NOTES ON AUSTRALIAN DIPTERA. No. v.
By J. R. Malloch.

(Communicated by Dr. E. W. Ferguson.)

[Read 29th April, 1925.]

In this paper I present keys for the recognition of the genera of Muscidae known to me from Australia. It is quite probable that there are some genera, and certain that there are many species, unknown to me, and I believe that the best method of interesting Australian students of Diptera in this rather difficult family is to make available to them data for the recognition of the known genera and species. From experience I judge that there is nothing tends more strongly to divert students from the intensive study of a group than a multiplicity of genera and species scattered throughout the literature of many countries, and in many languages, with no synoptic literature available for their recognition.

I do not presume to say that this attempt to elucidate the Australian genera is perfect, that anyone without experience in the work may sit down and in an off-hand manner name whatever species comes to hand. But the matter herein presented is the result of over twenty years' study of the group and contains data which, in some cases, are made known for the first time in print. I have had ready for the press for some years a key to the genera of Muscidae of the world, but have delayed publishing it, as I desire to make a more extended study of some difficult groups, more especially those occurring in New Zealand. It would serve no good purpose, even for comparison, were I to include in this paper genera not yet known from Australia, so I confine my presentation strictly to those genera I have seen from my various correspondents in Britain, Australia, and elsewhere.

Included in the family are all species that possess the following combination of characters: Second antennal segment with a longitudinal split at apex above, slightly to the outer side; spiracles of abdomen situated in the tergites at varying distances from the lateral margins, rarely in extreme margins; auxiliary vein of wing complete, ending in costa well in front of apex of first vein; postscutellum not convex; hypopleura without a vertical series of strong bristles below spiracle, sometimes with some fine hairs in this region; vibrissae present.

The nearest related families are the Calliphoridae and Tachinidae on the one hand and the Dryomyzidae, Helomyzidae, and Sciomyzidae on the other. The group usually referred to as Scatophagidae or Cordyuridae I consider a subfamily referable to Muscidae, but I have seen no species from Australia that belongs here, the only genus referred to it definitely by a recent author, Tapeigaster Macquart, being, I think, an acalyprate.

Within the past two or three decades there has been considerable change in the opinions of workers on the calyptres as to the limits as well as the number of families in this division. The more dogmatic definitions of these families have
been laid down by those workers who have confined their efforts to the species of a limited faunal region, and the increase in the number of families is credited to those who, covering several faunal regions, have endeavoured to apply the same differentiating characters to the entire assemblages as to the components of any given faunal region, with very unsatisfactory results. It appears to me, from a critical survey of a multitude of species from every part of the world, that we may be compelled to recognize but four families in this complex, Tachinidae, Calliphoridae, Oestridae, and Muscidae. There are several groups, such as are represented by the genera Sarcophaga, Metopia, Rutilia, Anacocphala, and Mesembrinella, etc., which may serve as the nucleus of tribes or groups of lesser rank than families, even subfamilies, but, unless we are prepared to elevate the four groups above named to the rank of superfamilies, we must perforce admit that family rank, even for the most distinct of the others, is out of the question, viewing the matter from a comparative point of view.

I present below a key to the four families listed above.

**Key to Families of Calyptrata.**

1. Hypopleura without a vertical series of strong bristles below spiracle .............. MUSCIDAE (incl. GASTROPHILIDAE)

   Hypopleura with one or more vertical series of bristles below spiracle .......... 2

2. Mouth parts vestigial ......................................................... OESTRIDAE

   Mouth parts well developed, functional ........................................... 3

3. Postscutellum not conspicuously convexly developed .......... CALLIPHORIDAE

   Postscutellum prominently convexly developed .......................... TACHINIDAE

There does not appear to me to be any good reason, based upon structure, for the separation of Tachinidae from Dexitidae of authors. The absence or presence of hairs on the arista, the only character that is used generally for the separation of these groups, being unreliable for that purpose, I have included them both under Tachinidae in the above key.

I present below a key for the recognition of the subfamilies of Muscidae known to me from Australia.

