.xi.1960, D. H. Colless) in ANIC, No. 5915; 2 ♂ and 2 ♀ *paratypes* in ANIC and 1 ♂ *paratype* to be placed in BM.

Type locality.—West slope, Kangaroo Valley, NEW SOUTH WALES.

Male

Rather like *A. nebulosus*, differing in the generally weaker bristling, and as follows:—

Head: vertex yellowish- or greyish-brown, with a quite sharply defined, dark mark over the ocelli, more or less confined to their immediate vicinity. Post-orbital bristles rather weaker and ocellar bristles absent. Antennal segment 2 without setae on anterior surface; segment 1, and the clypeus, with rather finer, brown setae. Palps dark brown.

Mesonotum sometimes rather darker and greyish, rather than yellowish-brown; scutellum little, if at all, paler. Prosternum with fringe of fine hairs. Wing (Plate 1E) 5.5-6.0 mm long, with more or less discrete, occasionally confluent, dark spots over r-m and the bases of R_s and M_{1+2} ; also, a round spot over the median fork and a larger patch over the base of R_4 , extending to the costa across R_1 ; extreme apex of subcostal cell more or less clear. Base of R_s gently curved, meeting R at an oblique angle, well basal to level of r-m; R_4 curved, rather than angled. Tibial spines weaker: fore-tibia without posterior apical spine; hind-tibia without dorsal, apical spine.

Terminalia (Figs. 14, 15) rather small; cerci black, truncate, expanded postero-ventrally, their internal surfaces with what can be regarded as a long, inwardly curved, tapering lobe, close to the ventral margin. Style with terminal fringe of fine, blunt teeth.

Female

Ornamentation as for male. Eighth sternite dark, deeply cleft posteriorly, forming two long, narrow lobes (Fig. 16). Wing length 6.4-6.5 mm.

Notes

All specimens have been swept in wet forest. The species seems to have a more northerly distribution than many others.

Specimens examined

NEW SOUTH WALES: Holotype and 1 ♀, same data; Rutherford Ck., Brown Mountain, 19.i.1961, D. H. Colless, 1 ♂. VICTORIA: Nowa Nowa, 28.x.1961, D. H. Colless, 2 ♂, 1 ♀.

Australosymmerus cornutus sp. n.

Types.—*Holotype* male (Clyde Mtn., N.S.W., Landslip, 17.ii.1961, D. H. Colless) in ANIC, No. 5916; 7 *paratype* ♂ in ANIC and 1 *paratype* ♂ to be placed in BM.

Type locality.—East slope, Clyde Mountain, NEW SOUTH WALES.

Male

Very similar to *A. naevius*, but rather more strongly bristled, and differing as follows:—

Integument rather darker, with an overall, golden or deep-yellowish tinge. Vertex usually paler at the centre, behind the ocellar spot. Clypeus and antennal segment 1 with very profuse, coarse golden-brown setae; segment 2 with some tiny setulae. Apical segment of palp often pale, the basal segment mid- to dark-brown.

Prosternal fringe with moderately strong bristles. Wing (Plate 1F) 5.7-6.7 mm long, with rather faint markings, the merest trace of dark clouding present over r-m and the base of R_s ; dark spots present over bases of M_1 and R_4 , the latter not extending across R_s or R_1 , but some faint clouding present in apex of subcostal cell and around wing apex. Halteres not so strongly darkened, apical half of knob often pale. Legs rather stout (see key); tibiae with strong spines; fore-tibia with strong posterior spine, but usually shorter than adjacent postero-dorsal.

Terminalia (Figs. 17, 18) large, somewhat resembling those of *A. fuscineris*, but coxite with a prominent, dark, pointed apical process, clearly visible in pinned specimens. Style with apical comb of fine teeth. Ninth sternite with a curious central pore.

Female

Not known.

Notes

All specimens were swept in wet forest (mainly true rainforest) on the coastal ranges; apparently with much the same distribution as *naevius*.

Specimens examined

NEW SOUTH WALES: Holotype; Mt. Wilson, 30.xii.1960, 1 ♂; Brown Mtn., 18.i.1961, 1 ♂; Rutherford Ck., Brown Mtn., 19.i.1961, 5 ♂—all D. H. Colless. VICTORIA: 17 ml. S.W. Lake Mt., Swamp, 3,000', 1.ii.67, N. Dobrotworsky, 1 ♂.

*Crionisca** gen. n.

Type species: *Crionisca rieki* sp. n.

Generally similar to *Australosymmerus* (as described above), differing as follows:—

Integument shiny, with bold markings. Clypeus long, projecting beneath head, mouthparts forming a short but distinct rostrum. Eyes weakly emarginate above antennae, lateral ocellus separated from eye margin by much more than its own diameter. Antennal segments 1 and 2 with, at most, a few tiny setae on their anterior surface. Post-orbital row with only a single strong bristle, set well back from the ocelli, dorsally directed; other members of the row scarcely, if at all, differentiated. Posterior pronotum with a single bristle; pleurotergites with long hairs. Wing (Plate 1G) with subcosta branched, the anterior

* An arbitrary combination of letters: feminine.