**Key to Subfamilies of Muscidae.**

1. Sixth wing-vein complete, faint apically, but extending to margin of wing; thorax with but three strong pairs of postfurcal dorsal cental bristles; hind tarsus with an outstanding bristle at base below on basal segment; eyes of males narrowly separated above, of females separated by about one-third of the head width, interfrontal stripe in this sex generally with a pair of cruculate bristles about the middle; hind tibia with at least two long posterodorsal bristles; scutellum with some erect soft hairs below apically ............ ANTHOMYINAE

   Sixth wing-vein not distinctly traceable to margin of wing; other characters not as above *in toto* ................................................................. 2

2. Pteropleura with a group of hairs in centre; eyes of males and females separated by about one-third of the head width, the interfrontalia without cruciate bristles; palpi dilated apically, usually conspicuously so; parafacials with some hairs on their entire length .............................................. LISPINAE

   Pteropleura bare, or, if haired, the eyes of males are not as widely separated as those of females; in no case are the palpi conspicuously dilated, and the parafacials are bare below bases of antennae ........................................ 3

3. Sixth wing-vein very short, the seventh more or less distinctly curved forward round its apex; hind coxae usually with one or two fine hairs at apex above; thorax with three pairs of postfurcal dorsal cental bristles; each orbit in females and in males with wide frons with two bristles on upper half directed outward over eyes, or the upper one slightly backwardly directed .................. FANNINAE
Sixth wing-vein sometimes very short, but when it is, the seventh is straight and never curved forward round its apex; hind coxae bare at apices above; orbits not with two upper bristles curved outward over eyes in either sex 4

4. Frons in both sexes one-third of the head width, each orbit with one long backwardly directed bristle on upper half; thorax with but one pair of presutural dorsocentral bristles; lower stigmatic bristle directed downward 5. Coenosinae

Frons of male narrower than that of female, or, if equally wide, the orbits have each two backwardly-directed bristles on upper half; there are two pairs of presutural dorsocentrals present, or the lower stigmatic bristle is not directed downward 5

5. Proboscis heavily chitinised, fitted for piercing, the labellae not enlarged or spongy; arista with long hairs on upper side, bare or pubescent below; lower calypters as in Phaoniinae; fourth wing-vein bent forward at or before middle of its apical section 6. Stomoxynidae

Proboscis not heavily chitinised, or fitted for piercing, the labellae generally large and more or less spongy, with chitinous rods or teeth; arista with the hairs almost invariably equally long above and below 6

6. Lower calypters rounded apically, its inner basal margin well separated from the basal angles of scutellum; fourth wing-vein never angularly bent forward near middle of its apical section; if curved apically, the beginning of the curvature is generally well beyond middle of apical section 7. Phaoniinae

Lower calypters more or less transverse at apex, its inner basal margin close to or underlying the basal angle of scutellum; fourth wing-vein conspicuously bent forward at or close to middle of its apical section, sometimes angularly so 8. Muscinae

Subfamily Anthomyiinae.

This subfamily I consider the most generalized of the family. It is essentially northern in its distribution, being abundantly represented in Europe and North America, extending its range into the Arctic Regions. Many of the species are phytophagous, some of them doing serious damage to root-crops and cereals. So far I have seen but three genera from Australia and these may be distinguished by means of the key presented below.

Key to genera.

1. Propleura haired in centre, i.e. below humeral angle and above propleural bristle in front of spiracle; species densely whitish-grey pubescent, with conspicuous black spots on dorsum of thorax and abdomen 2. Anthomyia Meigen

Propleura bare in centre 3. Anthomyia Meigen

2. Mid tibia without a ventral median bristle 4. Hylemyia R.-D.

Mid tibia with a distinct median ventral bristle 5. Egle R.-D.

Genus Anthomyia Meigen.

I have seen but one species of this genus from Australia, vicarians Schiner. Stein considered this species to be a synonym of tilocata Walker, but I think he was in error. I have published a key to the species of the genus known to me (Annals and Magazine of Natural History, 1923, 267). Unfortunately the last section of caption 16 referring to vicarians was accidentally omitted in printing the key. This should read:

"No dark spot at base of antennae in male; base of scutellum black  vicarians Schiner"

The specimens I have seen are from Eccleston and Maroondah, N.S.W.

Genus Hylemyia R.-D.

I have recently published a key to the known Australian species of this genus.

Genus Egle R.-D.

But one species of this genus is known to me from Australia. As it is of some economic importance, the larvae feeding in various root-crops, I give a short description of it to facilitate its identification.
An entirely black species, the interfrontalia of the female usually rufous in front; wings hyaline. Calyptrae white. Halteres yellow. Thorax in male with three broad black vittae, the spaces between them not conspicuously pale; in the female the thorax is much more densely gray pruinose and the vittae are not very noticeable. Abdomen in male gray pruinose, with a broad central vitta and a narrow apical and basal fascia on each tergite black.

Eyes very narrowly separated in male, in female separated by fully one-third of the head width, interfrontalia in female with a pair of cruciate bristles; arista pubescent. Thorax with 2 + 3 pairs of dorsocentral bristles and one or two pairs of presutural acrostichals. Abdomen in male depressed. Fore tibia with one anterodorsal and one posterior bristle near middle; mid tibia with one ventral, one anterodorsal, and two or three posterior bristles; hind femur in male with a series of long bristles on anteroventral and another on basal two-thirds of posteroverternal surface; hind tibia with one or two anteroventral, four to six anterodorsal, and three posterodorsal bristles. First posterior cell of wing slightly narrowed apically. Lower calyptra protruded.

Length, 5-5.5 mm.
One pair, Melbourne, Victoria, 14th Nov., 1923.

Subfamily Lispinae.
I have already published a generic key to this subfamily (These Proceedings, xlviii, 1923, 606).

Subfamily Fanniinae.
There are but two genera of this subfamily known to me from Australia. I give a diagnosis below for their identification.
A. Eyes of male separated by less than one-fifth of the head width; entirely black species, or at most only the base of abdomen faintly translucent yellowish .................................................. Fannia R.-D.
AA. Eyes in both sexes separated by one-third of the head width; legs and abdomen tawny yellow ........................................ Euryomma Stein.

Genus Fannia R.-D.
I have described one species, australis, and recorded another, canicularis L., from Australia. There is a third species known to me, but I have only a rather poor male specimen of it on hand, so defer publishing an identification meanwhile.

Genus Euryomma Stein.
I have already dealt with the only known species of this genus from Australia, peregrinum Meigen, in a previous paper in this series.

Subfamily Coenosinae.
This subfamily is a rather poorly defined one. I have been compelled to drop Atherigona Rondani and Pygophora Schiner as members of it and have transferred them to Phaoniinae. Ultimately it may be necessary to do the same with the other genera, in which case the group would bear the oldest name, Coenosinae.
I have seen but two genera from Australia, which are distinguished as below.
A. Hind tibia with a long anterodorsal bristle near middle and a much shorter one on anteroventral surface distinctly apicad of it .............. Coenosia Meigen.
AA. Hind tibia with two long bristles near middle, one on the anterodorsal and the other on the anterior surface, the bases of which are quite close together ..................................................... Caricea R.-D.

I have dealt with the species of these genera known to me in the preceding paper in this series.
Subfamily Phaoniinae.

This is the best represented subfamily in Australia, as it also is in Africa and South America. I give below a key for the identification of the Australian genera known to me at present.

Key to genera.

1. Pteropleura bare .................................................. 2
   Pteropleura hairy in part ......................................... 24
2. Third wing-vein bare at base .................................... 3
   Third wing-vein with some minute setulae at base .............. 22
3. Mid tibia with a strong ventral bristle near middle .......... 22
   Mid tibia without a distinct ventral bristle near middle ........ 4
4. Males ......................................................................... 5
   Females ....................................................................... 14
5. Fore femur with an elongate depression or concavity on apical half of ventral surface at the basal extremity of which there is at least one sharp thorn or spine .............................................. Hydrotaea R.-D.
   Fore femur without a distinct depression or concavity and thorn as above ........................................ 6
6. Eyes separated by about one-third of the head width ......... 11
   Eyes separated by not more than one-fifth of the head width ....................................................... 7
7. Hind tibia with one outstanding bristle on posterodorsal surface distinctly beyond middle, which is noticeably longer than diameter of tibia .. Phaonia R.-D.
   Hind tibia with at most one or two short setulae on posterodorsal surface, none of which is noticeably longer than diameter of tibia ................................................................. 8
8. Auxiliary vein of wing gradually approaching costa, first vein connecting with the latter beyond inter cross-vein; halteres black ....................................................... 9
   Auxiliary vein with a rounded curvature near apex, its junction with costa almost a right angle, first vein connecting with costa before or above inner cross-vein ..................................................... 10
9. Hypopleura bare .................................................. 10
   Hypopleura with fine hairs on upper margin in front of spiracle ..................................................... Ophyra R.-D.
   .................................................. Australophyra Malloch.
10. Fourth wing-vein not or very inconspicuously curved forward on apical section; prescutellar acrostichals not noticeably proximal of posterior pair of dorsocentrales ............................................. Helina R.-D.
   Fourth wing-vein rather conspicuously bent forward on apical section; prescutellar acrostichals very noticeably proximal of posterior pair of dorsocentrales ........................................... Antipodomysis Malloch.
11. Costa not extending to apex of fourth wing-vein ............ 12
   Costa extending to apex of fourth wing-vein .................... 12
12. Hind tibia with only three bristles, one on each of the following surfaces: anterodorsal, anteroventral, and posterodorsal; presutural and anterior postsutural dorso-central bristles much shorter than usual, hardly distinguishable from the discal hairs and setulae .......... Atherigona Rondani.
   Hind tibia with at least four bristles, two on each of the following surfaces: posterodorsal and anterodorsal; all dorso-central bristles long and strong .. 13
13. Each orbit with the two upper bristles directed backward, the anterior one of these not much longer than posterior one and not placed close to the bristle in front of it .......................................................... Lepocephala Mik.
   Each orbit with the upper two bristles directed backward, the anterior one much longer than the posterior one and much closer to the bristle anterior to it than it is to the posterior one ........................................ Pygophora Schiner.
14. Interfrontalia with a pair of cruciate bristles .................. 15
   Interfrontalia without a pair of cruciate bristles, sometimes with scattered fine hairs ........................................ 17
15. Hypopleura with hairs on upper margin in front of spiracle .. Australophyra Malloch.
   Hypopleura bare .................................................. 16
16. Ocellar triangle highly glossy, black .......................... Ophyra R.-D.
   Ocellar triangle more or less shining, not highly glossy ........ Hydrotaea R.-D.
17. Hind tibia with one outstanding bristle on posterodorsal surface beyond middle, which is noticeably longer than tibial diameter; dorsocentrals all long .......................... Phaonia R.-D. 
Hind tibia either without a bristle on posterodorsal surface or with several short setulae, or two long bristles; if with one it is at middle and short, and the anterior dorsocentral thoracic bristles are quite short and inconspicuous .......................... Atherigona Rondani. 
Hind tibia without long posterodorsal bristles ........................................... 19 
Hind tibia with two long posterodorsal bristles ....................................... 20 
18. Fourth wing-vein not or almost imperceptibly curved forward apically; prescutellar acrostichals in line with or behind the posterior pair of dorsocentrals ........................................... Helina R.-D. 
Fourth wing-vein quite noticeably curved forward apically; prescutellar acrostichals distinctly in front of posterior pair of dorsocentrals .................. Antipodomyia Malloch. 
Costa extending distinctly to apex of fourth wing-vein .......................... 21 
20. The two upper bristles on each orbit almost uniform in length, the anterior one not close to the bristle in front of it ........................................ Lispocephala Mk. 
The uppermost of the two upper bristles on each orbit much smaller than the second one, the latter much closer to the one anterior to it than to upper one ........................................... Pygophora Schiner. 
Face without such a carina ........................................................................ 23 
22. Prosternum setulose on sides .................................................. Limnophora R.-D. 
Prosternum bare ........................................................................... Myospila R.-D. 
23. Prosternum bare .............................................................. Metopomyia Malloch. 
Prosternum haired in part ............................................................. Dichaetoniyia Malloch. 

Genus Hydrotæa R.-D. 

There is but one species of this genus known to me from Australia, australis Malloch. Macquart described another species, fuscocypræa, but I have not seen it. 

Genus Phaonia R.-D. 

But two species of this genus are known to me, fergusoni Malloch and umbrinervis Stein. I redescribed this last species under the name parvula in 1921. I have what I consider may prove to be a third species; having but one male available I defer describing it as new. 

Genus Ophyra R.-D. 

There are two species of this genus known to me from Australia, nigra Wiedemann, and chalcogaster Wiedemann, both of which occur throughout the Orient. I keyed the species of this genus known to me in a recent paper (Ann. Mag. Nat. Hist. xi, 1923, 664). 

Genus Australophyra Malloch. 

There is but one species of this genus, analis Wiedemann, confined to Australia, so far as I know at present. 

Genus Helina R.-D. 

This genus is well represented in Australia. I present a key to the species known to me at present, some of which are new to science. 

Key to the species of Helina. 
1. Halteres black or fuscos (cf. triunabilifera) ........................................... 2 
Halteres yellow or brownish-yellow ........................................... 14
2. Abdomen not bluish or greenish, more or less bronzy, and with an iridescent cast, the apices of abdominal tergites violaceous; a black spot at apex of auxiliary vein, another over inner cross-vein, and one on each extremity of outer cross-vein; sternopleurals 1:2; eyes of male separated by about one-fourth of the head width; arista plumose ............................................... iridescent Malloch.

Abdomen black-blue, blue, blue-green, or green, with or without whitish pruinascence, the apices of tergites not darker than the remainder; sternopleurals 1:2; arista plumose; eyes of males never separated by more than one-sixth of the head width .......................................................... 3

Abdomen black, with distinct brownish-grey or gray pruinascence, always with paired blackish dorsal spots, at least in males; sternopleurals 2:2; arista short-haired or pubescent, longest hairs very rarely as long as width of third antennal segment; cross-veins of wings usually distinctly clouded ........... 11

3. Calyptrae, or at least the lower one, with fuscous or black margins and fringes ........ 4

Calyptrae entirely pale, margins and fringes whitish or yellowish ......................... 8

4. Narrowest part of frons in male over twice as wide as third antennal segment; thorax with one or two pairs of strong presutural acrostichal bristles ................................................. australasiae Malloch.

Narrowest part of frons in male about as wide as third antennal segment; thorax without differentiated presutural acrostichal bristles ................................................. 5

5. Postsutural dorsocentral bristles three pairs ...................................................... 6

Postsutural dorsocentral bristles four pairs ........................................................... 7

6. Smaller species, 4 mm. in length; thorax with faint pruinascence and very faintly vittate, abdomen not pruinascent; hypopleura bare .... tasmanensis Malloch.

Larger species, about 7 mm. in length; thorax very distinctly vittate; abdomen with dense pruinascence, more or less checkered ......................... hypopleurinis, n.sp.

7. Basal abdominal sternite bare; hind tibia without an anteroventral bristle at middle .......................................................... whitel Malloch.

Basal abdominal sternite hairy; hind tibia with a median anteroventral bristle .................. birtibasis Malloch.

8. Thorax with 4 pairs of postsutural dorsocentral bristles .................................. regina Malloch.

Thorax with 3 pairs of postsutural dorsocentral bristles ....................................... 9

9. Thorax black, without blue tinge, with rather dense whitish pruinascence; hind tibia with two anterodorsal bristles and no outstanding anterior setulae; lower calyptra much narrower than usual ................ calyptrata Malloch.

Thorax and abdomen blue or green, with whitish pruinascence, that on abdomen very thin ................................................................. 10

10. Thorax blackish-blue, abdomen blue; hind tibia with three or more anterodorsal bristles; wing without brown margins to veins ..................... caeruleas Stein.

Thorax and abdomen green, the former pruinascent, the latter without whitish pruinascence; hind tibia with two anterodorsal bristles; wing-veins margined with brown, the cross-veins most conspicuously so .................. novel Malloch.

11. Thorax with 4 pairs of postsutural dorsocentral bristles .................................. 12

Thorax with 3 pairs of postsutural dorsocentral bristles ....................................... 13

12. Eyes of male very closely contiguous ........................................................................ nigrescent Stein.

Eyes of male separated by more than the width of third antennal segment .................. nigrohalterata, n.sp.

13. Legs entirely black; margins of calyptrae fuscous in male, yellowish in female ................................................................. castigata, n.sp.

Tibiae tawny, remainder of legs black, margins of calyptrae yellowish in both sexes ........ simulating Malloch.

14. Thorax testaceous yellow, with or without distinct blackish vittae; sternopleurals 1:2 ................................................................. 15

Thorax black, nowhere yellow ....................................................................................... 16

15. Longest hairs on arista much shorter than width of third antennal segment; thorax with one pair of strong presutural acrostichals; head black; legs yellow, tarsi black ........................................... simularis Malloch.

Longest hairs on arista longer than width of third antennal segment; thorax without strong presutural acrostichal bristles ................................................................. 16
16. Thorax with 4 pairs of postsutural dorsocentral bristles; head yellow, third antennal segment and sides of frons black; thorax with three broad varicoloured dark vittae; apices of femora and tarsi black .......... fuscoflava Malloch. Thorax with 3 pairs of postsutural dorsocentral bristles; head entirely black; thorax with a fuscous dorsocentral vitta; femora yellow, tarsi black ................. flavofusca Malloch.

17. Thorax with 4 pairs of postsutural dorsocentral bristles ......................... 18 Thorax with 3 pairs of postsutural dorsocentral bristles .......................... 23

18. Longest hairs on arista longer than width of third antennal segment; legs tawny, tarsi fuscous; cross-veins of wings not noticeably clouded; fore tibia without a median posterior bristle; fore femora of female normal ......................... 19

Longest hairs on arista very much shorter than width of third antennal segment; at least a part of femora in addition to tarsi fuscous in males; inner cross-vein and sometimes also the outer one distinctly clouded; fore tibia with a median posterior bristle; fore femora in female with a scale-like downward extension at apex on anterior side and a large flat bare area at base on same side .... 21

19. Antennae and palpi black; presutural acrostichal bristles absent or very weak Antennae partly, palpi entirely yellow .............................................. antarctica Macquart.

20. Thorax with one pair of long presutural acrostichal bristles; hypopleura pilose below spiracle ................................................................. adversa, n. sp.

Thorax without presutural acrostichals; hypopleura bare .... vandiemani Malloch.

21. Legs black; hind tibia on male with a series of very long bristles on anteroventral and another on posterior surface; fore femur of female with the apical scale-like extension short and inconspicuous ................ pocciliventris Malloch. At least the tibiae tawny; hind tibia of male with from two to four short anteroventral bristles and no series as above; fore femur of female with the apical scale-like extension very distinct ......................... 22

22. Femora almost entirely black in male, cell on the extreme apices yellowish, in female the apices are broadly yellowish; fifth sternite of male with normal hairs; fore femur in female much thicker than usual, with the flat basal area on anterior side covering nearly the basal half, the apical anterior scale very large ................................ addita Walker. Femora of male broadly yellowish at apices, those of female entirely yellow; fifth sternite in male more densely haired than usual; fore femur in female but little thickened, the oval bare flat area at base on anterior side not one-fourth of the femoral length, apical scale not very large ............. piliventris Malloch.

23. Wings with a fuscous spot close against third vein just beyond outer cross-vein; both cross-veins broadly clouded; longest hairs on arista distinctly shorter than width of third antennal segment; fore tibia with a median posterior bristle; knobs of halteres brown ......................... trisubbiliform Malloch. Wing without a spot in first posterior cell as above; cross-veins of wings not noticeably clouded .................................................. 24

24. Cross-veins of wings conspicuously clouded ........................................ 25

Cross-veins of wings not noticeably clouded ................................. 26

25. Longest hairs on arista much shorter than width of third antennal segment; fore tibia with a median posterior bristle; presutural acrostichal bristles absent ......................... victoria Malloch. Longest hairs on arista about as long as width of third antennal segment; fore tibia without a median posterior bristle; thorax with one pair of presutural acrostichal bristles .......... simulata Malloch.

26. Bristles on anteroventral surface of hind femur extending from base to apex; neither the median posterior bristle on fore tibia nor posterior setulae on hind tibia present; no strong presutural acrostichals present ............ micans Malloch. Bristles on anteroventral surface of hind femur confined to apical half, or, if present on almost the entire length, there is a bristle at middle of posterior surface of fore tibia or there are setulae on posterior surface of hind tibia .. 27

27. Fore tibia with a median posterior bristle; hind femur with an almost complete series of anteroventral bristles; thorax with a pair of short presutural acrostichal bristles; hind tibia without posterior setulae ................................. 28

Fore tibia without a posterior median bristle ............................... 29
28. Legs entirely yellow ........................................ versicolor Stein.
   Legs yellow, tarsi black ................................ spilariformis Malloch

29. Thorax without a strong pair of presutural acrostichal bristles; abdomen without
a brassy or violaceous tinge; posterior setulae on hind tibia absent ...........
............................................................ achaeta Malloch.
   Thorax with a long pair of presutural acrostichal bristles; abdomen with brassy
or violaceous reflections; hind tibia with one or more weak setulae on posterior
surface near middle ........................................ aeneiventris Malloch.

N.B.—The descriptions of most of the species ascribed to the writer appeared in
the series of papers published in the Annals and Magazine of Natural History,
under the title "Exotic Muscaridae" from 1921 to date.

**Helina hypopleuralis**, n. sp.

♂.—Head black, orbits, face and cheeks with slight whitish pruinescence.
Thorax black, slightly gray pruinescent, dorsum with four dark vittae, most
distinct in front of suture. Abdomen blue-black, with whitish pruinescent
checkerings. Legs black. Wings slightly yellowish. Calyptra white, the margin
of lower one fuscous. Knobs of halteres brownish-black.

Frons at anterior margin about one-third of the head width, narrowed behind,
triangle shining, narrow, extending to anterior margin of frons, each orbit with
two upper bristles directed backward; third antennal segment about three times
as long as second; arista plumose; parafacialis very narrow; cheek about twice as
high as width of third antennal segment; eyes short haired. Thorax with 2 + 3
pairs of dorsocentral bristles, two postnotal intra-alars, prealar moderately long,
and no outstanding presutural acrostichal bristles; prescutellar pair of acros-
tichals long; sternopleurals 1:2; hypopleura haired below spiracle; hairs not
descending on sides of scutellum. Basal abdominal sternite bare; genitalia
normal. Fore tibia without a median posterior bristle; mid femur without ventral
bristles; mid tibia with three posterior bristles; hind femur with two or three
preapical anteroventral bristles; hind tibia with only two bristles, on anterodorsal
surface. Fourth vein slightly curved forward at apex.

Length, 7 mm.
Type, E. Dorrigo, N.S.W., 30 January, 1923.

**Helina nigrohalterata**, n. sp.

♂.—Similar to addita Walker in colour, chaetotaxy, and general habitus.
Entirely black, thorax quadrivittate, abdomen with a pair of dark spots on
second, and another on third visible tergite, legs black, both cross-veins of wings
clouded, the outer one least noticeably so. Calyptra dirty yellow. Knobs of
halteres blackish.

Eyes hairy; frons at narrowest part distinctly wider than third antennal
segment; arista with its longest hairs a little longer than its basal diameter; cheek
about three times as high as width of third antennal segment. Thorax 2—3+4
pairs of dorsocentral bristles, two pairs of long presutural acrostichals, and the
prealar minute; sternopleurals 2:2. Abdomen as in addita. the bristles quite long
and strong. Fore tibia without a median posterior bristle; fore femur normal;
mid femur with three or four long posteroventral bristles on basal half; mid tibia
with three or four posterior bristles; hind femur with an almost complete series
of anteroventral bristles; hind tibia usually with three anteroventral and two
anterodorsal bristles, and a few posterior setulae. Fourth wing-vein not bent
forward at apex.

Length, 7.5 mm.
Type, Gisborne, Victoria, 2 April, 1922 (G. Lyell).
Helina castigata, n. sp.

♂. ♀—Male similar to preceding species, differing in having the frons narrower, the postsutural dorsocentrals three pairs, the abdominal dorsal spots much larger, subtriangular, and rather poorly defined, with a central dark line between them, and the hind femur with the anteroventral bristles present only on apical half.

The fore femur in female is normal.

Length, 5-6 mm.

Type, male, allotype, two male and two female paratypes, Eungella Ra., 45 miles west of Mackay, Queensland, 1,400-2,400 feet, 13 to 25 Sept., 1923 (Goldfinch).

Helina adversa, n. sp.

♀.—Head black, antennae and palpi orange-yellow, apical half of third segment of former fuscous. Thorax and abdomen black, with gray pruinescence, the former faintly vittate, the abdomen with a dotted appearance. Legs orange-yellow, tarsi black. Wings clear, yellow at bases. Calyptra and halteres yellow.

Eyes pubescent; arista plumose. Thorax with 2+4 pairs of dorsocentral bristles, and one pair of long, strong, presutural acrostichals; prealar short; sternopleurals 1:2; hypopleura with some hairs below spiracle; hairs not descending on sides of scutellum. Abdomen normal. Fore tibia without a median posterior bristle, femur normal; mid femur without ventral bristles; mid tibia with three posterior bristles; hind femur with two or three preapical anteroventral bristles; hind tibia with two anterodorsal and one anteroventral bristle, and a short posterodorsal bristle beyond middle. Venation of wings normal.

Length, 8 mm.

Type, Fish River, N.S.W., 25 March, 1923.

There are one or two more species of this genus in my possession, but I consider that, owing to the very large number of species that have been already described, it is advisable to put forward, at this time, the foregoing key so that anyone who is interested in the group may be enabled to identify the more common species and, at the same time, get an idea of the various characters used in the differentiation of the species. Later on, when I have received all possible material in the genus, I may give a complete key to the species, but there is always the danger that, by putting off the presentation of a key, one may do so until such a presentation becomes impossible for some reason over which one may have no control. I shall always be glad to examine and report upon species of the genus should such be sent me.

Practically nothing is known of the larval habits of the genus elsewhere and of the Australian species we know nothing at present, so that here is a good field for biological investigation.

Genus Antipodomyia Malloch.

But one species of this genus is known, bancrofti Malloch.

Genus Neohelina Malloch.

The two species of this genus were diagnosed in my last paper on Australian Diptera.

Genus Atherigona Rondani.

There are several species of this genus known to me from Australia, one of which, excisa Thomson, is very widely distributed, occurring in the Americas,
Africa, and from Southern Asia to Australia. The larva lives in decaying fruits. Another species, *tibiseta* Malloch, is known at present only from Australia. Lack of males of other species prevents me from dealing with the whole genus at this time.

**Genus Lispocephala Mik.**

Stein described *tinctipennis* from Australia. This species is unknown to me. He also places *intacta* Walker in this genus, with a doubt. I intend to revise the genus shortly, its limits at present being but imperfectly understood.

**Genus Pygophora Schiner.**

There are two species definitely known to me from Australia, *apicalis* Schiner, the genotype, and *minuta* Malloch. I believe that there is a third species, but have so far seen only female specimens of it.

**Genus Rhyncomydae Malloch.**

There are two species of this genus in Australia, *carinata* Stein, and *australis* Malloch.

**Genera Limnophora R.-D., Myiospila R.-D., and Dichaetomyia Malloch.**

I have already dealt with the species of these genera known to me from Australia in this series of papers.

**Genus Metopomyia Malloch.**

There is but one species of this genus known, *atropunctipes* Malloch.

**Subfamily Muscinae.**

This subfamily, as here limited, contains comparatively few genera, but some of these are of great economic importance as they transmit certain diseases or in other respects injure man and domestic animals. Unfortunately I have seen but few specimens of the subfamily from Australia and cannot give a list of the native species at this time. I give here a key for the separation of those genera which I believe must occur, or which I have definite records of as having been found in Australia.

**Key to genera.**

1. Propleura hairy in centre, i.e. below the humerus and above the propleural bristles; fourth wing-vein angularly bent forward at middle of its apical section; suprasquamal ridge not setulose posteriorly .......................... *Musca* Linné
   Propleura not haired in centre ........................................ 2
2. Suprasquamal ridge with setulose hairs posteriorly ........................................ 3
   Suprasquamal ridge not setulose posteriorly ........................................ 4
3. Fourth wing-vein subangularly bent forward at middle of its apical section; species not metallic blue or green in colour ....................... *Viviparomusca* Townsend.
   Fourth wing-vein with a rounded forward curvature at middle of its apical section;
   species metallic blue or green in colour ........................................ *Orthellia* R.-D.
4. Prosternum, pteropleura, and hypopleura bare ........................................ *Balioglutum* Aldrich.
   At least part of the hypopleura or pteropleura haired ........................................ 5
5. Pteropleura with one or two bristles and some hairs above ........................................ 6
   Pteropleura bare ............................................................... 8
6. Fourth wing-vein subangularly bent forward close to middle of its apical section;
   species not metallic in colour on any part of body; frontal orbits without strong
   forwardly directed bristles at middle; prosternum haired .................... *Biomyia* R.-D.
   Fourth wing-vein with a rounded forward curvature near middle of its apical section;
   species blue-black, or metallic blue or green in colour; frontal orbits of female
   each with a strong forwardly directed bristle near middle; prosternum hairy or
   bare ........................................................................ 7
7. Species metallic blue or green in colour; mid tibia with a strong median ventral bristle; prosternum bare ........................................... *Pyrellia* R.-D.
Species blue-black in colour; mid tibia without a strong ventral median bristle, sometimes one present on middle of posteroventral surface; prosternum haired on sides .......................................................... *Morellia* R.-D.
8. Arista pubescent; prosternum hairy ................................... *Synthesiomyia* B. & B.
   Arista plumose; prosternum bare ..................................... 9
9. Presutural acrostichals well developed; hairs on hypopleura below spiracle .................
   Presutural acrostichals not developed; hairs on hypopleura on upper margin in front of spiracle and also below spiracle .................. *Passeromyia* Villeneuve.

Genus *Musca* Linné.

I have insufficient material in this genus to justify me in dealing with the Australian species, but I suspect that only one species, *domestica* Linné, belongs here, though there may be another which I have not yet seen.

Genus *Viviparomusca* Townsend.

This genus was erected for the reception of *Musca vivipara* Port., but I believe most, if not all, of the viviparous species belong in it. The exact distribution of *vivipara* has yet to be determined, and it may be very widely spread.

Genus *Orthella* R.-D.

This genus is known also as *Cryptolucilia* and *Pseudopyrellia*. My material does not permit an opinion as to the number of Australian species at this time. I have, however, seen *lauta* Wiedemann from Australia.

Genus *Biomyia* R.-D.

One or two of the Australian species recorded as *Musca* belong here.

Genus *Balioglutum* Aldrich.

Only one species, *illingworthi* Aldrich, belongs in this genus. It occurs in Queensland.

Genus *Synthesiomyia* Brauer and Bergenstamm.

One species of this genus is known, *nudiseta* van der Wulp.

Genus *Passeromyia* Villeneuve.

But one species of this nestling infesting genus, *longicornis* Macquart (*heterochaeta* Villeneuve), occurs in Australia. Townsend described it under the name *victoria*.

Genus *Graphomyia* R.-D.

One Australian species seen by me belongs to this genus.

Genus *Pyrellia* R.-D.

I have no species of this genus from Australia, but *serena* Meigen is known to occur.

Genus *Morellia* R.-D.

I have not yet seen any species of this genus from Australia. The species occur usually in the higher altitudes and it may be turned up in this continent yet.

Subfamily *Stomoxynidae*.

I have seen only the genus *Stomoxys* from Australia, but present a diagnosis for the separation of this genus and *Lyperosia*.

A. Palpi very much shorter than proboscis; centre of propleura haired ..................

   ................................................................. *Stomoxys* Geoffroy.

AA. Palpi as long as proboscis or almost so; centre of propleura bare ........................

   ................................................................. *Lyperosia* Rondani.